

# A case study of incorporating digital technologies into audio-visual-oral English teaching in the context of digital humanities

Weijia Hu<sup>1</sup>

<sup>1</sup>School of Foreign Languages, Zhejiang Gongshang University Hangzhou College of Commerce, 311508 Hangzhou, China

**Abstract.** Digital humanities is an interdisciplinary field as well as a set of methods and approaches that combine computational methods with humanistic inquiry. While discussions about the digital transformation of education have become more intense due to the increasing impact of digital technologies, there is still a need to explore the practice of integrating these technologies with audio-visual-oral English teaching. This article starts from the three characteristics of digital humanities research and moves on to document a three-year-long integration of digital technologies into audio-visual-oral English teaching, with emphasis on building online education infrastructure, deepening technology integration guided by the SAMR Model, and incorporating contests into formal learning. It emphasizes that the incorporation of digital technologies not only brings about significant changes in teaching philosophy, content, methods, and evaluation but also fosters the development of a new type of teacher-student relationship as teachers' role evolves from simply "teaching and problem-solving" to placing greater emphasis on "guiding and mentoring".

## 1 Introduction

In 2020, Tsinghua University and Zhonghua Book Company jointly launched the first digital humanities journal in Chinese mainland - Digital Humanities. The opening paragraph of its inaugural issue states that Digital Humanities (DH) is "a cross-disciplinary field and a methodology that utilizes computational and data science methods for humanities research. It applies digital technologies to the study of the humanities and represents a new paradigm of knowledge production, a transformation driven by media revolution". Initially, DH was referred to as "Humanities Computing". With the broadening scope of research and the widespread use of the internet, the term "Digital Humanities" replaced "Humanities Computing" in 2001 and became widely used by researchers. In 2009, Professor Wang Xiaoguang from Wuhan University introduced this concept to China for the first time [1]. Since then, DH research has received increasing attention from the academic community. In recent years, after the breakthroughs achieved in the application of generative AI models, there has been a new trend in the academic community to explore the deep integration of emerging technologies with foreign language teaching and research, and to comprehensively deepen the digitization of education. However, the explorative activities so far are still at an early stage, and more research on practical paths needs to be conducted with the practitioner in mind.

"Listening and speaking, two foundational skills, play a primarily role in language acquisition. Research conducted by American linguists highlights the

importance of listening and speaking activities in language communication, which account for 45% and 30% respectively. Additionally, reading and writing activities contribute 16% and 9% to overall language communication." [2] In today's society, with communication methods like broadcasting, television, multimedia, and the internet permeating every aspect of life, there is an increasing urgency to enrich language knowledge and enhance language abilities through audio-visual means. "Although English education at all stages in our country is undergoing vigorous reforms, advocating for the cultivation of students' listening and speaking abilities as well as their overall English proficiency, there is often a discrepancy between the actual teaching outcomes and the desired teaching expectations due to various reasons." [2] Chinese students are still relatively weak in listening and speaking in the process of language acquisition.

Based on the characteristics of DH research work, this case study summarizes a three-year-long integration of digital technologies into audio-visual-oral English teaching and provides the teaching team's reflection on their technology use and their insights into a new type of teacher-student relationship.

## 2 The characteristics of DH research

DH research is characterized by digitization, datafication, and intellectualization. Digitization refers to the fact that "the research objects of DH are typically native digital texts or digitized texts or texts that have been transformed into a digital format" [3]. Teaching content manually inputted into online learning platforms

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Corresponding author: [vicki.hu@qq.com](mailto:vicki.hu@qq.com)

is an example of digitized texts. Datafication is defined as “the application of DH technologies such as corpus technologies, big data analysis, text mining, and virtual reality to conduct humanities research based on statistical methods and data mining” [3]. An example of datafication in DH research is the analysis of learning data provided by online learning platforms to assess teaching effectiveness.

Combining the aforementioned two characteristics with AI technologies, intellectualization generates enhanced human wisdom through intelligent agents, assisting decision-making and problem-solving in contextualized scenarios [4]. For instance, generative AI technology can provide personalized intelligent companions for each student, not only assessing their oral proficiency through speech recognition but also engaging in continuous dialogues to provide tailored instruction.

