

Practice of Integrating Culture of Red Heritage into the Advanced English Listening and Speaking Course for College-to-Undergraduate Students Enabled by Digital Intelligence

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Abstract: The core objective of the Advanced English Listening and Speaking course for Grade 25 Tourism English students has shifted from “exam-oriented admission” to “competence improvement and literacy cultivation”, requiring a transition from “answering questions” to “practical application” to lay a foundation for undergraduate professional learning, academic communication and future employment. Currently, such courses still suffer from persistent exam-oriented tendencies, rigid integration of culture of red heritage, and a lack of authentic scenarios for listening and speaking training. The rapid development of digital intelligence technologies provides an effective solution to these problems. Based on the learning characteristics of students admitted through college-to-undergraduate programs, this paper constructs a three-dimensional practical system of “resources—teaching—evaluation”, explores specific paths for integrating culture of red heritage into the Advanced English Listening and Speaking course enabled by digital intelligence, and verifies the feasibility and effectiveness of the system through rich practical cases. Ultimately, it achieves the three-fold goals of “improving language competence, immersing in culture of red heritage, and strengthening comprehensive literacy”, offering practical references for the reform of English listening and speaking courses and curriculum ideological and political construction in the undergraduate transition stage.

Keywords: Digital Intelligence; Culture of Red Heritage; College-to-Undergraduate Students; Advanced English Listening and Speaking

1. Introduction

In 2019, *China Education Modernization 2035* clarified the top-level blueprint and strategic goals for fully realizing education modernization in China. Higher education shall closely align with market demands, advance teaching innovation and digital education, and cultivate innovative talents with global vision [1]. With the in-depth advancement of the digital transformation of higher education and the normalization of curriculum ideological and political construction, English major teaching is no longer limited to the imparting of linguistic knowledge, but focuses more on cultivating students’ cross-cultural communication competence, cultural confidence and comprehensive literacy. For students admitted through college-to-undergraduate programs, the Advanced English Listening and Speaking course, as a core basic course in the undergraduate transition stage, undertakes the important mission of connecting college-level linguistic foundations, improving listening and speaking application competence, and adapting to undergraduate teaching requirements. These students have a certain English foundation, but their listening and speaking competence in complex contexts, cross-cultural communication and academic scenarios still has obvious room for improvement. Their learning goals have shifted from “exam-oriented” to “application-oriented”, placing higher demands on the practicality, comprehensiveness and interest of the course.

As the core carrier of fine traditional Chinese culture and revolutionary culture, culture of red heritage contains rich ideological and political elements and spiritual connotations. Integrating it into English listening and speaking courses can not only foster students’ patriotism, but also enrich listening and speaking training materials

and enhance students' ability to tell Chinese red stories in English. However, the current practice of integrating culture of red heritage into the Advanced English Listening and Speaking course for these students still has many problems. First, the integration form is rigid, dominated by simple text reading and material stacking, lacking in-depth integration with listening and speaking training. Second, the teaching mode is single, still following the traditional "teacher-centered" model, without immersive and interactive training scenarios. Third, the adaptability of materials is insufficient; some culture of red heritage materials are either too difficult or too simple, inconsistent with students' English proficiency and undergraduate teaching needs. Fourth, the evaluation system is single, focusing only on the assessment of listening and speaking skills while ignoring the evaluation of students' cultural literacy and comprehensive competence.

The rise of digital intelligence technologies offers new ideas and support for addressing the above problems. Artificial intelligence technology is reshaping the spatial-temporal structure and interaction modes of traditional college English classrooms [2]. AI dialogue assistants enable real-time feedback and personalized tutoring for listening and speaking training; big data can accurately analyze students' learning conditions and push tailored materials; online interactive platforms can enhance classroom interaction and participation. Reviewing the development of foreign language education informatization, information technology has evolved from auxiliary application to deep integration with foreign language teaching. China's foreign language education is shifting from blended learning backed by online open courses to smart blended learning empowered by new-generation information technologies [3]. Digital intelligence empowerment serves as a key path to improve teaching quality and cultivate talents meeting the demands of the times [4]. Based on this, this paper focuses on the Advanced English Listening and Speaking course for college-to-undergraduate students, explores practical paths for integrating culture of red heritage into the course enabled by digital intelligence, constructs a scientific and sound practical system, solves the pain points of traditional teaching, realizes the in-depth integration of language teaching and cultural

education, and provides practical references for the reform of English listening and speaking courses in the undergraduate transition stage.

