

## **Technology-Enhanced International Chinese Education: An Overview**

**Xiaoping Gao**

University of Wollongong, Australia

### **1. Introduction**

#### **1.1 Background**

Recent decades have witnessed growing attention to the integration of technology into second language (L2) education, as evidenced by the emergence of specific research fields such as Computer-Assisted Language Learning (CALL) and Technology-Enhanced Language Learning (TELL) (Levy, 1997; Chapelle, 1994, 2007, 2009; Salaberry, 1999; Warschauer, 2004). Technology has played a significant role in the transition from teacher-centered to student-centered education, emphasizing active and collaborative student participation (Firmin & Genesi, 2013). This transformation stems from the recognition of technology's potential to enhance teaching effectiveness and improve learning outcomes, making TELL one of the fastest-growing research areas in language education in the digital age (Chun, 2011, 2016). Gradually, technology has become fully integrated into L2 language teaching, learning, and research, becoming a normalized aspect (Bax, 2003, 2011). The investigation of integral technological components has become a critical part of general digital literacies or multiliteracies in language education (Chun, 2016). The rapid evolution of information and communication technologies has revolutionized language education by providing new tools and resources. UNESCO has called for educators to integrate digital technologies into curricula to develop students' 21st-century skills (UNESCO, 2018). The COVID-19 pandemic has further accelerated the adoption of online technology by extending learning beyond physical classrooms through online and hybrid models, leading to the technological revolution and highlighting the pivotal role of technology in shaping the future of education (Hodges et al., 2020; Schleicher, 2020; UNESCO, 2021).

The field of International Chinese Education (ICE), also known as Teaching Chinese as a Second or Foreign Language (TCS/FL), has also experienced significant evolution in terms of technology integration. While the teaching of TCFL has a century-long history overseas dating back to the first Chinese classes offered at Yale University in 1877 (Yao, 2014), the teaching of Chinese as a second language (L2) within China began in the 1950s (Y. Cheng, 2005; Gao, 2014; Zheng, 2019). The formal establishment of the discipline of TCS/FL only occurred in the 1980s in China and the early 1990s in the United States (Gao, 2014; Y. Cheng, 2005; Yu, 2021; Zheng, 2019). This discipline continued to gain momentum throughout the 1990s and into the 21st century. The field's global presence was marked by the inauguration of the Confucius Institute in 2004 and the first World Congress on Chinese Language Teaching in 2005 (Gao, 2014; Y. Cheng, 2005; Zheng, 2019). The China National Academic Commission approved the conferment of a professional Master's degree in International Chinese Education in 2008

and its Bachelor's degree in 2012, signifying its transformation into an interdisciplinary research area encompassing more than just Chinese languages, linguistics, and education (Wu, 2016).

## 1.2 Technology in CLT

The development of technology use in Chinese language teaching (CLT) has been a dynamic journey, shaped by the evolution of technology itself and its integration into language teaching and learning. This broad concept of technology encompasses digital tools, resources, and the environments in which teaching and learning take place, such as online learning platforms (e.g., Moodle, Blackboard, Canvas), online communication platforms (e.g., Zoom, Webex, Google Classroom), and social online learning and Massive Open Online Courses (MOOC) platforms (e.g., Coursera, edX, FutureLearn, Udacity, and OpenLearning). Throughout history, the definition of technology has evolved in parallel with technological progress in CALL. As noted by Otto (2017), the journey begins with traditional tools like printed text, drawings, photos, audio recordings, video technologies, and multimedia resources, upon which teachers and learners have relied for years. As technology progressed, new options emerged for both teachers and learners.

In the realm of teaching Chinese as an L2, the adoption of technology has a rich history. For instance, Dr. Yuen Ren Chao used gramophone records to teach Chinese at Harvard University in the early 20th century (Bruce, 1926; Liu, 2022). Phonograph records also found their way into Chinese language education in China (Zheng, 2019). Mandarin classes were broadcasted on the radio in China and Japan starting in the 1960s. The teaching toolkit expanded to include teaching software, films, songs, slides, recordings, cassette tape recorders, audio, and video recorders during the 1970s to the 1990s (see Liu, 2022; Liu & Da, 2022; Yao, 1995). However, the real technological revolution in L2 Chinese education began in the mid-1990s with the widespread adoption of computers and the internet. Technology became intricately woven into language education, transforming the teaching of L2 Chinese. From audio recordings and images to broadcasting, television, online quizzes, and multimedia networks, the possibilities expanded (Yao, 2006, 2014; Xie, 2006). These familiar formats gradually paved the way for today's digital resources used on social media platforms such as WeChat and Twitter (e.g., Jin, 2018; Tong et al., 2022; Wang & Teng, 2017). Over time, these developments culminated in the incorporation of MOOC courses, the flipped classroom model, big data, artificial intelligence (AI), and virtual reality (e.g., Second Life) into the teaching of L2 Chinese (Shen & J. Cai, 2022; Zheng, 2017, 2019). This ongoing integration of technology not only reflects the evolution of the field but also offers new avenues for learners to engage with and master the Chinese language in an increasingly digital world.

