

Research on Innovative Pathways for Cultivating Postgraduate Students' Oral Communication Skills Oriented to Emerging Engineering Disciplines

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Abstract: This article addresses issues in current graduate oral English teaching, such as rigid course structures, insufficient motivation, and a lack of diverse evaluation standards. Grounded in the "New Liberal Arts" concept and following the new "Enlighten-Present-Transform-Integrate" model, it progressively guides students from imitation and repetition to spontaneous expression through professional and contextualized activities. This aims to enhance their expressive ability and logical thinking in technical topics. The teaching design includes various scenarios, such as engineering conversations, academic presentations, and debates, combined with effective teacher intervention and peer support, to foster students' cross-cultural communication awareness and innovative capabilities. The emphasis is placed on a diversified evaluation system that focuses on both process and application, encouraging students to transition from lower-level language proficiency to higher-order thinking and professional expression. This approach provides strong support for the development of new engineering talents with international perspectives and innovative practical abilities.

Keywords: New Engineering Discipline, Graduate Students, Oral Communication Skills Development

1. Introduction

Against the backdrop of globalization and accelerated technological innovation, the training of graduate students in the new engineering discipline not only focuses on the enhancement of professional skills but also emphasizes the development of cross-cultural communication abilities and advanced cognitive skills. Current graduate English oral courses

predominantly concentrate on basic expression and language fluency; however, these courses often lack contextualized and professional design, making it difficult to meet the demands of new engineering graduate students for precise communication and innovative expression in international engineering environments. Therefore, how to help students confidently express and effectively communicate in their professional fields through teaching innovation has become an important issue in new engineering English education.

2. Problems in Graduate Oral English Courses

Oral English courses for graduate students in the new engineering discipline aim to help students progress from "daring to express" to "expressing fluently" through professional and higher-order thinking-oriented teaching designs, in order to meet their needs for professional communication in international engineering environments. However, several issues still exist in the actual teaching and practice processes:

2.1 Rigid Course Structure and Simplistic Content

Graduate English oral classes often serve only as an environment for rote learning. The textbooks provide materials primarily focused on memorization, leaving students unable to speak beyond the templates. In some ways, the arrangement of textbooks limits the development of innovative thinking and the ability to express independent ideas. Additionally, while oral courses are intended to achieve teaching goals through communication and interaction, most of the class time is still spent on explaining basic vocabulary, sentence structures, and grammar. This monotonous course design fails to engage students actively, and their language creativity is stifled, ultimately draining their enthusiasm for

learning in the classroom.

2.2 Difficulty in Oral Output, Lack of Intrinsic Motivation, and Limited Improvement in Critical Thinking and Innovation

Firstly, students lack intrinsic motivation. Due to the limitations of classroom teaching, it is difficult for students to acquire knowledge and develop abilities through a limited number of lessons alone. The success of university English teaching largely depends on students' autonomous learning. The individual differences among students also require them to develop their skills in listening, speaking, reading, writing, and translation according to their specific situations. Secondly, contemporary university students are heavily influenced by internet culture, but in following trends without critical thought, they often lose the awareness of critical thinking and innovation. In their daily speech and assignments, many students blindly accept and imitate popular and foreign cultures, without necessary reflection and critique. Teaching that only focuses on knowledge ("what") and neglects thinking ("why") and ability ("how") causes students to deviate from the correct values and become ill-prepared for future challenges.

2.3 Rigid Evaluation Methods and Difficulty in Assessing the Process

The evaluation methods are overly simplistic and fail to assess students' comprehensive qualities adequately. Skills such as problem analysis, problem-solving, and the development of non-intellectual qualities are excluded from exams, leading students to focus solely on rote learning. Students who are good at thinking and have ideas often fail to fully develop their abilities. This results in a misguided focus on exam-driven learning, reversing the proper relationship between teaching and assessment, where exams serve the purpose of teaching rather than the other way around.