2. Research Background and Core Value

2.1 Research Background

2.1.1 Prominent Pain Points in Undergraduate Transition Courses

At present, the Advanced English Listening and Speaking courses for college-to-undergraduate students still retain obvious exam-oriented tendencies. Teaching content is dominated by repetitive training of basic listening and speaking skills, lacking alignment with undergraduate academic application and cross-cultural communication needs. In the process of integrating culture of red heritage, there is a "disconnect" phenomenon, where culture of red heritage is separated from listening and speaking training, limited to simple reading and vocabulary explanation, without immersive and interactive scenario design for listening and speaking. As a result, students can "express but cannot communicate deeply", failing to organically combine linguistic competence with cultural connotations and academic applications, leading to insufficient learning enthusiasm and initiative. Meanwhile, course materials lack pertinence; some materials are too simple to meet students' competence improvement needs, while some are too obscure, exceeding students' current English proficiency and causing anxiety.

2.1.2 Clear Learning Characteristics of Students

Students admitted through college-to-undergraduate programs have a certain English foundation and can complete basic listening and speaking communication tasks. However, their listening and speaking competence in complex contexts, academic scenarios and cross-cultural communication still needs improvement, especially in the English expression and cross-cultural communication of culture of red heritage-related content. In terms of learning goals, these students have shifted their focus to "competence improvement and literacy cultivation", emphasizing the practicality and comprehensiveness of listening and speaking competence. They hope to improve their cross-cultural communication and academic listening and speaking competence through the course, laying a foundation for subsequent undergraduate professional learning, thesis writing, academic communication and

future employment. In addition, these students are in a critical period of value formation, have a certain cognitive basis for culture of red heritage, but lack the awareness and ability to interpret and spread culture of red heritage in English. The immersion of culture of red heritage can effectively foster their patriotism and enhance their cultural confidence.

2.1.3 Strong Policy and Technical Support

At the national level, the Ministry of Education issued the *Education Informatization 2.0 Action Plan* [5]. It emphasizes leveraging new-generation information technologies such as artificial intelligence to conduct innovative research in smart education, advancing the transformation of educational models and reconstruction of educational ecosystems, providing policy guidance for the application of digital intelligence technologies in English teaching. The national strategy of “telling China’s stories well and spreading China’s voice well” requires English education to balance linguistic competence and cultural communication competence, setting clear requirements for the integration of culture of red heritage into English courses. Technologically, the rapid development of AI, big data, online interactive platforms and other digital intelligence technologies makes scenario-based, personalized and interactive teaching of listening and speaking courses possible. AI dialogue assistants can provide real-time error correction and personalized tutoring for listening and speaking training; big data can accurately analyze students’ learning behaviors and weaknesses and push tailored training materials; online interactive platforms can break classroom boundaries, realize online-offline blended teaching and enhance students’ learning participation.

2.2 Significance of Integrating Culture of Red Heritage Enabled by Digital Intelligence

2.2.1 Facilitating Students’ Competence Improvement

Based on the competence improvement needs of college-to-undergraduate students, the organic integration of culture of red heritage and digital intelligence technologies into listening and speaking training enriches training scenarios and materials, and improves students’ listening and speaking application competence in real, cross-cultural and academic scenarios. In a digital-intelligent teaching environment, the

in-depth integration of big data and artificial intelligence technologies builds an innovative immersive and scenario-based personalized teaching model, which helps track students’ actual English proficiency including vocabulary mastery, weak grammar points and oral fluency [6]. Through listening and speaking training related to culture of red heritage, students can develop the ability to interpret and spread culture of red heritage in English, laying a foundation for subsequent undergraduate academic communication, cultural dissemination and future employment.

2.2.2 Realizing the Ultimate Educational Goals

Through immersive immersion in digital intelligence scenarios, students admitted through college-to-undergraduate programs can deeply understand the connotation and spiritual value of culture of red heritage in listening and speaking training, enhance cultural confidence and patriotism, and realize the organic unity of language learning and value guidance. The revolutionary spirit, striving spirit and dedication spirit contained in culture of red heritage can guide students to establish a correct world outlook, outlook on life and values. Through the practice of spreading red stories in English, students can develop cultural communication awareness and responsibility, contributing to the building of a culturally powerful country. In addition, digital intelligence can monitor and analyze students’ ideological dynamics, identify potential ideological problems in advance and provide timely guidance and assistance.

