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A Research on Needs Analysis on English Speaking Instruction in the Stratified Teaching in Chinese Higher Vocational Colleges in the Context of Digital Intelligence

Xiaolian Duan[1] and Prannapha Modehiran[2]
Assumption University, Thailand
[1] Email: 83373810@qq.com, ORCID ID: https://orcid.org/0009-0004-7933-5475
[2]Email: prannapha@gmail.com, ORCID ID: https://orcid.org/0009-0009-9471-4955

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Abstract

Background and Aim: The researcher has been working in SVCST for 18 years and has a good grasp of the actual situation in higher vocational colleges. The researcher observed the low scores on the entrance English test and the lack of English-speaking skills, and there is a need to investigate the English-speaking needs. The research objective of this study was to find out the needs of Chinese English students in higher vocational colleges to improve their English-speaking skills.

Materials and Methods: Questionnaires were used to survey 498 students from the Textile and Clothing Department of Shandong Vocational College and the results of the questionnaire were analyzed using SPSS.

Results: The analysis showed that students struggle with vocabulary, speaking anxiety, and lack of practice. They preferred personalized and interactive learning, leading to the development of a tailored teaching model to support different proficiency levels.

Conclusion: The study provided insights into the specific needs of Chinese EFL students. The new teaching model effectively addresses these needs, improving students' speaking skills and engagement.

Keywords: Needs analysis; English speaking; Stratified teaching; Smart education; Vocational education; China

Introduction

English speaking proficiency is crucial for Chinese EFL students in vocational colleges, as it directly impacts their academic success and future career opportunities. However, many students face challenges such as limited vocabulary, anxiety when speaking, and insufficient practice opportunities. These issues are often exacerbated by the diverse proficiency levels within the classroom, making it difficult for traditional teaching methods to meet all students' needs effectively.

The researcher has been working in SVCST for 18 years to grasp the reality of higher vocational colleges. The researcher observed that there is a need to improve the English-speaking skills of higher vocational students. Since 2013, SVCST schools have been practicing tiered teaching, which is based on the proficiency level of the students.

The researcher found out that the English language proficiency of the new students is significantly lower through the pass rate of the English language test in the entrance examination. The table below shows the pass rate of the first-year senior students enrolled in September 2022 in our university. The data was taken from the field visit of the Academic Affairs Office of Shandong Institute of Science and Technology Vocational College and it is clear that the total pass rate is 32.01%.

The pass rates for the entrance exams for new students are as follows:

Table 1 Pass Rates in English Enrollment Test of New Enrolled Students

Department	Valid Numbers	Number of Passers	Number of Non-passers	Pass Rate
Pre-school Teaching	292	197	95	67.47%
Business Foreign Languages	321	243	78	75.70%
Mechanical Engineering	560	173	387	30.89%
Architecture and Engineering	503	134	369	26.64%
Textiles and Clothing	498	216	282	43.37%
Biochemical Engineering	681	167	514	24.52%
Economic Management	593	203	390	34.23%
Information Engineering	650	191	459	29.38%
Electrical and Mechanical Engineering	614	139	475	22.64%
Arts and Media	569	124	445	21.79%
Automotive Engineering	617	101	516	16.37%
Total	**5898**	**1888**	**4010**	**32.01%**

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Students are categorized into different groups based on their performance in the Advanced Placement and Entrance Examinations for English Language Learning Ability (ELLA). As a result, different groups used different learning activities and instruction designed to encourage the development of their English language skills. It is worthwhile to conduct a study by implementing two different types of oral English instruction in two (different levels) classes and exploring whether they improved students' oral proficiency.

According to Kong (2014), in the English classroom of higher vocational colleges and universities, students' motivation and initiative in learning were greatly stimulated and their creative thinking was improved through hierarchical teaching and teacher-designed instructional guidance. In the classroom, as students were keen to discuss topics with each other, they also developed their ability to use language to communicate with their classmates. Intelligent education through an interactive classroom experience is more likely to increase student enthusiasm and learning outcomes, and in addition, the learning and instruction provided by technology integration have a positive impact on improving ELLs' English-speaking skills (Abugohar et al.,2019).