3. Competency Development Needs of New Engineering Graduate Students

New engineering graduate students differ significantly from undergraduate students in terms of training goals, academic demands, and skill requirements. These differences are reflected in the following aspects:

3.1 Training Goals Focused on Problem-Solving and Innovation

The training goal for new engineering graduate students is more focused on solving practical problems and enhancing innovation abilities. In contrast, the training of undergraduate students usually emphasizes mastering foundational knowledge and broad exposure to various academic disciplines. At the graduate level, the focus shifts towards practical application and professional depth to tackle complex engineering problems and drive technological innovation. Graduate students are expected to have a higher level of understanding and application of specialized knowledge. They need to be well-versed in cutting-edge technologies and the latest developments in their fields. Moreover, new engineering graduate students often need to possess interdisciplinary knowledge integration abilities to address the demand for the cross-application of emerging technologies.

3.2 Cultivation of Innovation and Research Abilities

New engineering graduate students are required not only to complete theoretical coursework but also to engage in research projects, technology development, and other practical tasks. In contrast, undergraduate students primarily follow established theories and technologies that have been validated. Graduate students need to possess the ability to explore and innovate, proposing and validating new ideas or solutions. The new engineering field inherently emphasizes engineering applications, so the focus of graduate training is on enhancing practical skills. They need to apply theoretical knowledge to real-world engineering projects, demonstrating strong problem-solving abilities and adaptability to complex work environments. In comparison, undergraduate students face fewer practical requirements.

3.3 Autonomous Learning and Critical Thinking Abilities

Graduate-level study is largely self-driven, requiring students to develop critical thinking and the ability to analyze problems independently. In contrast, undergraduate students typically rely more on teacher guidance, with critical thinking being a secondary focus. Graduate students need stronger self-management skills and the ability to

continuously improve, especially when dealing with complex, open-ended research topics. New engineering graduate students often participate in international collaborative projects and may be required to communicate and collaborate in global work environments. Therefore, they must possess strong English communication skills, a global perspective, and cross-cultural communication abilities to navigate diverse cultural work scenarios, which is not as critical for undergraduate students.

4. Innovative Measures in Oral English Teaching

The reform of oral English courses for new engineering graduate students differs significantly from those designed for undergraduate students. These differences are reflected in the course objectives, teaching content, evaluation methods, and teaching approaches to better meet the learning needs and career development goals at the graduate level. Specifically:

4.1 Course Objectives Focus on Professional Communication and International Interaction Skills

Graduate oral courses not only emphasize basic oral expression abilities but also focus on cultivating students' professional academic communication and international interaction skills. The goal is to enable students to effectively participate in academic discussions, project presentations, and cross-cultural team collaborations. Compared to undergraduate courses, the objectives of graduate oral courses are more focused on enabling students to confidently and accurately express their viewpoints in their professional fields and clearly communicate complex technical content. The content of graduate oral courses is typically more specialized and may introduce technical topics, engineering project discussions, research results presentations, and other real-world scenarios to help students practice their English communication skills in academic or professional settings. Unlike undergraduate courses, which tend to focus on everyday conversation and basic topics, graduate courses are designed to incorporate more materials and case studies relevant to students' professional fields, allowing them to practice how to effectively convey specialized knowledge in real-life situations.

4.2 Diversity and Flexibility in Teaching Modes

Graduate courses adopt a variety of teaching methods, including blended learning (online and offline), fully English-medium classes, role-playing, and group discussions, incorporating the latest educational technology tools. This approach not only helps graduate students improve their oral abilities but also enhances their collaboration skills in cross-cultural teams. Unlike traditional lecture-based teaching at the undergraduate level, graduate courses are more flexible and interactive to cater to students' autonomy and higher language application needs. Since new engineering graduate students may work in international environments in the future, they need to develop cross-cultural communication awareness and skills. Therefore, courses deliberately introduce topics from diverse cultural backgrounds and simulate multicultural communication scenarios, allowing students to practice and improve their adaptability and sensitivity in cross-cultural interactions.

4.3 Cultivating Advanced Thinking Skills, Enhancing Critical and Innovative Expression

New engineering graduate students need to train their critical thinking and analytical abilities in oral English courses. This includes evaluating academic viewpoints and expressing innovative ideas. Compared to undergraduate courses, graduate-level oral courses require students to demonstrate logical clarity and structured analysis in their spoken expressions, enabling them to engage deeply with complex issues and present unique perspectives. This is crucial for both research and professional work environments.