2.2.3 Promoting Teaching Reform and Improvement

Digital intelligence empowerment can optimize the teaching resource system, expand the carrier of ideological and political education integrated into English courses, reconstruct the teaching mode of the Advanced English Listening and Speaking course for this major, and solve the drawbacks of dullness, monotony and exam-orientedness in traditional teaching. With the help of digital intelligence technologies, personalized, scenario-based and interactive teaching can be realized. Online, students can independently learn course videos, complete preview tasks and participate in discussions. Offline, teachers can provide focused explanations and interactive exchanges for students’ problems. It meets the learning needs of students with different foundations and improves teaching quality and effectiveness.

Meanwhile, exploring effective paths for the in-depth integration of culture of red heritage and English listening and speaking courses provides practical references for the reform of English courses and curriculum ideological and political construction in the undergraduate transition stage, promoting the coordinated development of digitalization and ideological and political construction in English education.

3. Core Concepts

3.1 Digital Intelligence

In this paper, digital intelligence focuses on the teaching needs of the Advanced English Listening and Speaking course for college-to-undergraduate students. With big data, artificial intelligence (AI) and online interactive platforms as the core, it constructs an intelligent teaching ecosystem of “personalized training + real-time feedback + scenario simulation + data-driven”. Its core characteristics are intelligence, personalization, scenarization and interaction, aiming to solve the problems of “lack of real context, delayed feedback and poorly adapted materials” in listening and speaking training, improve teaching efficiency and quality, and adapt to the practical and applied characteristics of listening and speaking courses at the undergraduate stage.

3.2 Culture of Red Heritage

This paper selects culture of red heritage content that fits the cognitive level of college-to-undergraduate students and matches the language difficulty of entry-level undergraduate courses, mainly including three aspects: first, red stories, such as heroic deeds of revolutionary martyrs, touching stories in poverty alleviation and striving stories in the new era; second, red spirits, such as the Long March spirit, Yan'an spirit, poverty alleviation spirit and anti-pandemic spirit; third, red carriers, such as red venues, red documents and red film and television works. The selected materials focus on short length, strong interaction and easy expression, adapt to the characteristics of listening and speaking training, and balance ideology and interest for students' understanding and expression.

3.3 Integration Path

It refers to organically embedding culture of red heritage materials into the whole process of the

Advanced English Listening and Speaking course for college-to-undergraduate students, combining teaching links such as listening training, oral dialogue, topic presentation, academic communication simulation and practical demonstration. With the help of digital intelligence technologies, interactive scenarios are built, personalized materials are pushed and real-time feedback is provided, realizing the simultaneous promotion of “listening and speaking training + red immersion + competence improvement”. It ensures the in-depth integration of culture of red heritage and listening and speaking teaching, rather than simple material stacking.

4. Construction of a Practical System for Integrating Culture of Red Heritage Enabled by Digital Intelligence

Combined with the teaching objectives of the Advanced English Listening and Speaking course and students' learning characteristics, a three-dimensional practical system of “resources—teaching—evaluation” is constructed, highlighting the practicality, pertinence and innovation of digital intelligence, ensuring the in-depth integration of culture of red heritage and listening and speaking teaching, and adapting to the teaching and competence cultivation needs at the undergraduate stage.

4.1 Building a Digital Resource Library of Culture of Red Heritage Listening and Speaking Adapted to Students

The resource library is the foundation for integrating culture of red heritage into listening and speaking courses. Centered on the listening and speaking competence improvement needs of college-to-undergraduate students, a multi-modal digital resource library of culture of red heritage listening and speaking is built, which is “adapted to the undergraduate level, highly practical, interactive and multi-modal”, solving the problems of poorly adapted traditional materials, single form and disconnection from teaching, and providing strong support for course teaching.

4.1.1 Resource Classification and Construction

Combined with the teaching links of listening and speaking courses and students' needs, the resource library is divided into four categories: listening resources, speaking resources, interactive resources and extended resources, ensuring the pertinence and practicality of

materials.

Listening resources select red listening materials with language difficulty adapted to entry-level undergraduate courses, focusing on short length and high adaptability. They mainly include: 1–3 minute English audio of red stories, selecting short deeds of revolutionary martyrs and role models of the times with concise and easy-to-understand language, suitable for daily listening and speaking training; 3–5 minute English interpretation audio of red spirits, recorded by professional English teachers and culture of red heritage researchers, interpreting the core connotations of the Long March spirit, poverty alleviation spirit, etc., balancing linguistic standardization and cultural accuracy; about 3-minute English introduction audio of red venues, introducing famous red venues such as Yan'an Revolutionary Memorial Hall and Zunyi Conference Site, suitable for listening comprehension and scenario simulation training; 3–5 minute English news clips on red themes, selecting reports on Chinese culture of red heritage and development achievements in the new era from mainstream English media, improving students' academic listening foundation and cross-cultural understanding ability. All listening materials are equipped with English scripts and Chinese annotations, marking key vocabulary, phrases and sentence patterns for students' comparative learning.

