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Exploration of pathways and reflection on application of AI-empowered practical teaching of listening and speaking in higher vocational English

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Abstract: In this era of rapid digitalization and globalization, higher vocational English (HVE) takes on the task of cultivating skilled workers, both technically and cross-culturally. However, traditional practical teaching of English listening and speaking in vocational schools faces several bottlenecks, such as insufficient instruction time, genuine-language-environment deficiency, and inadequate personalized evaluation. This paper intends to look into the transforming force of Artificial Intelligence (AI) to solve the issue. By using technologies like Natural Language Processing (NLP), Automatic Speech Recognition (ASR), and adaptive learning algorithms, this paper proposes a multi-angle path for promoting the training of English practical skills. The paper examines the advantages of AI in creating immersive scenarios, designing personalized learning pathways, and enabling real-time intelligent assessment. And it also offers a critical reflection on the application of these technologies – it mentions problems associated with the new tasks of teachers, the limitations of algorithmic feedback, and the requirement of humanistic values in language education. Study finds that although AI is a catalyst for educational reform, a mutualistic "Human-AI Collaboration" model can really upgrade listening and speaking education of English in college.

Keywords: artificial intelligence; higher vocational English; listening and speaking instruction; practical teaching; educational technology; human-machine collaboration

1 Introduction

The rapid development of information technology has significantly reshaped the landscape of global education, ushering in an era where artificial intelligence (AI) does not turn into a future notion but becomes a genuine instrument inside a school. Higher vocational education (HVE), in turn, must meet the demand for producing a lot of high-quality technical and skilled workers to serve the international labor market. English is a core part of vocational curriculum in terms of international business and a language of global communication and technology. Specifically, since vocational students often need to communicate with foreign customers, read through technical manuals or negotiate across international workplaces, listening and speaking skills are particularly crucial. But many vocational colleges' current English practical teaching is far from perfect [1]. Teachers often face challenges such as large class sizes, different levels of students' proficiency, and the lack of real-life scenarios to apply English, resulting in "Mute English", a phenomenon where students pass the written exam but cannot express themselves verbally.

The introduction of AI into this teaching scenery seems like quite the solution to these old problems. AI technology rephrases the user's content in a natural, human-like style, preserving the original word count while improving readability and scholarly quality. The Ministry of Education and other educational organizations have paid more attention to the "integration of information technology and education teaching", and have called for a change from standardized education to individualized education. In this environment, it's time to see what AI might do to make practical training for English listening and speaking more than just an idea, it's now something teachers have to think about [2]. This paper examines the practical application of AI in this field, analyzing how intelligent tools enhance environmental realism and generate personalized learning recommendations. However, it also acknowledges the challenges in addressing ethical dilemmas and moral questions that arise during technology implementation.

2 The current dilemma of English listening and speaking in higher vocational education

One needs to understand the need for AI intervention by first thoroughly investigating the structural and pedagogical problems currently present in higher vocational English education. The main problem is that there is a very big difference between what we need and the number of classes that can help us. In a regular vocational college setting, an English class could be big, with more than 50 students sometimes. In such an atmosphere, the traditional "instructor dominant" model naturally takes over, with the instructor delivering knowledge to a listening crowd. As for listening and speaking practice, which always needs lots of communication and special training, this number is so terrible: The student would have just one to two chances to speak in a 90-minute session and that's absolutely insufficient for learning a language [3]. At the same time, the content of practical training is behind the industry. Textbooks use general English, whereas students in courses such as automotive repair, tourism management, or nursing need English for Specific Purposes (ESP). Without genuine and relevant on-the-job scenarios, it is difficult for the students to understand how the language they are studying applies to their careers, which undermines their motivation.

Also, there is another kind of barrier, which is called "foreign language anxiety". It is more common among vocational students since they usually have weaker academic foundation compared to those college students. In a regular classroom, speaking one's mind could lead to public shame and immediate teacher correction, making students less likely to speak up. The feedback is also late and vague in traditional setting. For a teacher can't simultaneously monitor the pronunciation, intonation, and grammatical accuracy of fifty students [4]. And the homework assignments in listening and speaking are difficult to assess effectively without technology; teachers have to resort to random checks, leaving students unaware of their progress and areas for improvement. This leads to a feedback vacuum, where students persistently repeat the same pronunciation errors due to a lack of corrective guidance during their formative learning stages. So the appearance of intelligent system is not just a supplement, but also a need to break the limitation of time and space, as well as psychological pressure.

