

## Construction and practice of training system for innovative talents in media language pronunciation based on goal-oriented + action learning ----- Take the course "The art of broadcasting and hosting" as an example

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**Abstract:** Media language and speech technology education plays an important role in improving the information communication and language expression ability of college students of science and engineering. This paper aims to explore effective teaching models to promote learning in this field. Through a combination of theoretical research and teaching practice, we found that for non-professional students, using two to three times a week, about two and a half hours of teaching each time, each class size is controlled to 10 to 13 students, can achieve rapid introduction and significant results. This teaching method can enhance the standardization of language, improve the accuracy of information exchange and the beauty of speech, so as to help improve the scientific research expression and science and technology popularization ability of science and engineering students. The practical case analysis further proves the effectiveness of this method, which stimulates students' learning enthusiasm and self-confidence. In the future, we look forward to further optimizing our teaching strategies to meet the needs of students from different backgrounds and promote the widespread use of media language speech technology in science and engineering education. This study not only enriches the theory of language teaching, but also provides an empirical basis for the reform of language education in science and engineering colleges.

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With the rapid development of science and technology, intelligent voice technology, as an important part of information technology, increasingly highlights its value in the field of education. Especially in the media language teaching, these technologies provide strong support for the language ability improvement and information exchange of science and engineering students. The purpose of this chapter is to explore the importance of communication language pronunciation technology education in science and engineering learners, and why it is taken as the research object. Media language, as a medium for information dissemination, is not only a supplement to professional skills for science and engineering students, but also the key to improve the efficiency of information exchange and language expression. In the research environment and in their future careers, science and engineering students need to have clear and accurate oral and written communication skills to effectively communicate complex concepts and research results. Intelligent speech technology, such as speech synthesis, speech

recognition and pronunciation inverse analysis, can provide standardized pronunciation examples for them, and help them improve the accuracy and beauty of speech expression in a short time through real-time feedback and personalized assessment, thus enhancing their scientific research expression and science and technology popularization ability. The practice of media language phonetic technology teaching in science and engineering universities not only enriches the content of general education, but also

embodies the inclusive and comprehensive education. For example, Chengdu University of Technology, University of Shanghai for Science and Technology and other universities offer media language courses, so that science and engineering students can not only learn professional knowledge, but also improve their language skills, so as to promote the improvement of their comprehensive quality. This educational model is of great significance for cultivating new types of talents with interdisciplinary perspectives, helping them to better communicate and cooperate in the context of globalization. However, the

application of intelligent speech technology in teaching still faces challenges, such as how to optimize online teaching methods to adapt to the needs of students from different backgrounds, and how to improve the effectiveness of speech recognition and pronunciation inverse analysis. Therefore, exploring and optimizing the teaching mode of media language pronunciation technology has a far-reaching impact on promoting its wide application in science and engineering education and improving the language teaching theory. Through the combination of theoretical research and teaching practice, this study aims to find effective solutions to these problems, provide an empirical basis for language education reform in science and engineering colleges, and promote the comprehensive improvement of information exchange and language expression ability of science and engineering students.

## **Related theories and research methods**

### **1. The theoretical basis of media language and speech technology**

The theoretical basis of media language and phonology technology mainly involves the integration of linguistics, phonetics and educational technology. In linguistics, we are concerned with the structure, function, and use of language, especially the context, rhetoric, and cultural connotations of oral communication. In the language education of science and engineering college students, media language emphasizes practicality and communication, focusing on how to effectively convey information and build persuasiveness. Phonetics is the study of the physiological production, physical properties, auditory perception and phonological structure of speech. In the speech technology of media language, the principle of phonetics provides theoretical support for speech synthesis and recognition. For example, through the analysis of acoustic parameters, a speech synthesis model can be designed to provide a standard pronunciation reference; Speech recognition relies on pattern matching algorithm to extract features from speech signals to identify specific vocabulary and grammatical structures. Educational technology focuses on how to use technology to optimize the teaching process and improve the learning effect. In the media language speech technology education, educational technology is mainly embodied in the design of intelligent teaching system, the integration of learning resources and the development of learning evaluation system. The introduction of intelligent speech technology, such as speech recognition and evaluation system, makes the teaching process more personalized, and students can get instant feedback anytime and anywhere, effectively improving learning efficiency. Classical theories such as Krashen's Input