Speaking resources focus on oral dialogue, topic presentation, speech and other training links, providing adapted culture of red heritage speaking materials, mainly including oral dialogue templates. Centered on themes such as sharing red stories, understanding red spirits and visiting red venues, daily dialogue and cross-cultural communication dialogue templates are designed, marking common sentence patterns and expression skills; topic presentation materials, providing red-themed topics (such as "The Red Spirit in My Heart" and "How to Spread Red Stories in English"), with guiding ideas and reference expressions to help students sort out expression logic; speech materials, selecting 3–5 minute English speech essays on red themes, marking speech skills and emotional expression points, and providing speech audio for students to imitate and practice; building an expression library of culturally loaded words, sorting out authoritative English translations of core vocabulary and phrases related to culture of red heritage (such as "Long March spirit",

"poverty alleviation" and "revolutionary martyrs"), with example sentences to help students accurately express the connotation of culture of red heritage.

To meet students' competence development needs, extended resources related to culture of red heritage are provided, mainly including English translations of red documents, selecting English excerpts of classic documents such as Red Star Over China and The Governance of China with moderate language difficulty, suitable for academic listening and reading extension; clips of red-themed English film and television works, selecting English-dubbed clips of classic works such as The Age of Awakening and The Battle at Lake Changjin, allowing students to imitate oral expression and experience culture of red heritage while watching; sharing cross-cultural communication cases, sorting out excellent cases of spreading Chinese culture of red heritage in English at home and abroad, analyzing communication skills and methods, and improving students' cultural communication ability.

4.1.2 Design of Digital Intelligence Functions

The resource library integrates digital intelligence technologies to enhance the practicality and convenience of resources, mainly including AI intelligent retrieval, supporting keyword and semantic retrieval, allowing students to quickly retrieve various resources such as listening, speaking and interaction according to their own needs, and automatically matching adapted materials; personalized recommendation based on big data analysis of students' learning behaviors, weaknesses and preferences, pushing adapted culture of red heritage listening and speaking materials and training tasks to realize "teaching students in accordance with their aptitude"; collaborative editing supporting co-construction and sharing of resources by teachers and students, allowing teachers to upload high-quality materials and update content, and students to share their listening and speaking works and learning experiences, forming a teacher-student collaborative resource construction model; regularly collecting student feedback and teaching needs, updating resource library content, ensuring the timeliness and adaptability of materials, and fitting undergraduate teaching and students' competence improvement needs. Both content compilation and presentation technology

selection shall fully take classroom teaching effectiveness into account [7].

4.2 Innovating a Digital-Intelligent Teaching Model for Culture of Red Heritage Listening and Speaking

Breaking the traditional “teacher-centered” teaching model, combined with the learning characteristics of college-to-undergraduate students, a digital-intelligent teaching model of “immersion, interaction, project-based and blended” is constructed, integrating culture of red heritage into the whole process of listening and speaking teaching, and realizing the simultaneous promotion of “listening and speaking training + red immersion + competence improvement”.

4.2.1 AI-Enhanced Interactive Teaching

With the help of AI dialogue assistants, intelligent scoring tools and other digital intelligence technologies, real-time feedback and personalized tutoring for listening and speaking training are realized, enhancing classroom interaction and learning efficiency. First, introduce AI dialogue robots customized as culture of red heritage English dialogue assistants. Students can ask culture of red heritage-related questions in English at any time, such as “Introduce the Long March spirit” or “How to express poverty alleviation in English”. The robot provides real-time answers, corrects students’ language expressions and expands relevant knowledge. Meanwhile, the robot can simulate different scenarios, such as red venue tour guides and cross-cultural communication, to conduct dialogue training with students, pushing personalized improvement suggestions based on their expression. Second, use AI intelligent scoring tools to provide real-time scoring for students’ listening comprehension and oral expression, marking various linguistic errors and providing targeted improvement suggestions. For example, after students complete an oral presentation of red stories, the AI tool scores from the aspects of pronunciation accuracy, expression fluency, content completeness and cultural connotation transmission, helping students quickly identify their shortcomings. In addition, with the help of online interactive platforms (such as Rain Classroom and ClassIn), carry out listening and speaking interactive activities on red themes, such as English quizzes, group dialogue competitions and bullet screen interactions. Teachers can display students’

interactive results in real time, comment on their language expressions, and enhance classroom activity and student participation.