Smart education has been incorporated into the e-learning platform university English teaching methodology with necessary tools and materials for both teachers and students. This supports and enhances the learning process of students, including helping teachers track their learning pace and outcomes (Al Mulla & Abdullah, 2021).

Due to the increasing use of the internet and technology in the way people teach and learn there has been a dramatic change in language (Challob et al, 2016). Improving learners' English-speaking skills. There are many studies on improving English speaking skills through the application of technology-assisted instruction guides to improve English speaking skills.

Smart education is a modern educational paradigm based on smart devices and smart technologies that have been widely discovered and explored over the past two centuries. Technology can be adopted and utilized to assist learners in their learning abilities (Kim et al.， 2013). Mobile learning has been upgraded to ubiquitous learning, which means that learning can take place anywhere and anytime, and mobile learning is no longer limited by time, place, and environment (Chu et al., 2008).

Australia and IBM have partnered to create a cutting-edge, multidisciplinary, student-centered education system (Gray,2012). The system will workforce training, higher education institutions, and schools. Korea's SMART education program, whose goal is to reform the education system to enhance educational facilities (Choi&Lee,2012). New York's Smart Schools program emphasizes the value of classroom technology use (New York Smart Schools Commission Report, 2014). Intelligent education is attracting more and more attention and its development has become a new trend in education worldwide.

This study seeks to address these challenges by conducting a needs analysis to understand the specific difficulties faced by these students. The findings from this analysis will inform the development of an instructional model that integrates stratified teaching with smart education. This approach aims to provide personalized and adaptive learning experiences that cater to varying levels of proficiency, ultimately improving students' English-speaking abilities and their engagement in the learning process.

Objectives

Exploring the needs of higher vocational English learners to learn English a survey on the English learning needs of college students in our school

Literature Review

Theoretical Perspectives on English-Speaking Instruction

This section reviews key theories and approaches relevant to English-speaking instruction, including Communicative Language Teaching (CLT) and Task-Based Language Teaching (TBLT). These methodologies emphasize the importance of real-world communication and active language use, which are critical in addressing the gaps in traditional teaching methods.

Building on the theoretical framework of smart education, which involves the integration of advanced technologies and innovative teaching methods (Gabriela et al., 2018), this study aims to apply these concepts within the context of stratified English language teaching. By leveraging smart education tools, this research seeks to design and implement a tailored instructional model that addresses the diverse proficiency levels found in higher vocational colleges, thereby improving students' speaking skills. The following research design details the step-by-step application of these theoretical principles. The smart education framework used in the study consists of a leaner presence, a pedagogical presence, and a technological presence. Therefore, smart education essentially creates opportunities to improve learning tools and develop instructional delivery methods. Examining the needs of English language students to use intelligent education to improve their oral English proficiency in tiered English language teaching requires

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analyzing the theory (Brown, 2009; Macalister & Nation, 2020) to design a pedagogical intervention method in this study.

Stratified Teaching in Vocational Education

Stratified teaching involves grouping students based on their proficiency levels and providing differentiated instruction tailored to these groups. This approach has been widely adopted in vocational education in China to address the diverse learning needs of students. The literature suggests that stratified teaching can be particularly effective in improving language skills, as it allows educators to focus on specific challenges faced by different student groups.

Digital Intelligence and Its Impact on Education

Digital intelligence, encompassing technologies such as AI and big data, plays a transformative role in modern education. These technologies enable the creation of smart learning environments where instructional content can be dynamically adapted to meet the needs of individual learners. The integration of digital intelligence in language instruction offers the potential to enhance the learning experience by providing real-time feedback, personalized learning paths, and interactive learning environments.

Challenges in Developing English-Speaking Skills

Previous research highlights several challenges in developing English speaking skills, particularly in the context of English as a Foreign Language (EFL) learning. Common obstacles include language anxiety, lack of practice opportunities, and insufficient feedback. This section also discusses the role of affective factors, such as motivation and confidence, in language learning, and how these can be addressed through targeted instructional strategies.