### **3 Incorporation of digital technologies into audio-visual-oral English teaching**

This research took place during the 2020-2021, 2021-2022 and 2022-2023 academic years in a school of foreign languages of a university in Hangzhou. This case study follows the integration of digital technologies into freshmen audio-visual-oral English classrooms and the teaching team that participated consisted of one veteran teacher who had taught for five years and two young teachers who are strong advocates of digital technology. They regularly collaborate, following a horizontally aligned curricular process for the teaching of freshmen audio-visual-oral English in the school. Their findings are summarized as follows:

The integration of digital technologies into audio-visual-oral English teaching relies first and foremost on a change of mindset. Technologies are helpful in upgrading teaching models, instructional content, and assessment methods, and self-reflection and self-improvement are indispensable if technology integration is to achieve a sustainable and satisfactory effect.

#### **3.1 Shifting mindsets**

“The biggest barrier to innovation is our own way of thinking.” [5] When it comes to the innovative integration of modern information technology in education, the primary focus should not be on updating devices or specific methods, but rather on a transformation of mindset.

On February 13, 2023, Huai Jipeng, Minister of Education of the People’s Republic of China, emphasized in his keynote speech at the World Digital Education Conference that “Developing digital education and promoting digital transformation are the trend of the times, the need for development, and the direction of reform. It is also the aspiration, responsibility, and mission of all educators”. On February 27, 2023, the Central Committee of the Communist Party of China and the State Council issued the “Plan for the Overall Layout of Building a Digital

China” which highlighted the need to “accelerate digital technology innovation and application” in key sectors including education. It is evident that the trend of promoting the deep integration of digital technology in teaching cannot be ignored or avoided.

In the 21st century, technological advancements have indeed presented more challenges for educational innovation. However, if teachers of audio-visual-oral English courses are willing to embrace the changes brought about by technology with an open and inclusive mindset, actively participate in it, adapt accordingly, and effectively utilize digital technologies, it will help address the pain points of uneven distribution of teaching resources, monotonous teaching and evaluation methods, lack of practice and personalized guidance for students, as well as overcoming shyness and anxiety on the part of students. This will in turn stimulate learners’ interest and potential, significantly improve learning outcomes, cultivate their abilities in audiovisual comprehension and oral expression, while also equipping them with critical thinking, digital literacy, and cross-cultural communication skills. Such individuals are the learners who can adapt to the future society, and such classrooms are the “melting pots” with endless vitality. In the process of “accelerating digital technology innovation and application” technology serves as an accelerator, extending and expanding human capabilities.

#### **3.2 Upgrading teaching models, instructional content, and assessment methods**

##### *3.2.1 Building online education infrastructure*

The outbreak of the COVID-19 pandemic in early 2020 has given rise to the largest-scale exploration of online education in human history. Audio-visual-oral English teaching was no exception.

From February 2020 to June 2021, the teaching team developed two online courses, “English Listening (I)” and “English Listening (II)”, using the Fanya Online Teaching Platform, a comprehensive virtual teaching platform developed by Chaoxing Group. As required by a new program, the team further created two online courses, “Audio-Visual-Oral English (I)” and “Audio-Visual-Oral English (II)” on the same platform from September 2021 to June 2023. Through three years and four months of teaching practice and reflection, and the implementation of two reform projects on formative assessment, as well as a cultivation project on blended learning, the online course content of “English Listening (II)”, “Audio-Visual-Oral English (I)”, and “Audio-Visual-Oral English (II)” has evolved from an initial 1.0 version of “replicating offline classrooms online” to a 2.0 version of “closely following the teaching focus of the textbook and fully utilizing abundant online resources”.

Thanks to the support of the virtual teaching platform, the teaching model of the audio-visual-oral English courses has undergone a transformation. The teaching team has designed and implemented blended learning by utilizing various functions of the platform to

integrate diverse digital technologies into three stages of teaching: pre-class, in-class, and post-class. For example, considering the facts that the overall English foundation of first-year students was generally weak, that their listening learning during the middle and high school stages were mainly designed for college entrance examination, and that their self-learning ability was not strong enough, the faculty utilized the platform in the first semester of the 2020-2021 academic year to release study guides and preview materials before class, evaluate preview assignments, and provide personalized feedback, in order to develop freshmen students' habit of preview. After a semester of joint efforts by the faculty and students, 88.37% of the students reported in the end-of-term survey that they gradually acquired the important habit of preview.

