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The Role of AI Technology Plays in Chinese Students' Spoken English Learning

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Abstract:

With the popularization and development of the Internet, artificial intelligence as a common tool has been widely used in Chinese students' spoken English learning. Language learning assisted by AI technology is developed from information technology-assisted language learning. Although it has many advantages, it has not been fully developed and applied, and there is a research gap in the field of technology and ethics. This paper is a systematic review that describes in detail how information technology-assisted language learning has developed step by step from computers to artificial intelligence Apps and even robots, and summarizes the advantages of AI technology in spoken language learning, such as vividness, accuracy, and convenience, as well as the limitations of difficult application, high cost, low error-tolerant rate and neglect of cultural differences. Through literature investigation and comparative analysis, this paper summarizes the relevant suggestions and improvement plans for AI technology-assisted spoken English learning.

Keywords: Spoken English acquisition, artificial intelligence, CALL, MALL, RALL

1. Introduction

In recent years, the development of information technology has greatly promoted innovation in the field of language education. For instance, As a product of information technology, the intervention of blogs has made great achievements in foreign language classes. Hamuddin's research in 2018 showed that the use of blogs in the language teaching process can enable lecturers to upload and download materials at any time, allow students to learn anytime and anywhere, regardless of time and place restrictions, and further stimulate students' learning enthusiasm and communication enthusiasm [1]. In addition, information technology can make foreign language learning more standardized and procedural, effectively improving the learning effect.

According to John's research in 2018, from computer-assisted language learning (CALL) and mobile-assisted language learning (MALL) to robot-assisted language learning (RALL) today, the language learning system based on information technology is becoming more and more perfect and advanced [2]. Nowadays, with the increasing popularity of artificial intelligence, its role in foreign language learning also should not be underestimated. In China, varieties of foreign language learning applications are emerging in an endless stream, and the vast majority of them, such as Duolingo, Baicizhan, and Youdao Translation, are all equipped with corresponding AI-assisted functions, which can better cooperate with learners in the process of language acquisition.

At present, the application of artificial intelligence in foreign language learning in China mainly focuses on spoken English. In Chinese schools, AI technology has different applications in different learning stages of learners. For primary school students and junior high school students as primary learners, AI technology can give learners standard demonstrations and timely error correction compared with the database, preventing subsequent development problems caused by imbalance of educational resources and limitation of teachers 'spoken English level [3]. For college students majoring in English, AI technology mainly plays a role in speech synthesis, speech recognition, and oral assessment, which facilitates learners to carry out more professional and systematic learning and practice in the later period [4].

However, the application of AI technology has not been all plain sailing. Many AI-based spoken language learning software in the market have different problems, such as inflexible evaluation systems, low error-tolerant rates, and excessive commercial atmosphere, and there is still a lot of room for improvement [4]. At the same time, how to integrate AI tools based on sophisticated technology into the classroom of daily life is also a major problem.

This paper will focus on the role of AI technology in

Chinese learners' spoken English learning, introduce the development of information technology in language learning, discuss the benefits of AI technology to spoken English learning and the current shortcomings, and how to further promote the better combination of AI technology and language education.

2. Literature Review

2.1 CALL (Computer-Assisted Language Learning)

According to Davies, Walker, Rendall, and Hewer, the development of CALL can be broadly broken down into three processes: i) Dumb calls (1970s and 1980s); ii) Multimedia CALL (from 1990s); iii) Web CALL (from 1993) [5].

Although many scholars believe that this stage is not sufficient for the development and use of information technology, the role played by computers in the whole process still should not be underestimated. Studies have shown that computers can make second language learners more independent from traditional classrooms, get rid of the limitations of time and space, and be able to arrange learning autonomously at any time and any place [6]. Lee also pointed out that computers can provide students with hands-on practice through experiential learning [7]. In addition, many abstract concepts and cognition that are difficult to express and describe in language teaching can be represented by images displayed by computers [6].

Although the application of CALL has many advantages, its limitations are still quite obvious, and the most significant one is the influence of Second Language Acquisition (SLA) theory, which originated from English teaching. According to a 2016 study by Sauro, 64% of the research published in a CALL journal from 2012 to 2016 was English-focused. Many related CALL learning software are also based on English, and people who do not understand English cannot successfully make use of CALL [8]. Secondly, expensive computer and multimedia facilities can increase the cost of learning and harm educational equity, which further widens the educational gap between the rich and poor classes[6]. Moreover, at the end of the 20th century, computer technology has not been widely used. For ordinary school teachers and students, the operation of computer equipment was still difficult. As a result, CALL has not been well developed and popularized.

2.2 MALL (Mobile-Assisted Language Learning)

With the widespread adoption of mobile phones at the beginning of the 21st century, mobile devices are rapidly changing the structure of language learning. Characterized by its spontaneous, informal, personalized, and ubiquitous learning potential, MALL enables people to use portable devices in their busy daily lives to learn languages anytime and anywhere, rather than sitting in a classroom or in front of a computer at a fixed time. MALL enables language learning to change from teacher-led learning to student-led learning through mobile devices [9]. MALL is also particularly useful for distance language learners and groups such as immigrants and refugees [2].