Conceptual Framework

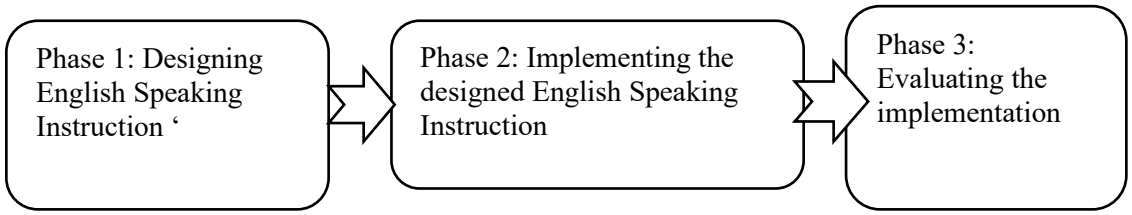

Figure 1 Conceptual Framework

The research process was structured into three distinct phases: needs analysis, instructional design and implementation, and evaluation. Phase 1 involved conducting a comprehensive needs analysis through a detailed questionnaire targeting the specific English-speaking challenges of students. Based on these findings, Phase 2 focused on designing and implementing tailored instructional strategies that directly addressed the identified needs. In Phase 3, the effectiveness of these strategies was rigorously evaluated through pre-and post-tests, as well as semi-structured interviews, to assess their impact on improving students' speaking proficiency. This structured approach ensures a logical progression from the identification of needs to the evaluation of outcomes, allowing for a clear understanding of how each phase contributes to the overall success of the intervention. This involved specifying teaching contents and sequences, teaching materials, descriptions for teachers’ and students’ roles, and required learning activities or tasks. Moreover, the English for Specific Purposes (ESP) context relating to the ‘selected topics’ was also integrated into the English-speaking instruction Using Smart Education in the Stratified English Teaching as part of the teaching contents. In addition, the researcher developed the designed English-speaking instruction by considering the theory of teaching speaking skills, comprising three stages: pre-speaking, while-speaking, and post-speaking (Brown & Lee, 2015).

The implementation of the designed English-speaking instruction was taken place in Phase 2. At this stage, pre-/post-tests were employed to measure how the designed English-speaking instruction enhanced the students’ English-speaking ability. This included the development of the speaking evaluation rubric which was used in the pre-/post-tests. At the last Phase, it was the evaluation of the implementation. Semi-structured interviews were employed to explore the students’ perspectives toward the designed English-speaking instruction and its effectiveness.

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Research Methodology

Research Design: In this study, a quantitative research method was adopted to collect data using a questionnaire, which was administered to 498 students.

Participants and Sampling: The participants of the study are first-year students from the Textile and Clothing department at SVCST. A total of 498 students were surveyed for needs analysis and the researcher used a computerized random sampling procedure to select 99 students out of the 498 students to participate in the experimental phase of the study. The sample was selected using random sampling to ensure accessibility and relevance to the objectives of the study.

Data Collection Instruments: The method of data collection consisted of a questionnaire that was designed to assess students' needs and preferences for teaching spoken English. The researcher administered the questionnaire to 498 students.

Data Analysis: Quantitative data from the questionnaires and tests were analyzed using statistical methods to identify patterns and correlations. Qualitative data from the interviews were analyzed thematically, with key themes and insights extracted to complement the quantitative findings.

Findings

Student Attitudes and Preferences

The results indicate that students at SVCST recognize the importance of improving their English-speaking skills for career advancement. However, they also express frustration with traditional teaching methods, which they feel do not adequately prepare them for real-world communication. The survey revealed the following preferences:

Table 1 Student Preferences for Learning Methods

Learning Method	Number of Students	Percentage (%)
Digital Tools (e.g., language apps)	389	78%
Group Discussions	279	56%
Role Plays	234	47%
Traditional Lectures	125	25%
Self-paced Learning	198	40%

Challenges in English Speaking Instruction

The researcher surveyed by administering questionnaires to 489 students. The study identifies several challenges faced by students, particularly in speaking English fluently and confidently. These challenges are categorized and quantified as follows:

Table 2 Challenges in English Speaking Skills Development

Challenge	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Lack of Confidence	215	150	72	35	26
Fear of Making Mistakes	200	173	78	32	15
Insufficient Practice Opportunities	278	154	46	12	8
Difficulty Understanding Native Speakers	142	192	96	40	28
Anxiety During Speaking Activities	198	214	62	17	7

After analyzing the number of strong agreement that there is not enough opportunity is the highest, indicating that among the challenges in teaching English as a foreign language, the opportunities students face to express themselves orally are the focus of attention.