As of June 2023, the teaching content of the four courses online, namely "English Listening (I)", "English Listening (II)", "Audio-Visual-Oral English (I)", and "Audio-Visual-Oral English (II)" has benefited a total of 739 freshmen majoring in English and Business English from the 2020 to 2023 classes. With an easy access to the online course resources, the students were able to preview the lesson plan and review the course materials wherever and whenever they wanted, and to focus more on listening, understanding, and interaction in class instead of being busy with note-taking. The use of technology has enabled the faculty to provide "round-the-clock" teaching services for students on campus, meet their personalized learning needs, promote the digitization of educational resources, thus reshaping the learning environment and redefining learning experiences. It allows students to naturally transition from one learning scenario to another while exploring knowledge, continuously broadening and deepening their understanding [6].

### 3.2.2 Deepening technology integration

Developed in 2006 by Dr. Ruben Puentedura as part of his work with the Maine Learning Technology Initiatives, the SAMR Model provides a framework for teachers to improve the integration of emerging technologies into their daily lessons so as to enhance the quality of education that students receive [7].

The SAMR Model uses a hierarchical framework divided into four distinct levels, each of which has its own set of technology integration standards. These levels and standards are "Substitution" where technology acts as a tool substitute, with no functional change, "Augmentation" where technology acts as a direct tool substitute, with functional improvement, "Modification" where technology allows for significant task redesign, and "Redefinition" where technology allows for the creation of new tasks previously inconceivable [8].

The first two are classified as "Enhancement" steps and the last two as "Transformation" steps. Examples of "Enhancement" include uploading preview materials and multimedia courseware onto the online learning platform and utilizing the platform for attendance management. During the phase of Transformation, technology is a decisive factor and is irreplaceable in the

process of innovating teaching methods. Therefore, when integrating digital intelligence technology into audio-visual-oral teaching, teachers should pay more attention to Modification and Redefinition in technological applications. Analyzing the big data provided by intelligent platforms proves to be an effective way.

In the second semester of the 2020-2021 academic year, the course "English Listening (II)" conducted two formative assessments using the "Exam" module of the Fanya platform. Utilizing the "Detailed Statistics" function of the platform, teachers were able to analyze the results and data gathered from assessments to understand the performance and progress of students, as well as identify areas for improvement in the teaching and learning process. With this functionality, teachers visualized the scores of each class and question type through graphical representations. Under the graphs, the students' answers for each question were presented in tabular form. Additionally, the teachers obtained an exam analysis report with a single click, which included an analysis of the exam structure, performance analysis, and evaluation and review sections. The report provided preliminary statistical data and analysis for the teachers, based on which teachers further explored and analyzed the data, identified students in each class who scored lower in specific question types, analyzed the reasons for their mistakes, and were well-informed before one-on-one communication took place. Moreover, they examined the difficulty and discrimination level of different question types, providing quantitative basis for teaching reflection. Furthermore, comparing the performance on the questions of different classes provided ideas for differentiated instruction.

Since the first semester of the 2021-2022 academic year, both the name and textbook for the freshman listening course have changed. The e-learning platform, WELearn, that comes with the new textbook integrates online courses, learning resources, and learning services. The platform is available not only on PCs but also on mobile devices. The "Learning Analytics" feature on the platform helps teachers quickly and in real time understand the students who need attention and why, the time required, accuracy, and errors for each type of question completed by each student, and the overall learning progress of each student for the entire semester. These data and statistics, as well as further analysis based on them, helped teachers better understand the learning progress of each student in each class, and summarize the achievement of the teaching objectives of the course at different stages. This provided powerful data support for adjusting the teaching content for the next stage of education, especially for formative assessment, because the use of massive amount of data formed learner profiles, thereby promoting the scientific and personalized evaluation and achieving better targeted instruction.

### 3.2.3 Incorporating contests into formal learning

If we consider the development of foreign language education and the discipline of foreign languages in the context of the unprecedented global changes, it becomes

evident that foreign language institutions need to reassess their mission and responsibilities. They should strive to cultivate and nurture outstanding talent who are proficient in languages, have a deep understanding of different cultures, and possess expertise in specific fields. This will contribute to fostering an “international perspective” among young citizens of the country, which is crucial for China’s strategic development, communication, and participation in global governance.