Compared with computers, mobile devices represented by cell phones are cheaper and more widely used. Even learners from those economically backward areas can also learn languages through mobile devices. New media forms that can assist language learning, such as moblogging, games, remote online courses, and podcasts, emerge in an endless stream [10]. Learners can also communicate and cooperate with other learners through the Internet.

However, language learning through mobile devices is still limited by certain conditions, such as the small screen where reading is relatively more difficult, the limited data storage space, and the restriction of multimedia itself [9]. On top of that, a terrible point for language learning is that while mobile technologies are advancing, their output is rapidly shifting from verbal to visual [10].

In recent years, research on MALL mainly focused on vocabulary teaching, indicating that using mobile devices to learn vocabulary seems to be a very successful application [11].

2.3 RALL (Robot-Assisted Language Learning)

Some Asian countries and regions were the first to apply RALL around 2004 [12]. In second language learning, the most effective mode of instruction is direct language interaction with native speakers. This is very difficult to achieve in ordinary schools, but the application demonstration based on artificial intelligence technology can make up for this deficiency. In 2012, Han proposed that robots play an important role in spoken language learning, especially in helping children learn foreign languages [12]. Some studies have mentioned that the elements of learning achievement involve learner interaction, low anxiety, and high motivation, and robots can provide motivation and entertainment for learners, thus becoming a source of great fun [13]. Experiments have proved that the use of RALL can make students enjoy the classroom more and actively participate in classroom interaction, reduce learning anxiety, improve learning motivation, and lead to more productive learning [14].

Accordingly, the development of RALL is not perfect enough, and the application of RALL in the language learning classroom is still being explored and revised. Han

mentioned that each element of the RALL system framework needs to be designed according to the language learning goals, and the issues of how teachers and robots cooperate in the classroom and what kind of teaching and learning mode should be used in RALL also need further discussion[12].

3. The Benefit of Using AI Technology in Spoken English Learning

The AI technology commonly used in language learning today is more like a combination of MALL and RALL, often with intelligent learning software used on mobile devices such as cell phones. Therefore, spoken English learning based on AI inevitably has the characteristics of both.

3.1 Improve the Accuracy of Spoken English Training

Traditional Chinese English classroom teaching focuses on reading and writing, while listening and speaking tend to be difficult to popularize. However, the traditional spoken English teaching method is often based on teachers' leading, students' following, and teachers' pointing out problems [4]. As a result, the teacher's spoken English level will greatly limit and influence the students' spoken English ability. In addition, Chinese students are often influenced by local accents when learning spoken English. According to Duan, Wang, and Qin, students in Jining, China, often have trouble distinguishing between flat tongue and tongue sounds when speaking English [3]. Without being corrected in a standard manner, this phenomenon will cause great obstacles to normal oral communication and even reading and listening.

With the development of science and artificial intelligence technology in recent years, computer-aided speech training technology has emerged. By using modern speech recognition technology, it can recognize and judge the input speech in a standardized way, and then feedback the results to learners through scores[3]. In this way, the teacher's level can avoid the restriction of students' oral learning, and students can get more standardized guidance and feedback, which is very beneficial to the long-term development of spoken English.

3.2 More Interesting Teaching Methods

Nowadays, many AI-based spoken English learning programs or software rely on a variety of interesting multimedia channels, which combine teaching with entertainment and emphasize motivation. This can effectively reduce learners' resistance, attract the attention of learners, especially preschool children, and make learning easier and more interesting. Duolingo, a famous spoken language learning App around the world, is one such platform that integrates gamification elements. Learners navigate through levels, earn points, and acquire knowledge imperceptibly while gaining a sense of accomplishment [15]. For young children with poor understanding ability, Duolingo has specially launched a children's version called Duolingo abc, using storytelling, watching videos, and other ways to convey and explain some difficult concepts vividly. Besides, interaction with AI robots can effectively stimulate curiosity and promote learning.

3.3 More Suitable for Learners' Needs

AI-based spoken English learning programs can be used as a standard for teachers to judge students' spoken English ability, and more suitable learning methods can be tailored for students. Highly targeted and personalized homework can enable students to discover and fill the gap, saving time and improving learning efficiency [16].

3.4 Improve Communication Skills

With the support of AI, teaching robots can have a two-way interaction with humans through natural language processing, voice recognition, and image analysis [17]. In the process of communicating with teaching robots in English, learners can become less nervous and more assertive and dare to express themselves[14] and avoid the situation of "dumb English", which means being afraid to speak. In addition, Apps such as Duolingo also provide online group interaction and discussion, which replicates real conversation scenes in real life and can improve their ability to understand and respond to conversations in real-time [15].

