Weiming Liu*

A systematic review of the use of WeChat in teaching Chinese as a foreign language

Abstract: Over the years, social media have gained popularity as tools for language teaching. The social media platform WeChat has been employed for teaching Chinese as a foreign language (TCFL). While studies have investigated the use of WeChat for TCFL, no systematic reviews have been conducted to provide an overview of existing research. This review article examines empirical studies on WeChat in TCFL, summarising their main characteristics, findings, and critically assessing the quality and relevance of the available evidence. Scopus and Web of Science were used as primary databases for this review. Relevant studies were identified by using keyword sets such as "WeChat Chinese language", "WeChat Mandarin", "WeChat *Hanyu*" and "WeChat *Putonghua*". The review identified the contexts, research methods and themes of the selected articles. The main themes include language learning, social interactions, learner agency and motivation. The paper also discusses the implications of using WeChat for TCFL and highlights areas for future research. It is hoped that the insights provided here will inform the design and implementation of future courses that use WeChat or other technology-assisted applications for language teaching.

Keywords: WeChat; Chinese as a foreign language; learner agency; motivation; social interactions

1 Introduction

Social media, which Meikle (2016, p. 6) characterised as "networked database platforms that combine public with personal communication", have transformed the way people communicate and learn thanks to their convenience and accessibility. Social media's digital environment provides an unprecedented opportunity for people to express themselves, connect and participate, which improves access and inclusion (Council of Europe, 2019). This digital environment has also fostered

*Corresponding author: Weiming Liu**, The School of Applied Language and Intercultural Studies, Dublin City University, Dublin, Ireland, E-mail: weiming.liu@dcu.ie. https://orcid.org/0000-0002-2468-6911

innovation in language education. The Open University's *Innovating Pedagogy 2021* report (Kukulska-Hulme et al., 2021) highlighted the widespread popularity of free online communication tools, such as Zoom, WhatsApp, Facebook, Line and WeChat. These platforms cater to a vast user base and create fruitful occasions for authentic-language learning. Thanks to these online communication tools, students now have the unique chance to collaborate with others in real-life scenarios or distant locations, which effectively bridges the gap between in-class instruction and independent learning activities.

In recent years, social media have gained popularity as tools for second language (L2) learning because they offer multiple benefits to students. First, research has consistently shown the positive impact of social media on language skills, especially in the realm of communication. As flexible communication tools, social media make it possible to connect learners to distant locations and large user bases (Barrot, 2022; Muftah, 2023; Sun & Asmawi, 2023). This global accessibility provides students with rich and diverse linguistic environments, which fosters an enhanced language-learning experience. Second, the integration of social media into L2 learning nurtures social interactions and active participation among language learners, which particularly benefits international students who may struggle to engage with target-language online communities (Yeh & Swinehart, 2022). By creating opportunities for language learners to communicate and engage with each other, social media can build a sense of community and promote social interactions. This perspective resonates with Vygotsky's (1986) idea that cognitive development is profoundly influenced by social contexts. Contemporary research has underscored the importance of the social activities through which individuals engage in learning (Wells, 2000). The essence of language learning lies in empowering students to participate in real-life situations, express themselves and accomplish diverse tasks. This approach aligns closely with the vision outlined by the Council of Europe (2020).

Language-learning environments have evolved to take care of students as social and collaborative agents, thus promoting agency in language use and learning (North et al., 2022). Scholars have shown how social media can enhance learner agency (Hafner & Miller, 2021; Reinhardt, 2019; Wang & Jiang, 2023). Students leverage social media platforms to practise their writing skills, seek feedback from peers and independently explore language resources. This heightened sense of control over their learning, whereby students make decisions across all aspects of their pedagogical journey (Holec, 1981), contributes to a profound sense of ownership and responsibility. This amplifies motivation and generates a strong feeling of personal accountability among learners (Kukulska-Hulme et al., 2022; Larsen-Freeman et al., 2021). Furthermore, social media can motivate language students wishing to enhance their linguistic skills (John & Yunus, 2021; Wiemeyer & Zeaiter, 2015). Motivation in language learning is driven by external factors, such as rewards and punishments,

and by internal needs, beliefs, interests and desires (Dörnyei, 2020). The motivational aspect is crucial in determining why individuals decide to participate in language-learning activities, how long they continue doing so and the effort they invest in said activities (Dörnyei & Ushioda, 2021). To maintain and nurture student motivation, it is essential to ensure that learning remains stimulating and enjoyable, which requires safeguarding students' self-esteem and enhancing their self-confidence (Dörnyei, 2001).

WeChat is a popular social networking platform that was launched in 2011. It has gained considerable attention around the world thanks to its features that support multimodal communication. WeChat allows users to easily connect with family and friends all over world. The increasing digitisation and interactivity of teaching Chinese as a foreign language (TCFL) have led to a growing interest in exploring the potential of WeChat for this type of teaching. Many studies have been conducted in this field, including work on learner engagement and authentic-language use (Jiang & Li, 2018; Tong et al., 2022), the pedagogical benefits of virtual exchanges (Luo & Yang, 2022), telecollaborative learning (Luo & Gui, 2021), TCFL instruction in study abroad programmes (Chen & Zhan, 2020), vocabulary acqui-sition (Pamintuan et al., 2018; Yang & Yin, 2018), digital affordances (Jin, 2018) and mobile-assisted oral feedback (Xu & Peng, 2017). Some scholars have also investi-gated the affordances of WeChat for facilitating teaching (Jin, 2018).

Ji and He (2020) explored the role of WeChat as an online community of practice for TCFL, highlighting community building and learner participation. They found that WeChat served as an effective platform for TCFL and that students' active participation and engagement in the online community of practice were crucial for achieving successful learning outcomes. Their study focused on Chinese language learners' participation in an online WeChat community. Still, a comprehensive analysis of the available research on the use of WeChat in TCFL is needed. This systematic review aims to identify and analyse empirical studies on this topic in order to evaluate the quality and relevance of their evidence, exploring the benefits, challenges and implications of using WeChat for TCFL. To achieve these goals, it asks the following research questions (RQs):

RQ1: How has WeChat been used for TCFL?

RQ2: What research methods were adopted in the reviewed articles?

RQ3: What are the benefits and challenges of using WeChat for TCFL?

RQ4: What are the implications of using WeChat for TCFL?

2 Methodology

Building on the above research questions, this section details the keywords, databases, inclusion criteria and the process of identifying relevant journal articles. The section also elaborates on the process of data coding and analysis employed to derive meaningful conclusions from the selected studies.

