Opportunities and Challenges of Teaching Non-English Majors of Higher Vocational Education Spoken English in the Artificial Intelligence Era

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Abstract: This article is a discussion of applying artificial intelligence to the spoken English teaching of non-English majors in higher vocational education. First of all, the history of artificial intelligence, as well as guidance about applying artificial intelligence to education, was reviewed. Secondly, the status quo of spoken English teaching in higher vocational education was investigated from both the teachers' and students' perspectives. Thirdly, both ample opportunities and tough challenges of spoken English teaching in higher vocational education, which were presented by artificial intelligence, were analyzed. Lastly, suggestions for dealing with the tough challenges were proposed.

Keywords: Artificial intelligence; Higher vocational education; Non-English majors; Spoken English

1. Artificial intelligence

1.1. The history of artificial intelligence

The founding period of artificial intelligence was from the 1930s to the 1950s. The Turing machine laid the theoretical foundation for modern computers in 1936. The neural network, which laid the base for its field, was put forward in 1943. As a term, artificial intelligence was initially proposed at the Dartmouth conference in 1956, marking artificial intelligence as a separate research field.

The first wave of artificial intelligence was from the 1950s to the 1970s. Logic theorist, which was the first automated reasoning computer program, was written by Newell *et al.* in 1956 [1]. DENDRAL, the first expert system, was developed by Feigenbaum *et al.* in 1965 [2]. ELIZA chatbot, a natural language processing program, was created by Weizenbaum in 1966 [3].

The first artificial intelligence winter was from the 1970s to the 1980s. Lighthill [4] published a report in 1973, criticizing that research on artificial intelligence lacked actual progress. The researchers generally over-promised; however, due to both technical and theoretical constraints of that time, they under-delivered, causing huge gaps between promises and realities of the artificial intelligence field, which led to funding cuts.

The second wave of artificial intelligence was from 1980 to 1987. With the progress of the expert system and the neural network, the artificial intelligence field came into its second development period. Machine learning became an independent research field, leading to various machine learning algorithms. Meanwhile, natural language processing research was also moving forward.

The second winter of artificial intelligence was from 1987 to 1993. The market for specialized LISP-based hardware collapsed in 1987. Additionally, the expert system failed in a commercial application. Funding for the artificial intelligence field was decreased.

The third wave of artificial intelligence was from the 2000s to the present. The wide use of the Internet and mobile devices has generated a tremendous amount of data. With the improvement of computing power, computers were capable of processing big data, achieving a breakthrough in deep learning, which assisted the advancement of machine learning.

1.2. Guidelines on applying artificial intelligence in education

Nowadays, artificial intelligence is widely used in different fields, and there is no exception to the education field. The application of artificial intelligence in education provides unprecedented opportunities for coping with challenges in the field; nevertheless, it also poses unknown risks.

There are a series of publications of UNESCO (United Nations Educational, Scientific and Cultural Organization), which guide the application of artificial intelligence in education. "Beijing Consensus on Artificial Intelligence and Education" [5] the first guideline on applying artificial intelligence in education, was published by UNESCO in 2019. UNESCO published "Guidance for Generative AI in Education and Research" [6] in 2023, which was the first guideline on using generative artificial intelligence in education. "AI Competency Framework for Teachers" [7] and "AI Competency Framework for Students" [8] were published by UNESCO in 2024, which initially provided competency frameworks for both teachers and students in the artificial intelligence era.

With the rapid advancement of artificial intelligence, China released a series of guidelines on using artificial intelligence in various fields. The Ministry of Education of the People's Republic of China has published a series of reports, guiding the application of artificial intelligence in education. The Ministry of Education of the People's Republic of China published "The Action Plan of Artificial Intelligence Innovation in Higher Education" [9] in 2018, which regulated technology innovation, talent development, and international cooperation in the artificial intelligence field in higher education. "Suggestions on Accelerating the Fusion of Subjects and the Training of Graduate Students in the Artificial Intelligence Field under Double First-Class Construction" [10] was released by Ministry of Education of the People's Republic of China in 2020, which provided guidelines for subject and talent development of artificial intelligence in higher education.