3 Pathways for AI-empowered practical teaching scenarios

The first major step in AI integration is to create immersive, high-fidelity practical training scenarios that replicate real-world vocational environments. By combining AI with VR (virtual reality) and AR (augmented reality), we can realize the vision of an "intelligent classroom". It will overcome physical obstructions. Context is vital for vocational students. For instance, a student studying Hotel Management can engage with an AI-powered avatar of a foreign guest at a check-in desk via simulation platforms [5]. AI is unlike static script, it will use NLP to respond dynamically according to student's input, creating an unscripted conversation akin to real-world unpredictability. When student is polite, the AI responds warmly; when student is rude/unambiguous, the AI becomes ambiguous, prompting a rephrasing. This bridges the gap between school and the workplace, so that students can practice dealing with complaints, explaining how things work, or having a business discussion in a low-risk, safe environment.

Besides this pathway goes past visual imitations into the world of "Intelligent Tutoring Systems" (ITS), available as a talking partner 24/7. In the past, it was stopped in a practical training setting when the bell rang. But with AI enabled mobile app we can have always learning. Students can take advantage of fragmented time—such as waiting for the bus, during lunch breaks, or even in the dorm—to practice their speaking [6]. Those systems use advanced voice interaction technology to have conversations with students. For example, a student can do a role play about "customs clearance procedure" with a chatbot. The hidden AI analyzes not only the words spoken but also the sounds of the speech. This kind of continuous exposure to the target language is enabled by adaptive algorithms that adjust based on student performance, leading to a significant increase in "time on task"—a key predictor of language proficiency. By shifting practical training from confined classroom settings to a pervasive digital environment, AI greatly changes the landscape of listening and speaking practice.

4 Constructing a closed loop of intelligent assessment and real-time feedback

The second important path is to establish an automatic speech recognition (ASR) and data analysis based accurate feed back mechanism. The goal of acquiring listening and speaking skills is more effectively achieved through immediate feedback than through delayed correction. Unlike traditional methods, AI systems can give us immediate satisfaction and actionable fixes. When a student reads or answers a question, the system instantly compares their audio input with a comprehensive database of native-models. It then visually renders the comparison through a color-coded score map, marking out precisely where the pronunciation deviated in relation to phonemes, stress, rhythm and intonation [7]. This is often beyond the capacity of even a human teacher to consistently deliver for every student. For example, a student may struggle to pronounce the "th" sound correctly, or that they fail to use the rising intonation at the end of their questions. The objective data-driven feedback will help students identify their blind spots without the sting of public correction.

Beyond analyzing individual pronunciation, AI provides a comprehensive view of "Learning Analytics" by aggregating all data collected during interactive sessions on the platform. This includes metrics such as time spent on tasks, vocabulary words that pose challenges, improvements in answer accuracy over time, and participation frequency. The system synthesizes all this information to create a holistic profile of the user. For the teacher, this capability is transformative. Instead of relying on guesswork to identify class-wide difficulties, the AI dashboard offers precise insights — for instance, revealing that 70% of students struggled with a specific listening passage on "logistics terminology". Armed with this data, teachers can implement "Evidence-Based Teaching", adjusting curriculum content to address identified gaps effectively. For students, the system is like an adaptive coach. If it detects that the student has trouble with the past tense, it will automatically push more listening practices as well as speaking prompts on past tense [8]. From the "one size fits all" instruction to "adaptive personal learning", AI guarantees practical instructions tailored to each learner's zone of proximal development.