The current research landscape reflects a growing emphasis on the pivotal role of technology in the field. Notably, there are several journals exclusively dedicated to exploring the impact of technology on CLT. Among them are the *Journal of Technology and Chinese Language Teaching*, launched in 2010, and *Chinese Language Teaching Methodology and Technology*, initiated in 2017. Moreover, a few edited volumes (e.g., Liu, 2022; Y. Zhang & Gao, 2021) have extensively documented the experiences, practices, and reflections of CFL educators as they integrated technology into their teaching methodologies on a global scale.

The educational landscape has undergone a transformative shift due to the COVID-19 pandemic, with teaching modes evolving from pre-pandemic face-to-face (FtF) instruction to fully online delivery during the pandemic's peak. Presently, educational institutions are embracing hybrid and/or blended approaches post-pandemic, where technology continues to play a pivotal role in enabling this transition. Consequently, there is a pressing need to capture innovative practices and showcase the effective utilization of technology in teaching methodologies to further enhance the teaching and learning of L2 Chinese.

## 2. The Special Issue

### 2.1 Aim

This Special Issue is dedicated to showcasing the innovative integration of technology into teaching and learning within the realm of CLT. It is focused on four key areas: technology-assisted curriculum development, language instruction, professional development, and assessment/evaluation. Its primary aim is to disseminate cutting-edge research and practices that illuminate the symbiotic relationship between technology and pedagogy. By exploring these facets, the Special Issue seeks to contribute to the advancement of technology-enhanced Chinese language pedagogy and offer valuable insights to educators, curriculum designers, and researchers, thereby enhancing teaching effectiveness and learning outcomes.

### 2.2 Selection process and criteria

The selection process commenced with a Call for Papers, inviting contributions from researchers and educators in the field of TCFL. We received a total of 38 abstracts, representing diverse contexts and approaches to technology-integrated CLT. These abstracts underwent an initial review based on the following criteria:

- **Relevance to Technology in TCFL:** Submissions were required to demonstrate a clear connection to the use of technology in TCFL, showcasing the most recent practices and research in this context.
- **Theoretical Foundations:** Each submission was expected to be firmly grounded in strong theoretical foundations, ensuring the scholarly rigor of the research.
- **Pedagogical Implications:** Submissions were evaluated based on their capacity to provide practical and actionable pedagogical insights that could benefit other educators seeking to incorporate technology into their teaching practices.

Submissions meeting these criteria were invited to submit full papers for further review. All selected full papers underwent several rounds of double-blinded review, adhering to rigorous scholarly standards. This process ensured the quality and scholarly depth of the studies. The final selection of papers for inclusion in this Special Issue was based on their combination of relevance to technology in TCFL, strong theoretical foundations, and the provision of valuable pedagogical insights. The selected studies, now part of this Special Issue, offer fresh perspectives, innovative practices, and thought-provoking insights that contribute to the ongoing advancement of technology-enhanced CLT.

### 2.3 Characteristics of the selected studies

The selected papers exhibit these characteristics:

- **Novelty and Practicality:** The selected studies within this Special Issue exhibit a remarkable blend of novelty and practicality. They are at the forefront of utilizing modern technologies as educational tools or learning platforms, showcasing innovative approaches to address real-world challenges in Second Language Acquisition (SLA).
- **Theoretical Foundations:** Each study in this collection is firmly grounded in strong theoretical foundations, reflecting the rigor and depth of their research. These theoretical underpinnings guide the development and implementation of technology-enhanced teaching and learning methodologies.
- **Pedagogical Implications:** A distinctive feature of these studies is their provision of robust pedagogical implications. They offer actionable insights and strategies that are readily

applicable to diverse educational contexts, enriching the teaching practices of language educators.