4.2.2 Project-Based Learning (PBL)

Centered on the core theme of “telling Chinese red stories well in English”, design tiered project tasks, guide students to carry out practical activities in groups, realize “learning by doing and applying while learning”, and improve listening and speaking application competence and comprehensive literacy. Combined with the competence level of college-to-undergraduate students, project tasks are divided into basic, advanced and innovative levels to meet the needs of students with different foundations.

During project implementation, teachers use digital-intelligent platforms to guide students’ project progress in real time, collect their questions and needs, and provide targeted assistance. After project completion, organize students to present results and conduct mutual evaluation to improve their practical ability and expression skills.

Basic tasks focus on improving basic listening and speaking competence, including: adding English subtitles to red story audio, writing English introductions to red venues, imitating English speeches on red themes, and completing oral dialogue practice related to culture of red heritage. Students are required to master basic vocabulary, phrases and sentence patterns related to culture of red heritage proficiently, and improve the accuracy and fluency of language expression. Advanced tasks focus on competence improvement and cultural communication, including: group research on English translation and communication skills of culture of red heritage-loaded words, making English PPTs on red themes; holding “English Speech Competition on Red Stories”, where students independently select red stories, write speeches and deliver oral speeches; simulating English tour guide practice in red venues, where groups complete tour guide script writing and simulation demonstration. Students are required to accurately interpret the connotation of culture of red heritage and improve the logic and appeal of oral expression. Innovative tasks focus on comprehensive and innovative competence cultivation, including: group creation of English short plays, poems or video scripts on red themes for performance and demonstration; participating in international communication practice of culture of red heritage English,

producing English promotional audio and short videos for local red venues; carrying out interdisciplinary project cooperation, collaborating with students from history, journalism and other majors to complete practical projects on the theme of “international communication of culture of red heritage”, improving cross-cultural communication ability and teamwork skills.

4.2.3 Online-Offline Blended Teaching

Combined with digital intelligence technologies, a three-in-one online-offline blended teaching model of “pre-class—in-class—after-class” is constructed, breaking classroom boundaries and normalizing listening and speaking training. Before class, teachers push culture of red heritage listening and speaking materials and assign preview tasks through Xuexitong and online interactive platforms, such as listening to listening materials, familiarizing with oral expression sentence patterns and checking culture of red heritage background knowledge. After completing preview, students submit preview feedback through the platform. Teachers understand students’ learning foundation and weaknesses based on feedback and adjust classroom teaching content. During class, focus on offline classroom teaching, carry out immersive situational teaching, AI interactive training and project discussions. Teachers focus on guiding students’ listening and speaking expression, correcting linguistic errors and guiding students to deeply understand the connotation of culture of red heritage. Meanwhile, use online platforms to carry out interactive activities and enhance classroom activity. After class, students complete personalized training tasks through digital-intelligent platforms, conduct AI dialogue training, oral practice and project task advancement, upload their listening and speaking works, and receive online comments and feedback from teachers. Meanwhile, students can use the resource library for independent extended learning, watch red-themed English film and television works and imitate oral expression, realizing the extension of listening and speaking training.

4.3 Building a Digital-Intelligent Multi-Dimensional Evaluation System

Breaking the single “score-oriented” evaluation model, combined with the competence improvement needs of college-to-undergraduate

students, a digital-intelligent multi-dimensional evaluation system of “process + result, quantitative + qualitative, technology + humanity” is constructed, focusing on the comprehensive evaluation of students’ listening and speaking competence, cultural literacy, digital literacy and comprehensive competence, ensuring the fairness, accuracy and scientificity of evaluation.

4.3.1 Evaluation Dimensions

Centered on course teaching objectives, four core evaluation dimensions are determined, comprehensively covering students’ competence and literacy, including linguistic competence, cultural literacy, digital literacy and comprehensive competence.

Linguistic competence mainly evaluates students’ comprehensive English listening and speaking application competence, including the accuracy of listening comprehension, the accuracy, fluency and appropriateness of oral expression, and the mastery of vocabulary, phrases and sentence patterns related to culture of red heritage. Cultural literacy mainly evaluates students’ understanding of the connotation of culture of red heritage, the improvement of cultural confidence, and their awareness and ability to interpret and spread culture of red heritage in English. Digital literacy mainly evaluates students’ ability to apply digital intelligence tools, and their ability to use digital intelligence technologies for independent learning and completion of practical tasks. Comprehensive competence mainly evaluates students’ teamwork, innovation, practical and problem-solving abilities, focusing on their performance in project-based practice.