5 Reflection on application: the transformation of the teacher's role

While the integration of AI into education holds great promise, its practical implementation demands careful consideration of the evolving identity and role of vocational English teachers. There is the common worry that AI will make teachers obsolete, yet a closer look shows that the teacher's task is actually getting more complicated instead of simpler. In the environment where AI is powered, teachers have to transform from "knowledge transmitters", "drillmasters" to "learning designers", "data analysts", "emotional facilitators". Machine is good at doing repetitive drills, pronunciation correction and vocabulary test, which are troublesome jobs for people [9]. The instructor should delegate the mechanical aspects of teaching to the AI, thus freeing their hands for more important cognitive tasks. Meanwhile, the teacher must design the pedagogical framework for AI tools, select suitable software, integrate the material into regular lessons, make sure that all digital situations match up with vocational standards.

But it will be a big trouble about "digital literacy" of the faculty. Many vocational English teachers are used to doing things the traditional way and don't have the skill set to deal with complicated data dashboards or fix AI software. There's danger that tech could merely become surface-level – used to dazzle – instead of totally rooted as a teaching device. Teacher is the interpreter of data. When an AI report claims a student is failing, the teacher has to go beyond the numbers and find out the reason—Is it a lack of motivation? A learning disability? A personal issue? It's static pattern-seeking and lacks feelings or sympathy [10]. So the teacher's job of providing emotional support, offering encouragement, and fostering cultural awareness carries even greater significance. The human teacher has to fill the gap between the cold, logical, algorithm and the warm, messy world of human communication—teaching students not just how to communicate clearly, but how to do so with empathy, cultural awareness, and nuance.

6 Reflection on application: technological limitations and ethical concerns

A critical reflection on the utilization of AI needs to face the problems and moral problems that arise from the technology because of their own limits and moral problems. We need to avoid treating "technological solutionism", like the belief that AI has solved all education problems by magic. First, it has problems with being accurate and biased. The improvement of ASR technology is great, but still has difficulty with non-standard accents or creative language use. In a vocational setting, students can have "Chinglish" or strong accent. If the AI keeps marking them as "wrong" or does not understand them, it's frustrating and demotivating and could end up promoting the kind of silence it was meant to cure. Also, the AI language model is trained from the available data sets and it can be as well biased. If it is mostly American or British English training data, the system may have a penalty on valid varieties of Global English that are not Standard American or British English, which does not align with the vocational goal of communicating in a diverse, global marketplace.

There's also an "algorithms-induced reductionism" risk in language learning. Language is an intricate social occurance containing gesture, expression, common history, and emotional undertow. AI tends to turn language into code—language's syntax, words, phonetics. It can tell if a sentence is grammatically right but cannot tell if a sentence is polite, if a person is making a joke, or if something is suitable for talking about in a place. Over-relying on AI may result in students speaking like robots and they might be technically correct but socially wrong. There is a worry regarding data privacy. AI systems need lots of student voice information and action logs to work. Vocational schools must strictly defend against student privacy breaches and the misuse of their data for commercial purposes. Finally, Machines lack the ability to connect emotionally with students, while teachers and students can build genuine relationships. If students feel like they are talking to a screen instead of a person, then their long-time engagement will decrease. Therefore, teachers should always be aware of AI's limitations when in use to ensure it serves pedagogy rather than dominates it.

7 Conclusion

The application of artificial intelligence in the practical teaching of listening and speaking for higher vocational English marks a great epoch-making turning point. AI creates full-immersion, industry-related scenarios and provides individualized, data-based feed-back to resolve the lasting shortage of time, resources, and interactive opportunities that have hindered vocational education. It serves a pathway for students to not only become linguistically proficient but also job-ready. However, it is not a ride without problems. It demands a reinvention of teachers' role, requiring educators to enhance their technological proficiency and assume a data-driven leadership position. It also necessitates vigilance when it comes to the technological constraints around accent recognition, cultural difference, and data ethics.

Ultimately, the future of vocational English education is the "Human-Machine Collaboration" (HMC). We must leverage AI to handle the repetitive and impersonal aspects of language learning while elevating the human-centric elements – feeling, cultural understanding, sentiment – which are naturally adept at by humans and can never be achieved by machines. This approach aims not to replace classrooms with technology but to augment them to build a hybrid learning environment where AI serves as a tool to amplify human potential. Only through such a thoughtful, balanced approach can higher vocational education truly achieve its goal of cultivating globally competitive, skilled professionals who thrive in the modern world.

Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

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