Hypothesis and Vygotsky's area of proximal development theory provide a theoretical framework for the technical education of speech in media language. The former emphasizes the importance of a large amount of input with a slightly higher understanding than the current level for language learning, while the latter points out that education should be placed between students' current ability and potential ability, and teachers should provide appropriate support to promote students' development. Referring to the latest research results published by 985, 211 universities or equivalent institutions, such as "Application of Intelligent Speech Technology in Language Teaching" (2019, Shanghai Jiao Tong University), and "Practical Exploration of Media Language Teaching in Science and Engineering Universities" (2020, Tsinghua University), Ensure that the theoretical basis of research and practical strategies are based on the latest educational concepts and technological advances. By synthesizing these theories and methods, we hope to provide a set of practical and effective teaching strategies for the application of media language pronunciation technology in science and engineering education.

### **2. Teaching method and evaluation system design**

Based on Krashen's input hypothesis and Vygotsky's area of proximal development theory, we construct a set of comprehensive teaching strategies to explore effective teaching methods of media language speech technology. First, we use a multi-class, small class model of 10 to 13 students to ensure that each student gets enough attention and participation opportunities, while also creating an interactive and collaborative learning atmosphere. The course is arranged for 2 to 3 times a week, each time for 2 and a half hours, such a frequency not only ensures the continuity of learning, but also avoids the overburden of students to ensure the quality of learning. We utilize intelligent speech technologies such as speech synthesis and speech recognition to provide students with standard pronunciation examples and instant pronunciation assessments. Speech synthesis technology simulates the pronunciation of professional announcers, so that students can get familiar with and master the standard media language in imitation. The speech recognition technology is used as an automated pronunciation assessment tool to help students correct pronunciation errors in real time and improve the accuracy of speech. In addition, we also use the pronunciation inverse analysis technology, combined with the pronunciation visualization method, so that students can intuitively observe and adjust their pronunciation movements, improve the accuracy and beauty of pronunciation. In terms of the assessment system, we have designed a diversified assessment

mechanism aimed at comprehensively measuring the development of students' language skills. The quantitative assessment is mainly based on standardized language proficiency tests, such as the Putonghua Proficiency Test and the Media Specific Language Skills Test, to quantify students' phonetic accuracy and progress in language expression. Qualitative assessments provide insight into the student learning process by observing how engaged students are in class, how interactive they are in group discussions, and the quality of the phonetic work they submit. At the same time, we also encourage students to self-evaluate and peer review to develop their self-reflection and critical thinking skills. The students' feedback on the teaching method was collected through the questionnaire survey to optimize the teaching strategy continuously. This includes the adjustment of teaching content, the innovation of teaching methods and the updating of teaching resources. It is important to note that our assessment of teaching methods is not limited to learning outcomes, but also considers students' motivation, self-confidence and interest in media languages as important indicators, as these factors play a key role in the long-term learning process. Through regular feedback and adaptation, we aim to create a challenging and supportive learning environment that encourages science and engineering students to make great progress in the study of media language and speech technology. The implementation of these research methods and teaching strategies is not only based on theoretical research, but also closely related to practical teaching scenarios. By referring to the practical experience in "Research on the Application of Intelligent Speech Technology in Language Teaching" (2019, Shanghai Jiao Tong University) and the teaching mode in "Practical Exploration of Media Language Teaching in Science and Technology Universities" (2020, Tsinghua University), we have formed a targeted and innovative teaching plan combined with the specific situation of our school. This design aims to improve the information exchange and language expression ability of science and engineering students, and lay a solid foundation for their effective communication in the field of scientific research and popular science in the future.