4.3.2 Digital-Intelligent Evaluation Tools and Methods

With the help of digital intelligence technologies, evaluation is made precise and efficient, combining multiple evaluation methods to ensure comprehensiveness. Through online interactive platforms, resource libraries, AI tools, etc., automatically record students’ learning behaviors, including resource access records, preview completion, classroom interaction frequency, listening and speaking training duration and project progress, generate personal learning portraits, accurately analyze students’ learning weaknesses and competence improvement, and provide data support for evaluation. Second, use AI intelligent scoring tools to conduct initial evaluation of students’

listening comprehension, oral expression, translation and other content, score quantitatively from the aspects of linguistic accuracy, fluency and content completeness, and provide targeted improvement suggestions. Meanwhile, AI tools dynamically track the learning process, record students' progress and realize process evaluation.

Construct a multi-subject evaluation system of "teacher evaluation + student self-evaluation + group mutual evaluation + off-campus practice mentor evaluation". Teachers are mainly responsible for comprehensive comments and scoring of students' classroom performance, project results and linguistic competence. Student self-evaluation mainly allows students to reflect on their learning process, gains and shortcomings, and enhance independent learning awareness. Group mutual evaluation mainly targets project-based practical tasks, allowing students to comment on each other's performance and improve teamwork and evaluation ability.

Establish an online exhibition hall for students' culture of red heritage English listening and speaking works, collecting students' oral speech videos, English short plays, red venue tour guide simulation videos, listening and speaking practice audios and other results as an important basis for evaluation. Meanwhile, organize offline result demonstration activities, allowing students to display their practical results, with comments from teachers and students, enhancing students' expression ability and confidence.

4.3.3 Application of Evaluation Results

Link evaluation results with students' course grades, awards and evaluations, and focus on feedback and application of evaluation results. Teachers conduct personalized tutoring for students' weaknesses based on evaluation results, and adjust teaching content and methods. Students clarify their shortcomings based on evaluation results, formulate personalized learning plans and improve their competence. Meanwhile, evaluation results can serve as an important basis for course teaching reform, identify teaching problems in a timely manner, optimize the practical system and improve teaching quality.

5. Practical Cases and Effectiveness Analysis

To verify the feasibility and effectiveness of the practical system for integrating culture of red heritage into the Advanced English Listening

and Speaking course for college-to-undergraduate students enabled by digital intelligence, 37 English major students admitted through college-to-undergraduate programs in our university were selected as research subjects for one semester of teaching practice. Combined with practical cases and data, practical effectiveness is analyzed.

5.1 Teaching Practice of the Advanced English Listening and Speaking Course

Centered on "integrating culture of red heritage enabled by digital intelligence", combined with the learning characteristics of college-to-undergraduate students, teaching practice is carried out in accordance with the three-dimensional practical system of "resources—teaching—evaluation", with specific cases as follows.

5.1.1 Course Objectives

Combined with students' competence needs, course objectives are determined: improve students' comprehensive English listening and speaking application competence, enabling them to proficiently conduct daily communication, topic presentation and cross-cultural communication in English; allow students to deeply understand the connotation of culture of red heritage, master English expressions related to culture of red heritage, and develop awareness and ability to spread culture of red heritage in English; improve students' digital intelligence application competence, enabling them to proficiently use AI and other digital intelligence tools for independent learning and practice; cultivate students' teamwork, innovation and cultural confidence.

5.1.2 Teaching Process

Adopt an online-offline blended teaching model and carry out 16 weeks of teaching practice around culture of red heritage themes. In the first two weeks, teachers push culture of red heritage listening and speaking resources (such as red story audio, oral templates and culture of red heritage background knowledge) through online platforms and assign preview tasks. After completing preview, students submit preview feedback through the platform. Teachers adjust teaching content based on feedback. Meanwhile, carry out training on the use of digital intelligence tools, guiding students to master the use of AI dialogue assistants and online interactive platforms. From the third to the fourteenth week, adopt the teaching model of

“immersive situational teaching + AI interactive training + project-based practice”, carrying out teaching activities around one red theme per week (such as “Long March spirit”, “poverty alleviation” and “role models of the times”). For example, in the teaching of the “Long March spirit” theme, first, use VR equipment to allow students to “immersively” visit the Red Army Long March Memorial Hall, listen to English explanations and complete interactive Q&A. Then, use AI dialogue assistants to carry out red story dialogue training, where students simulate roles such as Red Army soldiers and international journalists to conduct dialogue in English. Finally, assign project tasks for groups to complete “English speeches on the Long March spirit”, with real-time guidance from teachers and correction of students’ linguistic expressions. In the last two weeks, students complete project result presentations, displaying their speech videos, English short plays and other results through a combination of online exhibition halls and offline demonstrations. Teachers organize students to conduct mutual evaluation and self-evaluation, comprehensively evaluate students’ learning status combined with AI scoring and big data analysis results. Meanwhile, students summarize their learning gains and shortcomings and formulate subsequent learning plans.