Furthermore, it will also support the construction of an education powerhouse by providing talent and intellectual support [9]. Clearly, the teaching objectives of audio-visual-oral courses need to be redefined, going beyond the mere development of language skills. The cultivation of critical thinking and intercultural communication abilities is essential for individuals who are expected to effectively communicate across languages and cultures, and excel in specific domains. In this regard, leveraging digital technology can further enhance these efforts.

In 2022, during a brainstorming session on optimizing course design, the freshman audio-visual-oral English teaching team discussed the practicality of incorporating into formal learning the short video competition organized by Foreign Language Teaching and Research Press (FLTRP), which aims to develop students’ capabilities to tell China’s story well. The team believed that the competition’s goal of cultivating students’ critical thinking ability and intercultural communication competence align perfectly with the objectives of the course. Throughout the second semester of the 2021-2022 academic year, the freshman students, under the guidance of the teaching team, made 25 short videos about “Intelligent Manufacturing in China” by utilizing online resources, professional knowledge, and digital media technology. Their topics ranged from the century-long transformation of the Beijing-Zhangjiakou Railway to Alibaba’s logistics robots to the intelligent life on campus.

In the second semester of the 2022-2023 academic year, the course incorporated the competition as a project assignment. In addition to analyse the competition’s theme and the award-winning videos in the last two years, the teaching team invited a faculty member with a background in fine arts to provide specialized guidance on how to employ digital media technology for all kinds of image editing. Besides, the students were encouraged to learn how to polish the subtitles using machine translation software or large language models. Thirty-one cross-major teams dedicated both in-class and after-class time to depict characters from all walks of life that embody the spirit of the Chinese nation which was the theme of the 2023 competition.

The teaching team discovered that the whole journey of refining scripts, revising translations, making videos was truly meaningful as the students had immersed themselves in cultural relics in museums and the wisdom in classics when they were reading classics, searching for online materials, and visiting inheritors of intangible cultural heritage. Through the competition, they not only improved their language skills and digital literacy but also enhanced their cultural confidence. And

what is worth mentioning is that digital technology played a significant role in expanding learning beyond the physical boundaries of a traditional classroom, and expanding teaching content from textbooks to the vast resources available on the internet.

### 3.3 Self-Reflecting and Self-Improving

Continuous self-reflection, ongoing learning, and self-improvement are vital practices and mentalities for educational innovators. These habits and mindsets result in a seamless integration of digital intelligence-enhanced audio-visual-oral English teaching, creating a self-sustaining cycle of improvement.

Firstly, while the initial effectiveness of the digital transformation of the course has been evident, its online version requires ongoing optimization before it can be elevated to a high-quality blended course at the university or provincial level. It could also potentially serve as an exceptional open online course, benefiting students not only from our university but also from other domestic institutions. By doing so, it would enhance the availability and accessibility of outstanding foreign language education resources, facilitating educational fairness and openness, as can be seen from Beijing International Studies University’s practice of building an integrated smart tech-powered learning platform for foreign language education.

Secondly, the analysis of teaching data by the course team is currently limited to various visualized charts and preliminary statistical results. However, there is still a need for improvement in applying data analysis methods to gain insights into hidden conclusions, relationships, or patterns behind the data [10]. In addition, there is a need for improvement in quantitative data analysis and data-driven exploratory research. The main reason for this is that teachers lack an in-depth understanding and comprehension of the concept, types, value, and applications of big data. Furthermore, there are no systematic methods and skills for data collection, verification, mining, and application, leading to the failure to establish a data-driven teaching design and evaluation model.

Thirdly, incorporating the short video competition into audio-visual-oral English teaching not only enhances students’ abilities in listening, speaking, reading, and writing but also motivates them to explore diverse knowledge areas, broaden their horizons, stimulate their creativity and expressiveness, and utilize English language proficiency to discuss topics of interest. Notably, in the 2023 short video competition, there has been an increase in participation among freshman students, with the number of teams advancing to the national competition growing from one to four. Furthermore, due to the tremendous effort put forth by students in creating their short videos, they were deeply moved and actively involved in evaluating their classmates’ works on the Fanya platform.

Despite these achievements, the course team conducted timely evaluations. Although the teachers started utilizing digital intelligence technology for the 2023 competition, their usage was limited to text refinement. However, short video creation involves the

integration of art and science, creativity, and technology. This necessitates both teachers and students, particularly teachers, to enhance their interdisciplinary knowledge and skills, including digital literacy, and engage in cross-disciplinary collaboration to leverage the advantages of relevant disciplines.