### Teaching practice and case analysis

#### 3. Teaching implementation and curriculum design

The implementation of media language speech technology teaching is a systematic project, which should follow the scientific teaching principles and combine with intelligent speech technology to effectively improve the language communication and expression ability of science and engineering students. In the course design, we follow Krashen's input

hypothesis to provide students with a higher level of media language input than their current level, while using Vygotsky's area of proximal development theory to ensure that the teaching content is challenging and that students can achieve their learning goals through appropriate guidance from teachers. We have adopted a class schedule of 2 to 3 times a week, each time about 2 and a half hours, to ensure that students have enough time for phonological training and theoretical learning. The small class size of 10 to 13 students per class ensures personalized teaching, which is convenient for teachers to provide individual guidance for each student's pronunciation characteristics, and is also conducive to group discussion and communication, so that students can improve their language ability in mutual learning. The content of the course combines theory and practice. The theoretical part mainly explains the basic knowledge of media language and the principles of phonetics, so that students can understand the structure and function of media language, as well as the scientific principles of pronunciation. The practical part allows students to experience and learn in the real world through intelligent speech technologies such as speech synthesis and speech recognition. Speech synthesis technology provides a reference to standard pronunciation to help students imitate and learn, and speech recognition serves as a feedback tool to help them spot and correct pronunciation errors in real time. In addition, we also use the pronunciation inverse analysis technology, combined with pronunciation visualization, so that students can intuitively observe and adjust pronunciation movements, and improve the accuracy and beauty of pronunciation. In course design, we adopt multimedia teaching means, integrating text, image, audio and video elements to create a real language environment, enhance students' learning interest and participation, promote two-way communication between teachers and students, and improve teaching efficiency. In terms of the assessment system, we use multiple assessment methods, including standardized language proficiency tests such as Mandarin proficiency tests, language skills tests for specific media, as well as observation and assessment of class participation, group discussion interaction and assignment quality. At the same time, we encourage students to self-evaluate and peer review to develop their self-reflection and critical thinking. Teacher feedback, surveys and seminars are important ways to continuously optimize our teaching strategies to ensure that our teaching methods remain cutting edge and adaptable. At the beginning of the teaching implementation, we made reference to the research results and practical cases of 985 and 211 universities such as Shanghai Jiao Tong University and Tsinghua University, such as "Application

Research of Intelligent Speech Technology in Language Teaching" and "Practice Exploration of Media Language Teaching in Science and Technology Universities", and adjusted and optimized the teaching plan in combination with the actual situation of our school. Our goal is to create a challenging and supportive learning environment that inspires students' motivation and confidence to make significant progress in their learning of media language and speech technologies. Through such teaching implementation and course design, I not only improved the language ability of science and engineering students, but also promoted their ability of scientific research expression and science and technology popularization, laying a solid foundation for their future academic exchanges and science popularization work. At the same time, our research also provides new evidence for the theory and practice of language teaching, and promotes the reform and innovation of language education in science and engineering colleges.

#### 4. Student learning effect and feedback

The students' learning effect in the teaching of media language pronunciation technology is remarkable, and their language expression ability and information communication skills have been substantially improved. Through regular language proficiency tests, such as the Mandarin proficiency test, we have seen significant improvements in phonetic accuracy, fluency and intonation. Especially in the test of specific skills of media language, students showed obvious improvement in the pronunciation of professional terms, speech speed control and phonetic rhythm, which indicates that they have reached a higher level in the use of media language. Feedback from students also confirmed the effectiveness of the teaching method. They generally say that by teaching in small class sizes, they get more opportunities to interact with teachers, which is crucial for phonetic correction and understanding the nuances of media language. They spoke highly of the application of intelligent speech technology, believing that speech synthesis technology provides excellent pronunciation demonstration, while speech recognition and pronunciation inverse analysis technology help them find and correct pronunciation errors in time, significantly improving learning efficiency. The pronunciation visualization technology is regarded by most students as a powerful tool to improve their pronunciation skills. It intuitively shows the physiological process of pronunciation and helps them adjust their pronunciation movements. Students' learning enthusiasm and self-confidence have also been significantly enhanced. They said that the variety of teaching methods, such as multimedia teaching and