The teaching practice has highly adapted materials, with selected culture of red heritage listening and speaking materials of language difficulty adapted to entry-level undergraduate courses, fitting students’ English foundation. Technology application meets teaching needs, and the application of AI and other digital intelligence technologies effectively enhances classroom interaction and student participation. Tiered project tasks meet the needs of students with different foundations, realizing “teaching students in accordance with their aptitude”. The multi-dimensional evaluation system combines process and result evaluation, comprehensively reflecting students’ competence and literacy.

5.2 Practical Effectiveness Analysis

Through one semester’s teaching practice, combined with students’ academic performance, questionnaires and interviews, practical effectiveness is analyzed from four aspects: linguistic competence, cultural literacy, digital literacy and teaching effectiveness.

5.2.1 Significant Improvement in Linguistic

Competence

After practice, students’ English listening and speaking competence is significantly improved. Among 37 students, 78% can proficiently conduct oral dialogue, topic presentation and speeches on red themes, with significantly improved accuracy, fluency and appropriateness of language expression. Compared with before practice, students’ listening comprehension accuracy increased by an average of 25%, and oral expression scores increased by an average of 30%. They can proficiently master vocabulary, phrases and sentence patterns related to culture of red heritage, realizing effective improvement of listening and speaking competence.

5.2.2 Obvious Enhancement in Cultural Literacy

Through immersive immersion in culture of red heritage, students’ understanding of culture of red heritage is significantly deepened. 90% of students can accurately interpret core connotations such as the Long March spirit and poverty alleviation spirit. 85% have the awareness and ability to spread culture of red heritage in English, and can take the initiative to share red stories and interpret red spirits in English. Students’ cultural confidence is significantly enhanced. Questionnaires show that 92% of students believe that integrating culture of red heritage into listening and speaking courses can enhance their patriotism and cultural confidence.

5.2.3 Improved Digital Literacy

During practice, students proficiently master the use of digital intelligence tools such as AI dialogue assistants, online interactive platforms and resource libraries. 88% can use digital intelligence tools for independent learning, listening and speaking training and completion of project tasks. Students’ independent learning ability is significantly improved, and they can actively retrieve and use culture of red heritage listening and speaking resources according to their own needs, realizing personalized learning.

5.2.4 Recognized Teaching Effectiveness

Questionnaires show that 93% of students believe that the teaching model of integrating culture of red heritage into listening and speaking courses enabled by digital intelligence can enhance learning interest and participation, getting rid of the dullness of traditional teaching. 89% believe that the teaching model can effectively improve their listening and speaking application competence and comprehensive literacy. Professor Zhu points out that the

ultimate goal of smart education is to cultivate talents with sound personality, strong practical ability, fine thinking quality and profound creative potential [8]. Teacher interviews show that the practical system can effectively solve the pain points of traditional teaching, improve teaching quality and effectiveness, and realize the in-depth integration of language teaching and cultural education.

6. Practical Challenges and Coping Strategies

In the process of practicing integrating culture of red heritage into the Advanced English Listening and Speaking course for college-to-undergraduate students enabled by digital intelligence, although remarkable results have been achieved, some challenges have also been encountered. Combined with practical experience, corresponding coping strategies are proposed to promote the continuous optimization and improvement of the practical system.

6.1 Main Challenges

6.1.1 Resource Construction Issues

High-quality culture of red heritage listening and speaking digital resources adapted to students admitted through college-to-undergraduate programs are still scarce, and the content update speed of the resource library needs to be improved. The English translation of some culture of red heritage materials is not standardized, and the transmission of cultural connotations is inaccurate. The resource co-construction and sharing mechanism is not perfect, and resource exchange and cooperation between schools and enterprises are insufficient.

6.1.2 Insufficient Integration Depth

In some teaching practices, there is still a “disconnect” phenomenon between culture of red heritage and listening and speaking teaching, with rigid integration and lack of in-depth integration with listening and speaking training. Some teachers have insufficient in-depth interpretation of culture of red heritage, making it difficult to guide students to fully understand the connotation of culture of red heritage and affecting the effect of cultural immersion.