2. The status quo of spoken English teaching in higher vocational education

2.1. Spoken English teaching status quo

According to "The Basic Requirements Index for Running Colleges and Universities (Trial)" [11], the student-to-teacher ratio in higher vocational education should be 18:1. "Statistical Report on China's Educational Achievements" [12–15] from 2020 to 2023 (**Figure 1**), released by The Ministry of Education of the People's Republic of China, showed that the student-to-teacher ratio in higher vocational education was getting close to 18:1 but had not reached the requirement of 18:1 yet in 2023. Therefore, the current student-to-teacher ratio can still be improved.
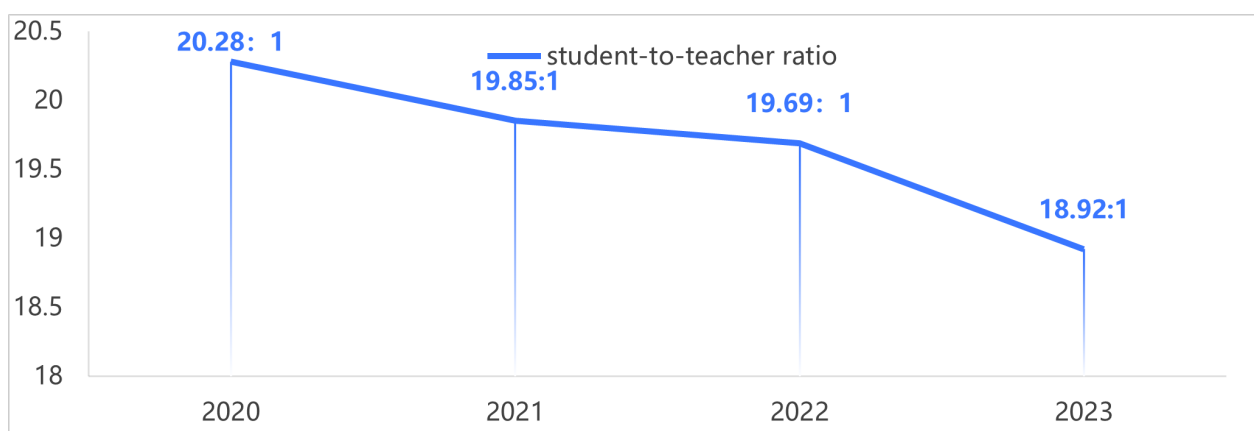
Figure 1. National student-to-teacher ratio in higher vocational education from 2020–2023.

As stated in "The English Course Standards for Higher Vocational Education (2021 Edition)" [16], English courses for non-English majors should foster students' skills in learning and using English. In order to meet the requirements for students' spoken English ability in "The English Course Standards for Higher Vocational Education (2021 Edition)," student-centered education philosophy should be adopted in spoken English teaching for non-English majors, but it takes time to change teachers' teaching philosophy. Although the reform of educational philosophy has been carried out in recent years in China, a large number of English teachers, who teach non-English majors spoken English, currently still employ teacher-centered teaching methods that are ineffective with regard to improving students' spoken English ability. Additionally, the lack of spoken English teaching facilities is also a major factor that impedes the desired results of spoken English teaching.

2.2. Spoken English learning status quo

High school graduates, secondary vocational graduates, veterans, etc., are the student sources of higher vocational colleges and universities. Students' English levels are in strong contrast with one another with respect to group levels and individual levels because of the diverse student sources [17]. For example, high school graduates are usually better than secondary vocational graduates when it comes to English basics. The complexity of student sources is having a negative impact on spoken English teaching for non-English majors in higher vocational education.

The learning motivation of non-English major students in higher vocational education has a significant influence on their spoken English learning. English courses for non-English majors are usually offered for the first year. However, this period is an adjustment time for students to get used to their college life, and a lot of them haven't had clear plans for their future yet, which generally means that they don't have a strong motivation for learning spoken English.