4. Problems Exist When Using AI Technology in Spoken English Learning

4.1 The Uneven Level of Spoken English Learning Apps

Although AI-based spoken English learning Apps are changing the way Chinese people learn spoken English, there are still many drawbacks in today's spoken English learning software market, and there is still much room for improvement. A study has evaluated the practicability of Youdao Oral Master, Liulishuo, and Fun Dubbing, three major spoken English learning software in the Chinese market, and pointed out that these Apps all have problems such as immature voice assessment systems, inflexible assessment standards, and excessive commercialization [4]. They believed that the popular spoken English learning software in the market still has defects such as low error-tolerant rate, ignoring individual uniqueness, and failing to take into account grammar and logic problems

[4].

4.2 Application Problems in the School

According to Han's research, the use of RALL involves many moral and technological problems, such as personal information leakage, management imbalance, sudden system failure, etc. [12]. In addition, how teachers should reasonably apply AI technology in the classroom and achieve better cooperation with AI is still to be practised and observed. Based on the uncertainty of the above issues, it may be difficult to promote AI-based spoken English teaching on a large scale in a short period of time.

4.3 High Learning Costs

Simply using AI-based spoken English learning Apps on mobile devices may be economical, but universalizing large AI-assisted learning systems on campus will be a very large expense. How to apportion this expenditure reasonably and relieve the educational pressure of school is still a question to be discussed.

4.4 Limitations of AI Technology Itself

In essence, oral evaluation puts more emphasis on accuracy. However, as the current AI speech recognition technology is based on a statistical model, which means it can only use the common pronunciation in its database and corpus as the standard, so it is difficult to assess which pronunciation is more accurate [4].

4.5 The Existence of Cultural Differences

Most of the existing AI-based spoken English learning software in China is based on the English assessment standards (such as IELTS and TOEFL) used by European and American countries while ignoring the characteristics and habits of Chinese people's own language expression. For this reason, these assessment standards may not work very well when facing Chinese learners. In addition, due to the cultural gaps and thinking differences, many scene simulations preset by artificial intelligence are difficult to understand well by Chinese learners, which will greatly affect the actual effect of AI technology.

5. Suggestions

Based on the characteristics, advantages, and limitations of artificial intelligence and the practical application of AI in spoken English teaching for Chinese students, the following suggestions are put forward:

5.1 Take Cultural Differences into Consideration

The setting of AI programs should not copy the learning methods and assessment standards of European and American countries but should be designed in combination with the language expression and learning habits of Chinese people. For example, in April 2018, the Chinese Language Commission officially released the China Standards of English (CSE), which is the first English proficiency assessment standard in China, and since then, the English proficiency level of Chinese people had a national scale. The AI-assisted spoken English learning App "Jingxiaoai" is an App developed based on CSE, which can be matched according to different levels of English proficiency and different situations of Chinese learners and carry out learning plans [18]. In addition, emphasis should also be placed on the explanation of cross-cultural scenes to deepen Chinese learners' understanding and impression of Western human geography, social sciences, and other aspects.

5.2 Optimize Spoken Language Learning Apps

According to relevant research surveys, there are still many shortcomings in the learning Apps on the market today. The evaluation system and evaluation criteria of these Apps should be further optimized to increase the practicality and operability of AI technology. Standard speech learning systems such as the Wechsler phonetic alphabet should be used to distinguish pronunciation patterns in different regions, and the selection of spoken language learning materials should be further classified by using databases [4]. In addition, it is necessary to implement the correct educational concept, make the design more humane, and reduce the interference of various irrelevant factors in the App for learners.

5.3 Change School Policies

In order for AI-assisted spoken language learning to be further implemented in schools, a number of issues must be considered, such as institutional policies, infrastructure, permanent or lack of faculty, student ownership of mobile devices, financial considerations, and hardware constraints [2]. Schools may be able to appropriately relax the classroom access system of AI technology because more field experiments and teaching effect studies are needed to compare and evaluate AI-assisted spoken English learning with traditional teaching methods so as to further solve various problems.

6. Conclusion

As a new development of computer-assisted language learning, AI-assisted spoken language learning has shown excellent results in both teaching and learning progress and is widely welcomed in China. Although there are technical and ethical hurdles to overcome, one thing is still clear: artificial intelligence will play an increasingly

important role in spoken English learning, and learners must begin to accept the use of AI technology in their learning progress, even in daily life. If the academic world can focus on solving the above problems, further improve the core technology of artificial intelligence, consider cultural differences, revise various policies, and test the results in practice, the development prospect of AI-assisted spoken English learning is bound to be bright.

This paper reviews the development process, advantages, and limitations of AI-assisted spoken English and puts forward corresponding improvement suggestions, which are conducive to deepening the public's cognition of information technology and artificial intelligence and promoting the further use of AI technology in Chinese learners' spoken English learning. However, this paper does not propose new methods or concepts but simply uses the paper review to summarize the previous research. In the future, more researchers may use more scientific and professional methods to solve the above problems and promote the continued development of AI spoken English teaching.

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