2.1 Keywords and inclusion criteria

To locate pertinent journal articles, a keyword search was performed. This entailed exploring online databases of academic publications with the following keywords: "WeChat Chinese language", "WeChat Mandarin", "WeChat *Hanyu*" and "WeChat *Putonghua*". These keywords were selected due to their direct relevance to TCFL, which constitutes the central focus of this study. The search results yielded articles that included the specified keywords in their titles, abstracts or full texts. This approach provided valuable insights into the primary themes of the study, which ensured a refined and targeted investigation.

One of the key inclusion criteria was that the journal articles should be published in English. This criterion aimed to broaden the search by transcending geographical and linguistic boundaries, given the current global academic prominence of English. It also aimed to minimise the challenges associated with translating, understanding and analysing non-English publications. This decision was also shaped by practical considerations, including limited access to Chinese articles in the author's university library and personal resources.

The present study focused exclusively on empirical journal articles due to their capacity to provide comprehensive and up-to-date coverage of a subject. The author conducted a thorough search of the Scopus and Web of Science databases, combining their strengths to increase the scope and depth of the literature search. This approach was in keeping with the research objectives and enriched the study's findings by ensuring a comprehensive identification of relevant articles. In summary, the following inclusion criteria were used to screen the articles identified through the search:

– Journal articles
– Investigations of WeChat use for TCFL
– Reports of empirical data
– English publications

Table 1: Journal article selection process in Stage 1 (S1).

Phases	Activities	Keywords	Number of articles found
Phase 1 (S1)	Search and identification	WeChat Chinese	831
Phase 2 (S1)	Search	WeChat Chinese language WeChat Mandarin WeChat *Hanyu* WeChat *Putonghua*	112 (WeChat Chinese language = 94, WeChat Mandarin = 18, WeChat *Hanyu* = 0, WeChat *Putonghua* = 0)
Phase 3 (S1)	Identification		11 (WeChat Chinese language = 10, WeChat Mandarin = 1)
Phase 4 (S1)	Checking for duplicates		10
Total			10

Blank cells indicate that the element was not applicable.

2.2 Identification of journal articles

The timeframe for the literature search spanned from the initial launch of WeChat as a social media tool in 2011 to February 2023. The latter date was when data collection for this study was completed; thus, it serves as the most recent point of reference for this investigation. The journal articles were identified in three stages. In Stage 1, Scopus provided high-quality peer-reviewed articles. Table 1 shows the different search phases of this stage and their results.

– In the first phase of Stage 1, the keyword "WeChat Chinese" produced 831 results. However, when it became apparent that the first 10 articles on this list were irrelevant, the author reasonably assumed that a significant portion of the sample would be unrelated to TCFL. As a result, the second phase of Stage 1 was carried out with the keywords "WeChat Chinese language", "WeChat Mandarin", "WeChat *Hanyu*" and "WeChat *Putonghua*". A total of 112 results were found in the second phase, including 94 with the keyword "WeChat Chinese language" and 18 with "WeChat Mandarin". However, no journal articles were identified using "WeChat *Hanyu*" and "WeChat *Putonghua*".

– Moving to the third phase of Stage 1, unrelated articles were removed from the two lists above. The selection process was mainly based on the topics and abstracts of the articles identified in the second phase. Ten articles obtained with the keyword "WeChat Chinese language" were kept, while only one article was kept from the list based on "WeChat Mandarin". The fourth phase of this stage involved checking for

Table 2: Journal article selection process in Stage 2 (S2).

Phases	Activities	Keywords	Number of articles found
Phase 1 (S2)	Search	WeChat Chinese language WeChat Mandarin WeChat *Hanyu* WeChat *Putonghua*	99 (WeChat Chinese language = 84, WeChat Mandarin = 11, WeChat *Hanyu* = 4, WeChat *Putonghua* = 0)
Phase 2 (S2)	Identification		10 (WeChat Chinese language = 9, WeChat Mandarin = 1)
Phase 3 (S2)	Checking for duplicates		9
Total			9

Blank cells indicate that the element was not applicable.

any possible duplicates in the two lists. The article located with the keyword "WeChat Mandarin" appeared on the "WeChat Chinese language" list. Therefore, in the end, only 10 articles remained for further analysis.

In Stage 2, the search was conducted using the Web of Science database. It consisted of four phases, as outlined in Table 2. In Phase 1, all four keywords were employed. This search yielded 99 results. Specifically, 84 results were generated with the keyword "WeChat Chinese language", while 11 were identified with "WeChat Mandarin". Only four results were found with "WeChat *Hanyu*", and no results were located with "WeChat *Putonghua*". The second phase involved removing non-relevant articles. After reviewing the topics and abstracts, nine relevant articles were kept for further consideration from the list obtained with the keyword "WeChat Chinese language", while one was chosen from the "WeChat Mandarin" list. Phase 3 (S2) entailed checking for any potential duplicates. The article in the "WeChat Mandarin" list also appeared on the other list. As a result, only the nine articles from the list identified with the keyword "WeChat Chinese language" were retained for further analysis.

As illustrated in Table 3, the first phase of Stage 3 involved thoroughly checking for duplicates in the lists generated during Stages 1 and 2. Seven articles appeared in both stages. However, three articles were retrieved only in Stage 1, which used the Scopus database, while two articles were found only in Stage 2, which employed the Web of Science database. As a result, 12 journal articles were identified in total.

In Phase 2 of Stage 3, a backward citation search was conducted to identify all cited references in the individual articles (Brown University Library, 2021). This approach ensured the inclusion of the widest possible range of sources. During this

Table 3: Journal article selection process in Stage 3 (S3).

Phases	Activities	Keywords	Number of articles found
Phase 1 (S3)	Checking for duplicates		12 (7 duplicates, 5 individual articles)
Phase 2 (S3)	Backward citation search	WeChat Chinese language WeChat Mandarin WeChat *Hanyu* WeChat *Putonghua*	1
Total			13

Blank cells indicate that the element was not applicable.

phase, one additional relevant article was discovered, which brought the total number of articles for the final phase of analysis to 13. A concise summary of the characteristics of these 13 journal articles is provided in the Appendix.

2.3 Data coding and analysis

The process of data coding and analysis comprised two stages – a preliminary one and a final one. In Stage 1, two articles were selected from the sample to verify the reliability and validity of the coding scheme. In Stage 2, the remaining 11 articles underwent coding and analysis. The final dataset for presentation and discussion was derived from these 13 articles. The data-coding and analysis process enabled the identification of patterns and relationships among the articles through thematic categorisation, which led to a conceptual understanding of the issues. Table 4 provides an overview of the two stages in question, and it outlines the activities conducted and the number of articles included at each stage.

Table 4: The summary of the two stages of the data coding and analysis.

Stages	Activities	Number of reviewed articles
Stage 1: preliminary coding and analysis	Coding two articles Categorising the findings into themes Analysing the coded data Finalising the codes used in Stage 1	2
Stage 2: final coding and analysis	Coding the other 11 articles Categorising the findings into themes	11
	Thematically presenting and discussing the data of the 13 articles	13

Table 5: The coding framework for reviewing research on the use of WeChat in TCFL.