Student-centered education philosophy is required in higher vocational education, and all teaching activities should be student-oriented. Nonetheless, most non-English majors were taught in teacher-centered teaching methods before their higher vocational education level. Therefore, when they first encounter student-centered teaching methods in their English courses, it will be hard for them to adjust. For instance, if students are asked to make spoken dialogues in English when they weren't trained in spoken English, they will feel nervous or even intimidated.

3. Opportunities and challenges of teaching non-English majors of higher vocational education spoken English in the artificial intelligence era

3.1. Opportunities of teaching non-English majors of higher vocational education to speak English in the artificial intelligence era

The rapid advancement of artificial intelligence has a profound impact on various fields. The impact of artificial intelligence on education is one of the hottest topics globally. There are new opportunities for addressing the biggest challenges with the emergence of artificial intelligence. Teaching non-English majors to speak English hasn't achieved the expected results due to the limitations of teaching facilities and teaching resources. With the coming of the artificial intelligence era, there are more feasible solutions to cope with the limitations of teaching spoken English in higher vocational education.

Artificial intelligence applications can be used in different kinds of mobile devices, which can help to deal with the lack of spoken English teaching facilities in higher vocational education. Additionally, when learning spoken English, students can have an immersive learning experience by using artificial intelligence, which will help them to overcome limitations of time and location. Artificial intelligence will help to offer students personalized support in spoken English learning under their personal English levels, despite the diverse student sources and the differences among students as a group and individuals [18]. Furthermore, personalized support will assist students in overcoming their nervousness or fear when they practice and use spoken English. When speaking English, students will have a sense of achievement owing to their personalized support by artificial intelligence, and this sense of achievement will further motivate them; as a result, their spoken English will be enhanced.

Teachers are capable of collecting non-English majors' spoken English data by using artificial intelligence; therefore, they can have a more precise understanding of students' spoken English levels, which enables them to provide more personalized guidance to students. Besides, teachers can use artificial intelligence to create spoken English exercises that are closer to students' real lives and more of today to help students feel more related to the exercises [19]. Meanwhile, with the assistance of artificial intelligence, teachers can help students maintain their interest in learning spoken English by providing prompt feedback on their spoken English exercises.

3.2. Challenges of teaching non-English majors of higher vocational education to speak English in the artificial intelligence era

The application of artificial intelligence in education indeed provides new opportunities for addressing the biggest challenges in the field, but it also poses new challenges. Teaching non-English majors to speak English in the era of artificial intelligence faces unprecedented challenges.

Artificial intelligence can create a large amount of spoken English exercises within minutes, but these fast-produced materials lack accuracy because, at the time being, there are no effective systems that supervise them at all. There are important limitations of the artificial intelligence field regarding natural language processing and speech recognition. The existing artificial intelligence technologies can't provide students with real spoken English simulation settings. Moreover, when students communicate with each other verbally, it is not only about informational communication but also about emotional and interpersonal communication. The application of artificial intelligence in spoken English teaching may lead to students' emotional absence and may also cause students' dependency on artificial intelligence when it comes to interpersonal communication.

Independent critical thinking and personal growth are the main purposes of education, yet the existing

artificial intelligence technologies can only provide students with feedback on their spoken English exercises based on their scores. Furthermore, ensuring information security and protecting teachers' and students' privacy is still an unsettled issue, given that artificial intelligence applications will collect a lot of personal information of teachers and students while assisting teachers and students in spoken English exercises.

4. Suggestions

First and foremost, effective supervising systems for the application of artificial intelligence in education should be developed. Spoken English exercises in higher vocational education that are generated by artificial intelligence should be under supervision so as to ensure their accuracy.

Second, offering students more real spoken English simulations by advancing the natural language processing technology and speech recognition technology. Clear arrangement of the roles of teachers and artificial intelligence applications plays an important role in avoiding students' emotional absence and lack of interpersonal communication.

Last but not least, when assessing students' spoken English abilities, formative assessment should be considered because this type of assessment will facilitate students' all-around development rather than only focus on their scores. Laws and regulations, which specify legal responsibilities of data collection and data usage by artificial intelligence applications, should be made as soon as possible to ensure the information security of teachers and students, as well as to protect their privacy.

Funding

Disclosure statement

The authors declare no conflict of interest.

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