The researcher experimented with 99 students in an organizational development intervention using a tiered approach to instruction.

Effectiveness of Different Instructional Approaches

Different instructional methods were evaluated based on their effectiveness in improving students' English-speaking skills. The effectiveness was measured through both student feedback and performance metrics:

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Table 3 Effectiveness of Instructional Methods

Instructional Method	Average Effectiveness Score (1-5)	Student Satisfaction (%)
Stratified Teaching	4.8	92%
Integration of Digital Tools	4.5	88%
Interactive Group Activities	4.2	85%
Traditional Lectures	3.1	65%
Real-Life Scenario Practices	4.4	89%

After the analysis, it can be seen that the highest number of strong agreements for tiered instruction indicates that the challenges faced by the students in teaching English as a foreign language are the focus of attention.

Correlations Between Challenges and Performance

The study also analyzed the correlations between the challenges students faced and their performance improvements post-intervention. It was found that addressing specific challenges led to greater improvements:

Table 4 Correlation Between Challenges and Performance Improvement

Challenge	Correlation with Improvement (r)
Lack of Confidence	0.68
Fear of Making Mistakes	0.62
Insufficient Practice Opportunities	0.74
Difficulty Understanding Native Speakers	0.55
Anxiety During Speaking Activities	0.70

The analysis revealed that insufficient practice opportunities were a significant concern among students, as indicated by their strong agreement on this challenge. This finding aligns with the literature on the importance of providing ample practice opportunities in language learning. The results also suggest that tiered instruction, supported by digital tools, can effectively address these challenges by offering personalized learning experiences tailored to students' proficiency levels.

Discussion

Impact of Stratified Teaching on English Speaking Proficiency

The stratified teaching approach, supported by digital intelligence tools, showed a significant impact on student outcomes. The improvements were particularly pronounced among lower proficiency students, who benefited from tailored instruction and targeted practice.

Role of Digital Tools in Enhancing Language Learning

Digital tools facilitated a more personalized learning experience, allowing students to practice at their own pace and receive instant feedback. This approach was highly effective in improving speaking proficiency across all proficiency levels.

Challenges and Solutions in Implementing Stratified Teaching

While the benefits of stratified teaching are clear, the challenges in implementation—such as resource allocation and teacher training—must be addressed. This study suggests that investing in these areas can lead to substantial improvements in educational outcomes.

Conclusion

This study highlights the effectiveness of stratified teaching combined with digital intelligence in addressing the diverse English-speaking needs of students in Chinese vocational colleges. By aligning with the theoretical frameworks discussed earlier, this research provides empirical evidence that supports the use of personalized, technology-enhanced instructional methods. These findings not only validate the proposed instructional model but also offer practical implications for educators and policymakers aiming to improve English language instruction in similar educational contexts. (Gabriela et al., 2018; Brown & Lee, 2015). The findings corroborate existing research on the effectiveness of personalized, technology-enhanced learning environments, particularly in vocational education settings where proficiency levels vary widely. Moreover, the significant improvements observed in students' speaking abilities provide empirical support for the application of these innovative approaches. This alignment with the literature not only validates the study's outcomes but also underscores its contribution to the ongoing discourse on educational best practices in the digital age.

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Implications for Practice

Educators should consider adopting stratified teaching and integrating digital tools into their instruction. Policymakers should support these initiatives by providing the necessary resources and professional development opportunities for teachers.

Future Research Directions

Further research should explore the long-term impact of these instructional approaches and investigate their applicability in other educational contexts and subjects.

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