In oral English courses for new engineering graduate students, the core goal is to enhance knowledge transfer and develop higher-order thinking skills. The course is designed as a gradual learning process to help students progress from "being afraid to speak" to "daring to express" and ultimately to "expressing with confidence and fluency." The course structure follows the "Enlighten—Present—Transform—Integrate" model:

The course begins by introducing topics and creating an interactive atmosphere to stimulate students' interest. Then, through review and

reinforcement of previous knowledge, students are guided to apply existing knowledge to new content, gradually raising their level of thinking. In the final phase, students summarize and consolidate knowledge, which allows them to flexibly apply it in different contexts.

Building on this, the course emphasizes creating a growth-oriented environment with a tolerant atmosphere for mistakes. Students are encouraged to express their personal views freely. The course design incorporates strategically placed discussion "traps" or challenging questions that lead students to engage in critical and analytical thinking, stimulating deeper reflection on professional issues. Both in-class and out-of-class communication activities emphasize peer support and self-directed learning, while the teacher's effective intervention helps students focus on higher-order learning tasks, leading to deep learning and the cultivation of innovative awareness.

This approach gradually transitions students from basic expression skills to higher-order thinking in professional fields. By progressing from lower-order to higher-order abilities, the course ultimately enables students to apply knowledge flexibly and enhance their comprehensive abilities. This transformation allows them to confidently and accurately express professional viewpoints in cross-cultural communication and academic discussions.

4.4 Constructing a Multi-Dimensional Assessment and Evaluation System

This paper proposes a dual-layer assessment system that combines comprehensive evaluation and positively-oriented evaluation, focusing on improving students' evaluation skills and critical thinking abilities. Based on past teaching experience, it has been observed that individual learning approaches often lead to feelings of frustration, which can reduce students' motivation to learn. In contrast, group learning approaches can promote knowledge sharing and transformation, gradually shifting the focus from enhancing learning efficiency to improving learning quality.

The evaluation system for oral English courses in new engineering graduate programs typically combines practical application abilities with diverse evaluation criteria, such as academic presentations, case analysis speeches, and project discussion performances. Furthermore,

the evaluation emphasizes the effectiveness of communication, logical thinking, and innovation abilities in the professional field. The evaluation adopts peer-to-peer and teacher-student evaluations. After the teacher assigns tasks, group leaders distribute task sheets and clarify the grading criteria to their team members. The team members complete the tasks and provide supporting materials and self-assessment reports. Mutual evaluations between group leaders and members contribute to the teacher's assessment (see Comprehensive Evaluation System Table).

According to the comprehensive evaluation system, the final exam accounts for 30% of the grade, with the remaining weight placed on regular performance, focusing on students' self-directed learning. There will also be additional points for high-level achievements, enabling students to ultimately reach higher-order skill levels.

Learning data from the course platform will be recorded to ensure attendance and increase course participation. Classroom performance will assess students' active participation and contributions, focusing on their responses to complex issues and fluency in professional expressions. Group discussions and team projects are designed to cultivate teamwork and knowledge sharing. Students are required to effectively express themselves and analyze problems in real or simulated professional contexts.

The final grade will include assessments of group dialogue and professional debate:

Group Dialogue (20 points): This assessment is based on group dialogues centered around professional topics, evaluating students' oral communication skills and problem analysis within the group.

Professional Debate (10 points): This assessment involves debates on current or complex issues in the professional field, enhancing students' critical thinking and persuasive expression, and promoting deep learning through multi-perspective analysis.

5. Conclusion

This paper constructs an English-speaking teaching system for new engineering graduate students, guided by higher-order thinking and professional application, providing systematic support for their cross-cultural communication and professional expression abilities. Through targeted course content, contextualized language

activities, and diverse assessment methods, the course not only helps students improve from basic expression to professional and autonomous communication but also fosters their critical thinking and innovative awareness.

This teaching innovation lays a solid language foundation for the career development of new engineering graduate students in the international engineering field, while also offering a new exploratory pathway for English speaking teaching in new engineering education.

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