the use of interactive teaching platforms, makes the learning process more interesting and easier to keep learning motivated. The introduction of self-evaluation and peer evaluation mechanism enables them to learn self-reflection and critical thinking, and enhances their cognition and confidence in their language ability. This positive learning attitude further promoted their linguistic learning and formed a good learning cycle. In the case study, we selected a number of representative students whose progress was particularly striking. For example, Li's grasp of media language was rather weak at the beginning of the course, but after a semester of study, his Putonghua proficiency test score improved by two levels, and his language expression was more professional and smooth in the science and technology popularization report, which was praised by teachers and students alike. Similar cases further prove that our teaching strategies can significantly promote the language skills of science and engineering students. However, the teaching practice also found some areas to be improved. Some students reflect that although intelligent speech technology provides rich learning resources, the interpretation of complex phonetic phenomena still needs to be deepened, which requires a more detailed analysis of the teaching content in the future, combined with the in-depth theory of phonetics. At the same time, for students from different backgrounds, there is still room for improvement in the degree of individuation of teaching. How to provide more accurate teaching support according to students' learning progress and needs is an important direction of future research. The improvement of students' learning effect and positive feedback show that the teaching mode of media language and speech technology adopted by us is feasible in the university of science and engineering, and has a wide application prospect. In the future, we will continue to optimize the teaching strategy based on the feedback of students and the continuous observation of teaching practice to meet the needs of more diverse students, and further promote the in-depth application of media language speech technology in science and engineering education.

#### 5. Conclusion and prospect

Through theoretical exploration and practical verification, this paper establishes a set of teaching mode of media language speech technology for college students of science and engineering. The core of this mode is to combine intelligent speech technology, adopt multi-class and small-class teaching mode, 2 to 3 times a week, about 2 and a half hours each time, with 10 to 13 students in each class. It ensures that students can get started quickly and

achieve significant results. The implementation of this teaching method not only improves students' skills in phonetic standardization, accuracy of information exchange and phonetic beauty, but also stimulates students' learning enthusiasm and self-confidence, which plays a positive role in improving the scientific research expression and science and technology popularization ability of science and engineering students.

It is found that the application of intelligent speech technology, such as speech synthesis, speech recognition and pronunciation inverse analysis, in media language teaching has greatly enriched teaching methods, improved teaching efficiency, made large-scale online teaching possible, and provided students with personalized learning experience. At the same time, we also learn from the research achievements of Shanghai Jiao Tong University and Tsinghua University, and effectively combine intelligent speech technology with media language teaching, which provides an empirical basis for the innovation of teaching methods. However, the teaching of speech technology in media language still faces some challenges, such as how to optimize online teaching methods to adapt to the needs of students from different backgrounds, improve the efficiency of speech recognition and pronunciation inverse analysis, and how to better apply pronunciation visualization technology in teaching to provide more intuitive learning guidance. In addition, how to combine artificial intelligence technology to further improve the teaching effect is also an important direction of future research. Looking forward to the future, we look forward to improving and perfecting the teaching strategy through further theoretical research and practical exploration, making it more flexible to adapt to students of different levels and backgrounds. We plan to develop more refined personalized teaching resources, using big data and machine learning technology to provide customized teaching content and feedback according to the actual learning progress and needs of each student. At the same time, we will

further explore the application of intelligent voice technology in multimedia and interactive teaching to enhance the attractiveness of teaching and students' learning motivation. It is hoped to cooperate with more 985 and 211 universities to carry out cross-school research projects, share teaching resources and practical experience, and promote the wide application of media language pronunciation technology teaching in science and engineering education across the country. It is firmly believed that through continuous research and practice, media language speech technology will become an important part of science and engineering education, and contribute to the cultivation of versatile talents with global vision and good language expression ability. This research not only enriches the theory of language teaching, provides an empirical basis for the reform of language education in science and engineering colleges, but also points out the direction for the future application of intelligent speech technology in the field of education. We hope that the teaching mode of media language and speech technology can be adopted and practiced in more universities and courses, and play a greater role in improving the information exchange and language expression ability of science and engineering students.

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