Research questions	Main categories	Sub-categories	
RQ1	Research context	–	Publication status
		–	Research participants
RQ2	Research methodologies	–	Research methods
		–	Data collection tools
RQ3	Benefits and challenges	–	Language learning
		–	Social interactions
		–	Learner agency
		–	Learner motivation
RQ4	Implications	–	Technological integration
		–	Social contexts

Microsoft Excel 2016 was used to store and generate the data. As indicated in Table 5, the data was organised into four main categories: research context, research methodologies, benefits and challenges, and implications and areas for future research. Each of these four categories included several sub-categories.

The first category – research context – was divided into two sub-categories: publication status, including year of publication and publishing journal, and research participants, which focused on the individuals involved in the reviewed studies. The second category – research methodologies – was also divided into two sub-categories: the methods used in the reviewed articles and data collection tools, which included the specific tools or instruments used to collect the data in the reviewed studies. The third category – benefits and challenges – was organised into four sub-categories: language learning, social interactions, learner agency and learner motivation. The fourth category – implications – was broken down into two sub-categories: technological integration and social contexts.

Overall, the main categories and their sub-categories demonstrate how the data was organised to align meaningfully with the study's research questions. This allowed the author to examine the relationships between the categories, view the data as a whole and develop a conceptual understanding of the issues (Hennink et al., 2011, p. 245).

3 Results and discussion

This section starts by providing information on the publication status of the reviewed articles, the locations of the research projects discussed in them, the participants

involved and the research methods used. It also explores several other themes, including language learning, social interactions, learning agency and learner motivation.

3.1 Publication status

The initial step to understand the academic significance and breadth of the reviewed articles was an examination of their publication status. As shown in Figure 1, the annual publication status of the 13 articles showed fluctuations. In 2016 and 2017, two articles were published. The number increased to five in 2018 but dropped to zero in 2019. In 2020, only one article was published, followed by another one in 2021. In 2022, the number of published articles increased to two. Overall, then, there were noticeable variations in the number of articles published each year, with a relatively significant increase in 2018.

Figure 2 provides an overview of the distribution of the 13 reviewed articles according to their publishing journals. *Computer Assisted Language Learning* had the highest percentage, accounting for approximately 30 % of the sample. The *Journal of Technology and Chinese Language Teaching* published 22 % of the articles. Hence, these two journals issued more than half of the articles on the use of WeChat for TCFL as identified in this review. The remaining journals published one article each, and they accounted for approximately 8 % of the sample.

Overall, the publication landscape suggested that interest in the use of WeChat for TCFL was not limited to a single publisher. Rather, this topic was of interest to a broad range of audiences, from specialised journals focusing on Chinese language education to more general publications dealing with computer-assisted language learning or second and foreign language education. Still, the diversity of publishing
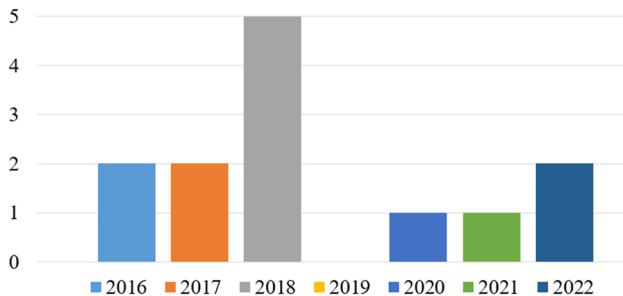

Figure 1: The annual publication of the 13 reviewed articles.

Figure 2 data labels:
- Journal of Technology and Chinese Language Teaching (3) 22%
- Asian-Pacific Journal of Second and Foreign Language Education (1) 8%
- JALT CALL Journal (1) 8%
- TESOL International Journal (1) 8%
- Global Chinese (1) 8%
- ReCALL (1) 8%
- Computer Assisted Language Learning (4) 30%
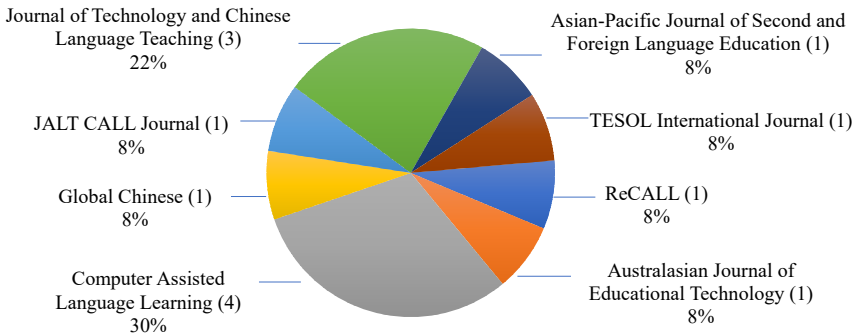- Australasian Journal of Educational Technology (1) 8%

Figure 2: Publishers and their associated publications.

journals may limit the readership of these articles to certain fields and hinder their visibility and impact outside of those fields.

3.2 Participants involved

Exploring the characteristics of the participants of the studies discussed in the reviewed articles provided insights into the multifaceted and dynamic engagement of this literature with the phenomenon under consideration. Participant numbers varied widely, from as few as two university-level Chinese language learners (Jin, 2018) to as many as 81 beginner-level students of Chinese (Tong et al., 2022), as shown in Figure 3. Participants came from different linguistic backgrounds, and they included learners of Chinese, Chinese-speaking peers, and students of English. The diversity of participants was valuable for understanding the nuances of Chinese language learning in different contexts, even though the research locations were primarily situated in China, the United States and Australia.