- **Global Perspective:** Spanning across seven countries, including Armenia, Australia, Canada, Guyana, New Zealand, the UK, and the US, the studies capture the status of technology-integrated teaching and learning on a global scale. This diversity of contexts enriches the depth and breadth of insights and practices presented.
- **Diverse Courses and Participant Groups:** The studies encompass a wide spectrum of Chinese courses, spanning from elementary to advanced level L2 Chinese classes to Chinese academic writing for first language (L1) speakers. They involve participants with diverse language proficiency and backgrounds, such as university students, school-aged learners, Chinese L1 and L2 teachers with varying levels of experience. This inclusivity broadens the applicability of the findings to a wide range of TCFL scenarios.
- **Emerging Technologies:** Notably, these studies explore the implementation of emerging technologies (e.g., ChatGPT, Zoom, online vocabulary games) in teaching and learning. This forward-looking approach highlights the dynamic nature of technology integration in TCFL.

Overall, the studies presented in this special issue showcase the most current practices in technology-integrated CLT and represent a collective effort to advance the field, offering valuable insights to educators and researchers seeking to enhance teaching efficacy in an increasingly technology-driven world.

## **2.4 Organization of this issue**

This issue comprises seven articles that collectively showcase the most current practices in technology-integrated TCFL. These articles are meticulously organized to align with the teaching cycle, encompassing the stages of planning, execution, reflection, and assessment/evaluation. They revolve around four overarching themes: curriculum and material development, instructional practices and reflections, teacher education, as well as assessment and evaluation. The first three studies explore technology-integrated teaching and learning across the US, Canada, and the UK. They cover topics assessing the effectiveness of pre-recorded videos in enhancing vocabulary and grammar acquisition within a flipped classroom model, implementing ChatGPT in various Chinese courses to stimulate interactions and cultivate communicative and writing skills, and examining various tasks within virtual exchanges to foster intercultural competence. Subsequently, two studies delve into teacher and student perceptions of classroom interactions and students' willingness to communicate in synchronous online classes compared to traditional in-person classes at university settings in Australia and the US. The last two papers report on the effectiveness of a virtual teacher training program conducted in New Zealand and cognitive differences among learners and teachers in Armenia and Guyana regarding the use of images in online matching games. Rooted in robust theoretical frameworks, these studies have the potential to contribute to theoretical development, enhance pedagogy, and stimulate discussions across a wide spectrum of educational contexts.

## **3. Studies in This Issue**

### **3.1 Technology-enhanced instruction**

Self-created movies and films as multimedia resources have been widely used in teaching L2 Chinese (J. Cai & Chen, 2020; S. Zhang, 2022). However, how to create them to meet the needs of learning vocabulary and grammar to facilitate the implementation of the flipped classroom model and to what extent these videos facilitate learning remain under-researched. Shenglan Zhang (in this issue) conducted an exploratory study using the Design-Based Research method to investigate the effectiveness of

multimedia resources, specifically pre-recorded videos designed for teaching vocabulary and grammar in alignment with instructional and multimedia design principles. The study involved 39 CFL learners from two proficiency levels at an American university, with data collected through questionnaires, reflections, interviews, and verbal protocols. The findings reveal that these materials significantly enhance the learning of grammar and new vocabulary, providing increased opportunities for practicing listening and writing skills while enhancing cultural and pragmatic competencies. Moreover, the study outlines design principles for future research, emphasizing the importance of technology-enhanced materials in promoting the flipped classroom model and blended learning. This study highlights the potential of well-designed pre-recorded materials to enrich CFL learners' language learning experiences outside the traditional classroom and underscores the importance of incorporating student feedback into material development to benefit curriculum designers and teachers in optimizing learning outcomes.

Generative AI has emerged as a captivating subject in higher education following the release of ChatGPT, OpenAI's GPT language model, in November 2022. To date, however, few studies have explored the use of ChatGPT in language education, particularly in teaching L2 Chinese (W. Cai, 2023). The study conducted by Jing Li, Xiaohui Ren, Xinliang Jiang, and Chiu-Hung Chen stands as one of the few examinations of ChatGPT's implementation as an instructional tool in teaching three Chinese language courses (i.e., Intermediate Low and Intermediate High L2 Chinese course, and Chinese Academic Writing) at a Canadian university. Employing a backward design approach, the authors, who are frontline teachers, have reported on the remarkably human-like conversational interactions facilitated by ChatGPT through activities in which ChatGPT serves as a peer-assisted teaching tool. They meticulously documented design principles, motivation, procedures, outcomes, and their reflections as teachers. They found that these activities assisted students in learning grammar, engaging in conversational exchanges, composing narrative short texts, and improving academic writing skills. They observed students' active participation in discussions, critical thinking, self-reflection, and seeking improvement in writing through interactions with ChatGPT, which functions as a peer providing references and a discussion platform. Notably, ChatGPT's flexibility, responsiveness, and wealth of information have significantly enriched students' overall learning experiences. This report highlights how ChatGPT has been effectively integrated into CLT, offering a promising avenue for enhancing pedagogical practices in language education. The practices employed in their implementation, reflections on the pros and cons of integrating ChatGPT into classroom instruction, and integrated rubrics for assessments serve as inspirational sources for those who are interested in incorporating this AI tool into their teaching practices.