#### 4 The significance of enhancing audio-visual-oral English teaching through digital technology

The key to the advancement of audio-visual-oral English teaching through digital intelligence lies in the seamless integration of digital intelligence technology. This integration has resulted in significant transformations in teaching philosophy, content, instructional models, and assessment methods.

For example, AI-powered natural language processing tools can support teachers in easily locating relevant supplementary materials for listening and speaking, thus enhancing targeted teaching content. Moreover, if teachers are capable of effectively tracking, analyzing, and evaluating teaching data, they can portray students' learning progress in different stages of listening and speaking. This enables a scientific and unbiased analysis and diagnosis of students' abilities in these domains, further guiding the arrangement of tailored teaching content based on individual needs. Furthermore, the fusion of digital intelligence technology with listening and speaking instruction helps bridge the gap between the arts and sciences, facilitating the integration of industry, academia, and research.

In addition, the deep integration of digital intelligence technology with audio-visual-oral English instruction also involves establishing a new type of teacher-student relationship. The advent of intelligent learning companions means that teachers and textbooks are no longer the sole means of acquiring listening and speaking skills. As a result, teachers' role evolves from simply "teaching and problem-solving" to placing greater emphasis on "guiding and mentoring". By assisting students in critically utilizing the recommended resources and examining the assessment and suggestions provided by intelligent learning companions, teachers and students form a new learning community. Both teachers and students must step outside their comfort zones: teachers should embrace new technologies and actively incorporate them into listening and speaking instruction; students, on the other hand, should move away from the traditional passive learning mode of "attending classes and completing assignments" and engage in more exploratory learning. Integrating the short video competition into listening and speaking instruction is a practice of this type. It employs a project-based learning approach, where the focus of the class shifts from imparting knowledge to providing a platform for students to explore and learn through self-discovery, aided by digital intelligence technology.

#### 5 Conclusion

This paper summarizes the seven-semester-long digital transformation of the freshman audio-visual-oral English teaching. The practice follows the three key characteristics of digital humanities research: digitization, datafication, and intelligence. It involves integrating various digital intelligence technologies into both in-class and after-class activities, resulting in significant changes in teaching philosophy, content, instructional models, and assessment methods. In this new learning environment, teachers are no longer seen as all-knowing problem solvers but as collaborative partners, fostering a learning community where both teachers and students grow together.

In the realm of digital humanities, the instruction of audio-visual-oral English goes beyond merely teaching English as a means of communication. It is now situated within the broader goal of building an educationally strong nation. By leveraging powerful digital intelligence technologies, innovative educational models are created, allowing for synergy between different learning environments inside and outside the classroom. This approach aims to ignite students' enthusiasm for English learning and ultimately serve the goal of cultivating foreign language talent for the new era.

#### References

1. Y. Zhang, N. Fu. <https://mp.weixin.qq.com/s/XU6l43BO3ZCH4lssBP3DPQ> (2023)
2. Y. Qu. *A Study of English Listening Proficiency*, 26 (2019)
3. K. Hu, Y. Hei. *Chinese Translators Journal*, **2**, 5 (2020)
4. Y. Zuo. <https://www.chinanews.com.cn/cj/2021/05-28/9487550.shtml> (2021)
5. G. Couros. *The Innovator's Mindset - Empower Learning, Unleash Talent, and Lead a Culture of Creativity* (2020)
6. D. Thornburg. *From the Campfire to the Holodeck - Creating Engaging and Powerful 21st Century Learning Environments* (2020)
7. R. R. Puentedura. [http://www.hippasus.com/rpweblog/archives/2006\\_11.html](http://www.hippasus.com/rpweblog/archives/2006_11.html) (2006)
8. J. T. Hilton. *The Social Studies*, **107**, 68 (2015)
9. F. Jiang. [http://chisa.edu.cn/news/lunbo/202307/t20230707\\_2111066584.html](http://chisa.edu.cn/news/lunbo/202307/t20230707_2111066584.html) (2023)
10. Z. Zhang, Y. Yang, G. Feng. *Journal of Shijiazhuang Tiedao University (Social Science Edition)*, **3**, 104 (2021)