As shown in Table 6, the reviewed articles covered a wide range of language proficiency levels, from beginners to advanced mid- or high-level learners. The mix of participants in Chen and Zhan (2020), Jin (2018), Luo and Gui (2021), Luo and Yang (2016, 2022), Pamintuan et al. (2018), and Yang and Yin (2018) provided an interesting contrast among learners at different levels of language competence. These mixed-level groups demonstrated how language students with dissimilar linguistic skills can be integrated when the learning contexts and the learners' cultural and linguistic backgrounds are conducive to such integration. In the reviewed articles, this linguistic diversity demonstrated the applicability of WeChat to TCFL across proficiency levels and indicated the potential for the sustainable development of Chinese language programmes. The diversity of language proficiency levels in the articles also
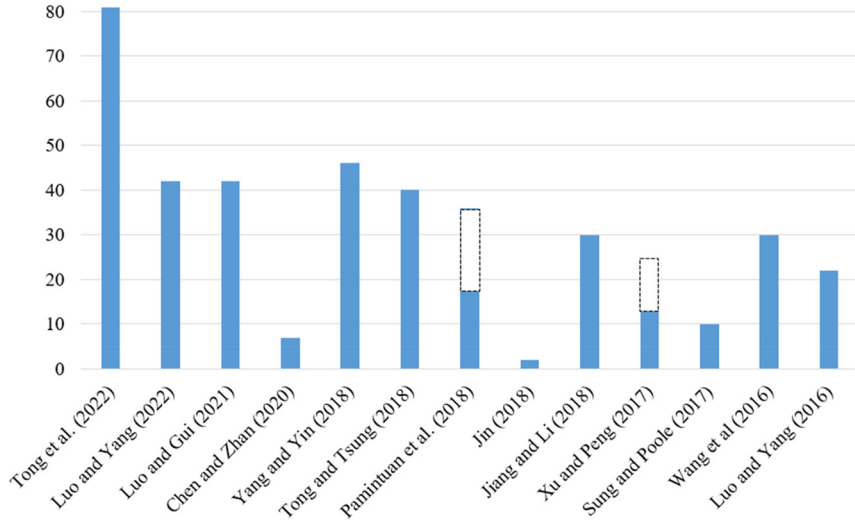
Figure 3: The number of participants in the reviewed articles. The areas with dashed lines indicate that the numbers of native Chinese speakers involved in the two studies were unclear.

highlighted the importance of considering students' differing linguistic skills when designing language-learning materials and conducting research.

3.3 Research methodologies

The 13 reviewed articles employed a variety of research methods to explore different aspects of the use of WeChat for TCFL. For instance, Tong et al. (2022) utilised a case study design to explore student engagement and authentic language, while Chen and Zhan (2020) adopted a similar approach to investigate the use of the WeChat recording tool for learning Chinese. Tong and Tsung (2018) also employed a case study design to study L2 Chinese students' perceptions of using WeChat for Chinese learning in a one-year study abroad programme. Luo and Yang (2022) adopted a mixed methods design to examine the effects of synchronous online language exchange on Chinese learners' linguistic and intercultural competence. Similarly, Jiang and Li's (2018) study employed a mixed methods approach to link up learners of Chinese with native speakers through WeChat in an Australian tertiary CFL curriculum. Xu and Peng's (2017) study also used a mixed methods design to investigate the effectiveness of using WeChat for language learning.

Table 6: Learners' language proficiency levels in the reviewed articles.

	Reviewed articles	Participants' language levels
1	Tong et al. (2022)	– A beginners' course
2	Luo and Yang (2022)	– Elementary students (n = 13) – Intermediate students (n = 7) – Chinese students of English (n = 21)
3	Luo and Gui (2021)	– Elementary students (n = 13) – Intermediate students (n = 7) – Chinese students of English (n = 21)
4	Chen and Zhan (2020)	– Mandarin heritage learners with advanced proficiency (n = 2) – Intermediate learners (n = 3)
5	Yang and Yin (2018)	– University students with less than one year of formal Chinese instruction (n = 14) – University students with 1–2 years of formal Chinese instruction (n = 16) – University students with more than three years of formal Chinese instruction (n = 16)
6	Tong and Tsung (2018)	– One beginner-intermediate class – One intermediate class – One advanced class
7	Pamintuan et al. (2018)	– Chinese as a foreign language (CFL) learners who had passed Chinese Proficiency Test (HSK) 5 and HSK Speaking Test (HSKK) beginner
8	Jin (2018)	– Intermediate students (n = 3) – Advanced students (n = 4)
9	Jiang and Li (2018)	– Learners of Chinese who had studied Chinese for 1.5 years (n = 15) – A group of Chinese native speakers on campus
10	Xu and Peng (2017)	– Advanced mid-level/advanced high-level class
11	Sung and Poole (2017)	– Students of Chinese from a first-year Chinese course (n = 5) – Chinese students of English
12	Wang et al. (2016)	– Learners of Chinese from a third-year Mandarin class (n = 15) – Chinese students of English (n = 15)
13	Luo and Yang (2016)	– First-year students (n = 13) – Second-year students (n = 9)

Several other research methods were also employed in the reviewed articles. For example, Sung and Poole's (2017) study adopted an exploratory design to investigate the use of a smartphone social networking application for language learning. Wang et al.'s (2016) research also chose an exploratory design to facilitate online language exchanges. Luo and Yang (2016) employed the same kind of design to verify the effectiveness of applying WeChat to Chinese language classrooms. Some of the articles in the sample relied on quasi-experimental or qualitative research designs. For example, Pamintuan et al. (2018) adopted a quasi-experimental design to investigate

the use of WeChat for CFL learners' vocabulary acquisition, while Jin (2018) employed a qualitative design to explore what language development affordances WeChat provided to students of Chinese in a study abroad programme. Finally, Yang and Yin (2018) chose a within-subjects research design to expose all participants to learning colloquialisms on mobile phones with WeChat and printed materials.

To investigate various aspects of Chinese language learning through WeChat, the authors of the reviewed articles employed an array of data collection tools, which encompassed both qualitative and quantitative methods, such as tests, surveys, interviews, observation checklists, WeChat communication records, and reflection journals. These varied tools allowed the gathering of extensive and diverse data from multiple sources, which offered a holistic perspective on language learning. For instance, Tong et al. (2022) used WeChat chat histories and student surveys to collect data on the use of the app for Chinese language learning. Luo and Yang (2022) collected data from various sources, including transcripts of cultural discussions in WeChat groups, Skype conversations, reflection journals, end-of-programme interviews, and end-of-semester questionnaires to examine the impact of WeChat on students' cultural learning. Similarly, Luo and Gui (2021) collected naturally occurring interaction data, learners' reflection journals, informal interviews, end-of-programme interviews, students' questionnaire responses, and teacher–researcher reflective journals to assess the effectiveness of WeChat in promoting language learning.

Chen and Zhan (2020) employed a variety of methods, including online surveys, email questions, learner recordings, instructor feedback recordings, reflections, lesson plans and class notes. Tong and Tsung (2018) used interviews and open-ended survey questions to verify the effectiveness of WeChat in enhancing Chinese language proficiency. Pamintuan et al. (2018) utilised profiling surveys and observation checklists to evaluate WeChat-based language instruction. Other studies, such as Jiang and Li (2018), Jin (2018), Sung and Poole (2017), Wang et al. (2016) and Xu and Peng (2017) employed a combination of surveys, observations and interviews to explore the impact of WeChat on various aspects of language learning, including interactional and communicative competence, writing proficiency, and task-based learning. In Yang and Yin's study (2018), a vocabulary-knowledge scale was used to create pre-, post-, and delayed post-tests in order to investigate students' retention of colloquialisms. The questionnaire for this study consisted of 11 Likert items that gauged attitudes towards WeChat-based vocabulary learning, along with three open-ended questions aimed at uncovering the advantages and disadvantages of the app's use as well as the recommendations for its use.