Virtual Exchanges (VE) has gained growing recognition for its potential to promote intercultural learning (Barbosa & Ferreira-Lopes, 2023) and also in the context of TCFL (Guo et al., 2022; Guo & Xu, 2023). Zhiyan Guo's (in this issue) study goes a step further by exploring how different task types employed in virtual exchanges impact the development of intercultural competence in TCFL. Drawing on the theories of Intercultural Communication and VE, Guo analyzed the data collected from a wide range of sources (questionnaires, Padlet notes, and reflective journals) through weekly virtual exchanges between university students in China and the UK during the COVID pandemic. The results show that students acquired new knowledge in the target language and developed their intercultural competence in dimensions including attitude, knowledge, skills, and critical cultural awareness. The study delves into the relationship between task effectiveness and the development of intercultural competence, offering valuable insights into how educators can optimize Virtual Exchange experiences to maximize intercultural competence growth in language learners. The findings offer practical guidance for educators looking to foster students' intercultural competence through the use of virtual exchanges.

### 3.2 Perceptions of technology-integrated learning

Classroom interaction plays a crucial role in pedagogical practices and has received substantial attention in SLA research due to its proven benefits on L2 development (Loewen & Sato, 2018). However,

interactions in synchronous online classes are under-researched, especially when compared to those interactions in face-to-face settings. Grounded in the Interaction Hypothesis (Long, 1981), which underscores the positive effect of interactions on L2 proficiency development, Xiaoping Gao and Leimin Shi (in this issue) compared students' and teachers' perceptions of teacher-student and student-student interactions in synchronous online classes versus face-to-face alternatives at an Australian university. A thematic analysis of survey and interview data collected from three proficiency levels of L2 learners and their teachers revealed congruence among students and teachers in the importance and necessity to promote interactions in class regardless of delivery modes. However, students favored face-to-face (F2F) interactions, citing reduced motivation and fewer opportunities for interactions in synchronous online classes, and preferred to interact with the teacher rather than peers during online sessions. The study identifies various factors influencing their perceptions, including a sense of community, interaction opportunities, engagement strategies, individual differences, and technological constraints. This study underscores teachers' pivotal role in fostering classroom engagement and enhancing learning experiences by considering students' preferences. It contributes to the advancement of interaction theories in second language education, shedding light on the challenges and opportunities for shifting to hybrid or blended learning modes in the post-pandemic era.

Willingness to communicate (WTC) is another popular topic that has generated a series of studies in SLA since the 1990s (MacIntyre, et al. 1998; Nematizadeh & Wood, 2021). Attention has recently shifted to its more dynamic, state-like components and understanding the interaction between WTC and the learning situation (J. Zhang et al., 2018). However, WTC in the context of Synchronous Computer-Mediated Communication (SCMC)/ online classes remains under-researched. Fangzheng Zhang and Yuxiao Du's study (in this issue) compared US students' perspectives on WTC in online versus in-person modes, evaluating four aspects: anxiety, sense of control, familiarity, and environment. Based on the data collected from one-on-one interviews with six elementary-level students at an American university during COVID-19, they found that students had mixed feelings regarding WTC in both modes. That is, students favored both the convenience of the online mode and the efficacy and enriched interpersonal engagement in the in-person mode. They perceived a higher sense of control during online interactions while appreciating the sense of familiarity and the conducive environment of in-person sessions. Their responses regarding anxiety varied. Online modes may offer convenience and certain advantages, but do not universally enhance students' WTC. The mixed findings emphasize the need for a nuanced approach to language instruction by considering individual differences and the unique dynamics of each learning context. This study's implications and pedagogical suggestions are particularly relevant as education continues to evolve in the post-pandemic era.