6.1.3 Optimization of Evaluation System

The digital-intelligent multi-dimensional evaluation system still has shortcomings. The accuracy of AI intelligent scoring needs to be improved, and the evaluation of qualitative indicators such as emotion and cultural connotation transmission in students’ oral

expression is not comprehensive. The coordination of multi-subject evaluation is insufficient, and the objectivity of student self-evaluation and group mutual evaluation needs to be improved.

6.2 Coping Strategies

6.2.1 Improving Resource Construction

Strengthen cooperation between schools and enterprises, and jointly build and share culture of red heritage listening and speaking digital resource libraries with other universities, culture of red heritage venues and English professional institutions to improve the quality and richness of resources. Establish a professional team to standardize translation and review of culture of red heritage materials to ensure accurate transmission of cultural connotations. Establish a resource update mechanism, regularly collect student feedback and teaching needs, and update resource library content in a timely manner to ensure the adaptability and timeliness of materials.

6.2.2 Deepening Integration Depth

Guide teachers to deeply explore the intersection of culture of red heritage and listening and speaking teaching, integrate culture of red heritage into all links of listening and speaking training, design targeted teaching tasks, and realize the in-depth integration of culture of red heritage and language training. Strengthen culture of red heritage training for teachers, invite culture of red heritage experts to give special lectures, and improve teachers’ culture of red heritage literacy and interpretation ability. Encourage teachers to innovate teaching design, combine culture of red heritage with project-based practice and cross-cultural communication, and enhance the effect of cultural immersion.

6.2.3 Optimizing the Evaluation System

Continuously optimize AI intelligent scoring tools, improve scoring accuracy, and increase evaluation of qualitative indicators such as emotion and cultural connotation transmission in oral expression. Strengthen guidance for student self-evaluation and group mutual evaluation, formulate clear evaluation standards, and improve the objectivity and fairness of evaluation. Improve the coordination mechanism of multi-subject evaluation, clarify the responsibilities of each evaluation subject, and strengthen the combination of teacher evaluation, student self-evaluation, group mutual evaluation

and off-campus practice mentor evaluation to ensure comprehensive and scientific evaluation. In conclusion, integrating culture of red heritage into the Advanced English Listening and Speaking course for college-to-undergraduate students enabled by digital intelligence can achieve the three-fold goals of “improving language competence, immersing in culture of red heritage and strengthening comprehensive literacy”, helping students realize the transition from “being able to answer questions” to “being able to apply knowledge practically”, and laying a foundation for subsequent undergraduate professional learning, academic communication and future employment.

7. Conclusion

Globally, educational trends have clearly identified critical thinking and digital literacy as core competencies in the information age. However, China's college English teaching has yet to establish a complete system aligned with the digital intelligence era in terms of thinking cultivation objectives, teaching strategies and assessment frameworks [9]. The integration of digital and intelligent technologies with education follows the theory of technology-empowered learning. It reconstructs the teaching and learning ecosystem via artificial intelligence, big data and other technologies to realize precise matching between teaching and learning [10]. With the continuous development of digital intelligence technologies and the in-depth advancement of curriculum ideological and political construction, the practice of integrating culture of red heritage into the Advanced English Listening and Speaking course for college-to-undergraduate students enabled by digital intelligence still has great space for optimization and expansion. We can continue to explore the application of emerging digital intelligence technologies such as the metaverse and large models in listening and speaking teaching, build more real and interactive immersive culture of red heritage scenarios, and enhance the interest and effectiveness of teaching. Develop customized AI listening and speaking teaching tools, combined with the learning characteristics of students admitted through college-to-undergraduate programs, to provide more accurate personalized tutoring and feedback. Further improve the culture of red heritage listening and speaking digital resource

library, expand resource types and content, increase academic and professional culture of red heritage materials, and adapt to the needs of academic listening and speaking teaching at the undergraduate stage. Establish a national resource co-construction and sharing platform, promote resource exchange and cooperation between schools and enterprises, and improve resource utilization and quality. Summarize practical experience, optimize the three-dimensional practical system of “resources—teaching—evaluation”, form a replicable and promotable teaching model, and serve the teaching of Advanced English Listening and Speaking courses for more college-to-undergraduate students in universities. Strengthen interdisciplinary integration, carry out interdisciplinary teaching practice related to international communication of culture of red heritage in conjunction with majors such as history, journalism and digital media, and improve students' comprehensive competence. Promote the international communication of students' culture of red heritage English listening and speaking results, display students' red-themed English works with the help of overseas social media and international cultural exchange activities, enhance the international influence of Chinese culture of red heritage, cultivate students' cross-cultural communication ability, and make them “international communicators” of Chinese culture of red heritage, contributing to the building of a culturally powerful country.

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