3.4 Language learning

In the reviewed articles, the use of WeChat for language learning emerged as a significant topic. WeChat offered a wide array of features, including structured language tasks, support for language exchange and assistance with classroom instruction. The platform's capabilities extended to individual and pair recording, homework management and instructor feedback, all of which played a significant role in improving the quality of language-learning experiences.

When it came to enhancing language proficiency, some of the articles underscored the positive impact of WeChat on learners' linguistic skills. For example, Luo and Yang (2016) reported that their WeChat project was instrumental in boosting students' Chinese language abilities across various dimensions, including vocabulary, character recognition, grammar, speaking, listening, reading and writing. Pamintuan et al. (2018) drew attention to a notable difference in vocabulary-acquisition performance between their study's experimental group, which used WeChat and the control group. Similarly, the comparison of WeChat and printed materials made by Yang and Yin (2018) demonstrated that distributing vocabulary-learning materials through WeChat messages aligned with the participants' preference for using mobile devices, which enhanced the potential for incidental vocabulary learning. However, this approach predominantly facilitated learners' short-term retention of words. Collectively, these findings confirm the assertions of Barrot (2022), Muftah (2023) and Sun and Asmawi (2023) regarding the positive impact of social media on language learning and teaching.

In the reviewed articles, the effects of WeChat went beyond linguistic growth. They also led to a deep appreciation for Chinese cultural nuances. Sung and Poole's (2017) study investigated the app's role in weekly language learning, and it revealed that participants not only acquired language skills but also deepened their cultural knowledge through interactions with peers. This dimension of the impact of WeChat on learning Chinese involved learners' development of a comprehensive understanding of the cultural context in conjunction with the language's usage and representation. The students in this study valued the cultural learning aspect, as it provided them with opportunities to explore China and its culture beyond the confines of the classroom. Engaging in culture-related discussions using WeChat facilitated a deep sense of cultural immersion (Luo & Yang, 2016, 2022) and garnered especially positive evaluations (Luo & Gui, 2021). The integration of WeChat into the learning process enabled learners to gain insights into different cultural perspectives. In essence, the influence of the app extended beyond language acquisition; it played a crucial role in enhancing students' cultural competence and enriched their overall experiences of learning Chinese.

3.5 Social interactions

In addition to fostering linguistic growth, WeChat played a vital role in shaping the social interactions linked to language learning. The connection between linguistic development and WeChat-based social interactions underscored the app's holistic impact on the learning process. WeChat proved to be a versatile platform that facilitated various aspects of social engagement in different educational settings. Luo and Yang (2016) discussed the app's contributions to classroom instruction, including socialisation and information sharing. Xu and Peng (2017) examined the role of WeChat in facilitating class collaboration, while Luo and Yang (2022) emphasised its role in creating social communities among learners of Chinese, which generated cross-cultural discussions.

WeChat served as a platform for instant interactions between teachers and students in informal settings (Tong et al., 2022). Chen and Zhan (2020) recognised its positive impact on teacher–learner language contact. Furthermore, Xu and Peng (2017) showed the app's effectiveness in providing feedback on oral production, which benefited students in terms of pronunciation, grammar, vocabulary and content improvement. Yang and Yin's (2018) study described WeChat as a rapid feedback mechanism for language learners, compared to traditional printed materials. WeChat also bridged the gap between learners of Chinese and Chinese international students, thus addressing limitations in classroom teaching, as noted by Jiang and Li (2018).

WeChat facilitated students' real-life conversations in environments where authentic language was used. For example, Jin (2018) revealed how the app efficiently disseminated programme updates and offered opportunities for informal interactions with native speakers, thereby fostering authentic communication. Tong et al.'s (2022) study demonstrated that the use of WeChat in a class group encouraged authentic-language use and helped achieve authentic-language learning goals, while Sung and Poole (2017) drew attention to structured language tasks and authentic communication in Chinese–English tandem projects. Jiang and Li (2018), Luo and Gui (2021), Luo and Yang (2022) and Wang et al. (2016) also provided learners of Chinese with opportunities to interact with native Chinese speakers, allowing them to immerse themselves in authentic learning environments. Opportunities to use the language beyond the classroom were instrumental in CFL learners' development. The advantages of WeChat-based authentic learning align with the objectives of the *Common European framework of reference for languages,* which emphasises the practical application of language learning to real-life situations (Council of Europe, 2019, 2020).

Taken together, the reviewed articles underlined the versatility of WeChat in supporting communication and collaboration between students, teachers and native speakers. When the interplay between the social context of language learning and technology was highlighted, the emphasis placed on the former confirmed Yeh and Swinehart's (2022) results concerning social media's role in promoting interactions through target-language online communities. University collaborations, diverse linguistic groups and teacher–student engagement all contributed to the learning process, which was catalysed by the prominence of WeChat in social interactivity. This learning environment strengthened bonds and encouraged interactions, reinforcing the idea that students played an active part in co-creating learning materials, as noted by Kukulska-Hulme et al. (2021). The role of WeChat in enriching the social context proved valuable regardless of the implemented forms of collaboration. Learners benefited from interactions that bridged knowledge gaps and increased their competence. WeChat-mediated interactions, which recurred as learning activities across the reviewed articles, underscored the impact of the social context on student learning (Vygotsky, 1986; Wells, 2000); they also pushed forward learning in a dynamic environment (North et al., 2022).

3.6 Empowering learner agency

Regarding language learning and social interactions, the concept of learner agency highlights students' role in shaping purposeful linguistic engagements within their contexts of reference. This section delves into the rationale for promoting learner agency as evidenced by the reviewed articles, thus shedding light on how WeChat can contribute to empowering students in their language-learning journey.

Chen and Zhan (2020) found that WeChat recordings for linguistic tasks provided opportunities for increased oral and aural practice, which allowed learners to articulate responses spontaneously. Tong and Tsung (2018) explored Australian university students' perceptions of using WeChat for Chinese language learning in a study abroad programme and revealed facets of learner agency such as language choice and sustained platform use. According to Tong et al. (2022), learners' engagement was positively associated with their sense of control over their pedagogical paths. Similarly, Jiang and Li (2018) argued that WeChat tasks offered a high degree of agency that enabled students to determine when and where they completed tasks, what questions they asked, and how often they practised before posting their voice messages. This elevated agency in language learning facilitated personalised task execution, which fostered enhanced control of and engagement with the learning process.

The adaptability and convenience of WeChat, which was highlighted by Luo and Yang (2016), extended learning beyond the confines of the classroom, thus supporting independent learning practices. According to Yang and Yin (2018), students' utilisation of the app's translation function facilitated rapid communication and served as a valuable tool for addressing queries that arose during self-learning. This reinforced the role of WeChat in nurturing independent and resourceful learning practices. Exchange programmes (Luo & Gui, 2021; Luo & Yang, 2022) were also found to be effective in boosting student engagement and improving language skills.