### 3.3 Teacher education

Teacher education is a key area of professional development in TCFL (Bai, 2021). As Chun (2011) proposes, pedagogic and digital literacies are crucial skills for language teachers to develop, enabling them to play a pivotal role in engaging in effective, critical, and reflective teaching practices. However, existing studies show that CFL teachers lack technology content knowledge according to the TPACK (Technology, Pedagogy, and Content Knowledge) framework (e.g., H. Cheng, 2014). In this issue, Grace Yue Qi and Chujie Dai introduced a Virtual Peer Mentoring (VPM) program tailored for training a junior L2 Chinese teacher at a New Zealand university. The VPM program was conducted in a distance delivery mode via Zoom, following a CARR cyclic process: *Collaborative planning, Action implementation, Reflection, and Reimplementation/Readaptation*. This longitudinal study spanned a year during the COVID-19 pandemic to support the mentee teacher's pedagogic and digital literacy development. Their thematic analysis of multimodal data (i.e., online teaching recordings, online chats, stimulated recall interviews, and self-directed written journals) revealed enhanced digital literacy skills and transformative pedagogical practices of the mentee teacher. Peer mentoring has been effective in alleviating the mentee teacher's burden, enabling her prompt response to students' diverse needs, and navigating teaching

innovations through pedagogical and technological reflections. This study underscores the value of collaborative efforts and actions within the iterative peer mentoring process, highlighting the importance of capacity building among language teachers for ongoing professional development in the digital age.

### 3.4 Assessment and evaluation

Assessment is a pivotal component of the teaching cycle, playing a crucial role in evaluating not only students' learning outcomes but also teaching efficacy and effectiveness (Conrad & Openo, 2018). However, the validity of assessment questions, particularly in online learning games, is an overlooked area for examination. Drawing upon the cognitive load theory in educational psychology (e.g., Sweller, 2005; Sweller & Chandler, 1991, 1994), Xiangling Jiang (in this issue) investigated cognitive differences among L2 learners and L1 and L2 teachers in recognizing two types of images used for online vocabulary games and interpreting their meanings. L2 learners and L1 and L2 teachers in Armenia and Guyana participated in the study. She found that processed animations were easier to remember than real-world images in facilitating short-term memory. Images including weaker cultural connotations benefit vocabulary learning due to differences among L1 and L2 teachers and L2 learners in their interpretation of the meanings conveyed by the same images. This study emphasizes the importance of assessing the validity of the materials used for online assessment and considers cognitive and linguistic differences among teachers and learners when designing online assessment and learning resources.

## 4. Conclusion

This overview delves into the multifaceted landscape of technology's integration into TCFL, by clarifying the definition of technology, reviewing a brief history of technology-integrated CLT, and introducing the studies featured in this special issue. It is evident that technology offers the potential to reshape the future of CLT. Therefore, future directions should prioritize empirical studies with robust methodologies to explore the effectiveness of technology implementation. It is worth noting that the studies included in this issue predominantly adopted qualitative research methods. This reflects the reality of a limited number of students involved in CFL classes. Expanding the scope to include the technology-integrated teaching practices in China, the target language environment, would provide a more comprehensive perspective of the field. Emerging technologies hold promise in facilitating curriculum design, material development, classroom interaction, and assessment. Future studies should consider investigating the use of emerging technologies (e.g., ChatGPT) to enhance learner engagement. As technology evolves continuously, CSL educators, researchers, and practitioners must remain adaptable in aligning their approaches with the ever-changing educational landscape. By embracing the insights provided by this Issue, educators and researchers can together navigate this dynamic terrain with renewed purpose and direction, ultimately advancing the field of CLT.

As a guest editor, I am deeply grateful to the IJCLT editorial team for affording me this valuable opportunity to curate the works within this special issue. I extend my heartfelt appreciation to the anonymous reviewers for their unwavering dedication in delivering timely and constructive feedback. To our contributors, I extend a sincere thank you for their commitment through several rounds of the revision process and enduring patience. Their experiences as frontline educators not only enrich our understanding but also continue to mold and define this captivating and continuously evolving field of study.

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**Dr. Xiaoping Gao** is Associate Professor of Chinese and Discipline Leader for Languages and Linguistics at University of Wollongong. Her research expertise includes language pedagogy, second language acquisition, educational technology, teacher education, and cross-cultural communication. She has won six prestigious awards, including the 2022 Australian University Teaching Excellence Award. Dr. Gao has authored numerous papers, led national and University research projects, and co-edited the book *Frontiers of L2 Chinese Education: A Global Perspective* ([Routledge, 2021](#)). She also serves on the editorial boards of *International Journal of Chinese Language Teaching*, *Journal of Researching and Teaching Chinese as a Foreign Language*, and *Languages and Culture Networks for Australian Universities Studies*.