These findings on the benefits of WeChat use resonate with Reinhardt's (2019) argument that the conscious use of social media can promote learner agency in various ways. Students can exercise control over their learning experiences (Larsen-Freeman et al., 2021) by selecting among a range of learning methods according to their preferences and needs. In the reviewed articles, this agency-driven approach nurtured ownership and responsibility for learning (Holec, 1981). This level of ownership drove active engagement and created enthusiasm for the learning process. By providing opportunities for learners to exercise their agency (Wang & Jiang, 2023), WeChat empowered them to pay attention to learning activities and engage with peers and educators. Some of the reviewed articles looked at settings that extended beyond the classroom (Hafner & Miller, 2021). WeChat dismantled spatial and temporal barriers, and it permitted participation in any location and at any time, thus amplifying student responsibility and engagement. The students' considerable strides mirrored their commitment and impetus in the learning journey. Environments that championed agency stimulated students' evolution into responsible language learners (Kukulska-Hulme et al., 2022; North et al., 2022).

3.7 Motivation

Motivation plays a critical role in empowering students to take charge of their educational journey, and it intertwines language learning and social interactions within a dynamic landscape. The use of WeChat notably enhanced students' motivation to learn Chinese. This result echoes the findings of Luo and Yang (2022), according to whom "enhanced motivation in learning Chinese is another frequently discussed benefit, as reflected in the students' highly positive perceptions toward the exchange as a whole" (p. 44).

Learners exhibited favourable attitudes towards WeChat's role in learning, and they emphasised its contribution to feedback (Xu & Peng, 2017). Several reviewed articles delved deeper into the enjoyment that learners derived from using WeChat for language learning. For instance, Luo and Yang (2016) observed that the adoption

of WeChat enhanced student motivation to learn Chinese. The app's influence was underscored by the consensus that it made classes more enjoyable, interesting and exciting. Also, as noted by Jiang and Li (2018), interactions with native speakers on WeChat inspired learners, who expressed satisfaction and enjoyment while engaging in exchanges based on asking and answering questions. These interactions served as catalysts for a strong desire to improve language learning, which ultimately enhanced students' confidence in speaking Chinese.

The active participation of learners and their use of Chinese in WeChat-based class groups (Tong et al., 2022) relates to the theme of student engagement discussed in the previous section. Learners' engagement was positively associated with their sense of control over their pedagogical paths (Tong et al., 2022), which enabled them to determine the factors influencing their participation in learning tasks (Jiang & Li, 2018). Students possessed both the capability and the inclination to extend their control over learning tasks beyond the classroom (Luo & Yang, 2016). Some of them continued to demonstrate their commitment to the learning process, especially when striving for self-learning, which underscored the role of WeChat in nurturing independent and resourceful pedagogical practices (Yang & Yin, 2018).

The reviewed articles emphasised the significant role of motivation in driving student actions. This finding is in keeping with Dörnyei and Ushioda's (2021) assertion regarding the importance of motivation in decisions related to participation in language-learning activities, persistence and effort investment. Overall, the articles suggested that students, fuelled by motivation, actively engaged with their learning contexts. This finding resonates with John and Yunus' (2021) results, which show that integrating social media into the classroom has a positive impact on motivation. Students' active engagement with learning was closely associated with their intrinsic motivation. When using WeChat for pedagogical activities, they expressed inherent satisfaction and enjoyment (Dörnyei, 2020). Furthermore, their increased confidence, particularly in interactive exchanges with native speakers, arose from the social aspects of the learning contexts. Enjoyment, interest and confidence converged as powerful factors that sustained and kindled motivation, as noted by Dörnyei (2001).

4 Implications

This review has shown that WeChat serves as a versatile tool for TCFL, facilitating language learning, promoting social interactions, empowering learner agency and enhancing motivation. Building upon these insights, this section delves into the implications drawn from the comprehensive analysis presented.

WeChat stands out as a multifaceted tool that fosters language learning. Its adaptability and accessibility enable students to integrate it into their learning process, extending their educational journey beyond the traditional classroom. This aligns with the evolving landscape of technology-assisted and student-centred language learning. Consequently, it is crucial to investigate the specific mechanisms by which social media platforms like WeChat can further catalyse and enhance language learning outcomes. A prerequisite for this is that educators must be adept and comfortable with using social media in teaching, and they should possess the skills to guide students effectively. To stay relevant and competent in the digital education landscape, educators need to continually update their teaching methods and leverage emerging technologies. However, this review suggests that the effectiveness of WeChat as a language-learning tool may vary among learners. Therefore, it is crucial for researchers to understand learners' nuanced preferences and to examine the various factors that shape these preferences in language learning. This involves comparing traditional classroom-based methods with those that incorporate social media. Understanding these influencing factors enables educators to better design and implement more effective language-learning strategies, thereby meeting the diverse needs of learners.

This review has convincingly demonstrated how WeChat is pivotal in facilitating social interactions, which are essential for language learning. Fostering a collaborative pedagogical environment requires creating a setting that nurtures a sense of community among students. Such an environment ought to be strategically designed to foster interactions and the sharing of experiences and knowledge, thereby enhancing learning outcomes. Students should be encouraged to leverage the capabilities of social media for accessing authentic-language resources. This encompasses connecting with native speakers, participating in language exchange programmes and engaging in conversations in the target language. Engaging in these practices enables learners to apply their language skills in real-world contexts, thus improving their language proficiency and boosting confidence.

Engaging in social contexts significantly enhances learner agency and boosts motivation, a fact that becomes increasingly relevant in the evolving landscape of technology-assisted language learning. In such environments, students are progressively taking more control of their learning experiences. The interplay between learner agency, motivation and social contexts forms a crucial element of language acquisition. Educators, utilising tools like WeChat, should concentrate on developing materials and activities that cater to the individual preferences and needs of students. This approach is essential for fostering intrinsic motivation and increasing students' interest in learning activities. In addition, educators must strive to create learning environments that empower students to take greater

responsibility in their language learning journey, allowing them to explore and engage with the language in ways that align with their personal learning styles and goals.

5 Conclusions

This review examined 13 journal articles published between 2018 and 2022 in order to offer insights into the use of WeChat for TCFL. It covered publication status, participant demographics, research methods and key thematic areas related to language learning, social interactions, learner agency and motivation. The review's findings highlighted the social nature of language learning through social media, which is in keeping with Vygotsky's (1986) social development theory. This lens revealed WeChat's potential to facilitate authentic-language learning and enable meaningful communication. The app emerged as an empowering tool that can enrich students' educational experiences and interactions with others. This empowerment was particularly evident in the learning that occurred through active engagement in social activities, which promoted student agency. The role of motivation in language learning, which arises from a combination of external and internal factors, was demonstrated. Furthermore, the flexibility of WeChat, with its ability to be used at different times and in different locations and cater to students with dissimilar proficiency levels, showed that the app is a promising tool for TCFL.

Still, it is important to acknowledge several limitations of this review. First, its relatively small sample size may limit the scope of the findings. Second, the concentrated distribution of the studies, primarily conducted in Australia, the United States and China (see Appendix I), may constrain the generalisability of the conclusions to a broader context. Third, despite the comprehensive search strategy involving the Scopus and Web of Science databases, as well as the backward citation search, some relevant data sources may have been overlooked. The exclusion of articles published in Chinese represents the fourth limitation, as their inclusion could have contributed to a more thorough understanding of the use of WeChat for TCFL. Fifth, this review focused on the adoption of WeChat in CFL educational settings. Expanding the analysis to encompass the use of the app for teaching other languages could have enriched the study's perspective. Despite these limitations, this review has widened the horizons of language instruction and learning by providing valuable guidance to educators and researchers interested in exploring the possibilities presented by WeChat and other social media with similar pedagogical affordances in language education.

Appendix I: Summary of the selected journal articles

Authors	Year of publication	Title	Journal	Number of participants	Research site	Course/ programme	Research design	Data collection tools
1 Tong et al.	2022	Student engagement and authentic-language use on WeChat for learning Chinese as a foreign language	*Computer Assisted Language Learning*	81	Australia	CFL course	Case study	– WeChat history – Student survey
2 Luo and Yang	2022	Pedagogical benefits of Chinese-American virtual exchange: A study of student perceptions	*ReCALL*	42	– USA – China	Chinese–American exchange project	Mixed methods	Qualitative data: – WeChat group cultural discussion transcripts – Skype conversations – Reflection journals – End-of-programme interviews Quantitative data: – End-of-semester questionnaires
3 Luo and Gui	2021	Developing an effective Chinese-American tele-collaborative learning program:	*Computer Assisted Language Learning*	42	– USA – China	Chinese–American exchange project	Action research	– Skype conversations – WeChat group discussion transcripts

(continued)

Authors	Year of publication	Title	Journal	Number of participants	Research site	Course/programme	Research design	Data collection tools
		An action research study						– Students' weekly reflection journals – Informal interviews with the students throughout the semester – End-of-programme interviews – Student responses to an end-of-semester questionnaire – The teacher–researcher reflective journal
4	Chen and Zhan	2020	WeChat assisted differentiated Chinese as a foreign language instruction in study abroad: A pilot case study	*Journal of Technology and Chinese Language Teaching*	7 (including 2 instructors)	China	Sheltered content courses in a study abroad programme	Case study	– Online survey – Email questions – Learner recordings of topics

(continued)

Authors	Year of publication	Title	Journal	Number of participants	Research site	Course/programme	Research design	Data collection tools
								– An instructor's recording of feedback – Reflections – Lesson plans – Class notes
5 Yang and Yin	2018	Learning Chinese colloquialisms through mobile technology	*Journal of Technology and Chinese Language Teaching*	46	China	Learning Chinese colloquialisms through WeChat and printed materials	Within-subjects research design	– Pre-test, post-test, and delayed post-test – Attitudinal questionnaire
6 Tong and Tsung	2018	L2 Chinese students' perceptions of using WeChat for Chinese learning: A case study	*Global Chinese*	40	China	Study abroad programme	Case study	– Interviews – Open-ended survey questions
7 Pamintuan et al.	2018	The use of WeChat application on CFL learners' vocabulary acquisition	*TESOL International Journal*	18 (plus Chinese interlocutors)	– The Philippines – China	A 10-day treatment	Quasi-experimental research	– Profiling survey – Pre-test and post-test – Observation checklists
8 Jin	2018	Digital affordances on WeChat: Learning Chinese as a second language	*Computer Assisted Language Learning*	2	China	Summer intensive study abroad programme	Qualitative research	– Students' weekly survey – Researcher's participatory observations

(continued)

	Authors	Year of publication	Title	Journal	Number of participants	Research site	Course/ programme	Research design	Data collection tools
									– Two semi-structured interviews
9	Jiang and Li	2018	Linking up learners of Chinese with native speakers through WeChat in an Australian tertiary CFL curriculum	*Asian-Pacific Journal of Second and Foreign Language Education*	15 (plus Chinese native speakers)	Australia	Second-year spoken Chinese course	Mixed methods	– Questionnaire survey – An interview
10	Xu and Peng	2017	Investigating mobile-assisted oral feedback in teaching Chinese as a second language	*Computer Assisted Language Learning*	13	China	Speaking course	Mixed methods	– Oral feedback – Questionnaires – Interviews
11	Sung and Poole	2017	Investigating the use of a smartphone social networking application on language learning	*The JALT CALL Journal*	10	USA	A tandem language-learning project	Exploratory study	– Survey responses – WeChat records
12	Wang et al.	2016	Exploring the affordances of WeChat for facilitating teaching, social and cognitive presence in semi-synchronous language exchange	*Australasian Journal of Educational Technology*	30	– Australia – China	A language exchange programme	Exploratory study, qualitative approach	– Task designer's reflection journal – Teachers' reflection journals – Student-survey data

(continued)

Authors	Year of publication	Title	Journal	Number of participants	Research site	Course/ programme	Research design	Data collection tools
								– The use of media on WeChat – Transcriptions of corrective feedback – Transcriptions of interactional discourses
13 Luo and Yang	2016	Using WeChat in teaching L2 Chinese: An exploratory study	*Journal of Technology and Chinese Language Teaching*	22	USA	A five-component WeChat project	Exploratory study, mixed methods	– End-of-semester questionnaire – Interviews

References

Barrot, J. S. (2022). Social media as a language learning environment: A systematic review of the literature (2008–2019). *Computer Assisted Language Learning*, *35*(9), 2534–2562.

Brown University Library. (2021, August 25). *Guide to searching: Citation searching*. https://libguides.brown.edu/searching/citation

Chen, L., & Zhan, H. (2020). WeChat assisted differentiated CFL instruction in study abroad: A pilot case study. *Journal of Technology and Chinese Language Teaching*, *11*(2), 64–92.

Council of Europe. (2019). *Recommendation CM/Rec(2019)10 of the Committee of Ministers to member states on developing and promoting digital citizenship education*. Committee of Ministers. https://search.coe.int/cm/Pages/result_details.aspx?ObjectId=090000168098de08

Council of Europe. (2020). *Common European framework of reference for languages: Learning, teaching, assessment – companion volume*. Council of Europe Publishing.

Dörnyei, Z. (2001). *Motivational strategies in the language classroom*. Cambridge University Press.

Dörnyei, Z. (2020). *Innovations and challenges in language learning motivation*. Routledge.

Dörnyei, Z., & Ushioda, E. (2021). *Teaching and researching motivation* (3rd ed.). Routledge.

Hafner, C. A., & Miller, L. (2021). Learning, working and playing online: University students' practices when collaborating in social media. In C. Fuchs, M. Hauck & M. Dooly (Eds.), *Language education in digital spaces: Perspectives on autonomy and interaction. Educational linguistics* (Vol. 52, pp. 17–37). Springer.

Hennink, M., Hutter, I., & Bailey, A. (2011). *Qualitative research methods*. SAGE.

Holec, H. (1981). *Autonomy and foreign language learning*. Pergamon.

Jiang, W., & Li, W. (2018). Linking up learners of Chinese with native speakers through WeChat in an Australian tertiary CFL curriculum. *Asian-Pacific Journal of Second and Foreign Language Education*, *3*(1), 1–16.

Ji, J., & He, S. (2020). Chinese language learners' participation in a WeChat online community of practice. *Journal of Technology and Chinese Language Teaching*, *11*(2), 93–112.

Jin, L. (2018). Digital affordances on WeChat: Learning Chinese as a second language. *Computer Assisted Language Learning*, *31*(1–2), 27–52.

John, E., & Yunus, M. M. (2021). A systematic review of social media integration to teach speaking. *Sustainability*, *13*(16), 16.

Kukulska-Hulme, A., Bossu, C., Charitonos, K., Coughlan, T., Ferguson, R., FitzGerald, E., Gaved, M., Guitert, M., Herodotou, C., Maina, M., Prieto-Blázquez, J., Rienties, B., Sangrà, A., Sargent, J., Scanlon, E., & Whitelock, D. (2022). *Innovating pedagogy 2022: Open university innovation report 10*. The Open University.

Kukulska-Hulme, A., Bossu, C., Coughlan, T., Ferguson, R., FitzGerald, E., Gaved, M., Herodotou, C., Rienties, B., Sargent, J., Scanlon, E., Tang, J., Wang, Q., Whitelock, D., & Zhang, S. (2021). *Innovating pedagogy 2021: Open university innovation report 9*. The Open University.

Larsen-Freeman, D., Driver, P., Gao, X., & Mercer, S. (2021). *Learner agency: Maximizing learner potential*. Oxford University Press.

Luo, H., & Gui, M. (2021). Developing an effective Chinese-American telecollaborative learning program: An action research study. *Computer Assisted Language Learning*, *34*(5–6), 609–636.

Luo, H., & Yang, C. (2016). Using WeChat in teaching L2 Chinese: An exploratory study. *Journal of Technology and Chinese Language Teaching*, *7*(2), 82–96.

Luo, H., & Yang, C. (2022). Pedagogical benefits of Chinese-American virtual exchange: A study of student perceptions. *ReCALL*, *34*(1), 37–50.

Meikle, G. (2016). *Social media: Communication, sharing and visibility*. Routledge.

Muftah, M. (2023). Impact of social media on learning English language during the COVID-19 pandemic. *PSU Research Review*. https://doi.org/10.1108/PRR-10-2021-0060

North, B., Piccardo, E., Goodier, T., Fasoglio, D., Margonis-Pasinetti, R. & Rüschoff, B. (Eds.), (2022). *Enriching 21st century language education: The CEFR companion volume in practice*. Council of Europe Publishing.

Pamintuan, C. F., Mallari, D. G., Garcia, N. T., Galang, J. P., & Buduan, R. M. B. (2018). The use of WeChat application on CFL learners' vocabulary acquisition. *TESOL International Journal*, *13*(4), 26–38.

Reinhardt, J. (2019). Social media in second and foreign language teaching and learning: Blogs, wikis, and social networking. *Language Teaching*, *52*(1), 1–39.

Sun, L., & Asmawi, A. (2023). The effect of WeChat-based instruction on Chinese EFL undergraduates' business English writing performance. *International Journal of Instruction*, *16*(1), 43–60.

Sung, K.-Y., & Poole, F. (2017). Investigating the use of a smartphone social networking application on language learning. *The JALT CALL Journal*, *13*(2), 97–115.

Tong, P., & Tsung, L. (2018). L2 Chinese students' perceptions of using WeChat for Chinese learning: A case study. *Global Chinese*, *4*(2), 361–381.

Tong, P., Yin, Z., & Tsung, L. (2022). Student engagement and authentic language use on WeChat for learning Chinese as a foreign language. *Computer Assisted Language Learning*. https://doi.org/10.1080/09588221.2022.2052906

Vygotsky, L. S. (1986). In A. Kozulin (Ed.), *Thought and language*. MIT Press.

Wang, Y., Fang, W.-C., Han, J., & Chen, N.-S. (2016). Exploring the affordances of WeChat for facilitating teaching, social and cognitive presence in semi-synchronous language exchange. *Australasian Journal of Educational Technology*, *32*(4), 18–37.

Wang, W., & Jiang, L. (2023). Writing on WeChat moments: Impact on writing performance and learner autonomy. *Computer Assisted Language Learning*, *36*(7), 1236–1264.

Wells, G. (2000). Dialogic inquiry in education: Building on the legacy of Vygotsky. In C. D. Lee & P. Smagorinsky (Eds), *Vygotskian perspectives on literacy research: Constructing meaning through collaborative inquiry* (pp. 51–85). Cambridge University Press.

Wiemeyer, L., & Zeaiter, S. (2015). Social media in EFL teaching: Promoting (oral) communication skills in complex competency tasks. *Dutch Journal of Applied Linguistics*, *4*(2), 193–211.

Xu, Q., & Peng, H. (2017). Investigating mobile-assisted oral feedback in teaching Chinese as a second language. *Computer Assisted Language Learning*, *30*(3–4), 173–182.

Yang, J., & Yin, C. (2018). Learning Chinese colloquialisms through mobile technology. *Journal of Technology and Chinese Language Teaching*, *9*(1), 35–47.

Yeh, E., & Swinehart, N. (2022). Social media literacy in L2 environments: Navigating anonymous user-generated content. *Computer Assisted Language Learning*, *35*(8), 1731–1753.

Bionote

Weiming Liu
The School of Applied Language and Intercultural Studies, Dublin City University, Dublin, Ireland
weiming.liu@dcu.ie
https://orcid.org/0000-0002-2468-6911

Dr Weiming Liu is currently an Assistant Professor in the School of Applied Language and Intercultural Studies at Dublin City University, Ireland. His academic interests centre on language teacher education and foreign language teaching and learning, with a particular focus on the intricacies of language pedagogy within the realm of teaching Chinese as a foreign language.