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SWOT Analysis of AI Implementation in International Chinese Language Teaching: Teachers' Perspectives

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Abstract

Artificial intelligence (AI) is being used in every sector of society, including education. There is a surge in learning Chinese among foreign learners. However, due to the complex features of the Chinese language, international Chinese language teachers are facing difficulties in terms of teaching strategies and learning outcomes. In such a context, the study intends to identify the strengths, weaknesses, opportunities, and threats associated with AI integration in Chinese language teaching and to examine the perceptions of teachers about this AI implementation in Chinese language teaching from their personal experiences. A qualitative research design using semi-structured interviews has been carried out on 15 Chinese language teachers. Purposive and snowball sampling has been employed. The multi-dimensional findings of the study have been explained and classified under 'Strengths', 'Weaknesses', 'Opportunities', 'Threats', 'Perceived Utility', and 'Perceived Ease of Use'. The insights from the study will help to develop AI-mediated technologies for foreign language learning and guide the teachers to implement them in the best possible way to get maximum learning outcomes.

Keywords: Ai Technology, Perceived Utility, International Chinese Language Teaching, SWOT Analysis

Introduction

Background of the Study

In the past 20 years, internationally, the Chinese language has become a more widely taught foreign or second language, inside China as well as outside of it. Speaking Chinese as a first or additional language in both Chinese-speaking and non-Chinese-speaking regions, or as a lingua franca, the Chinese language family has the greatest number of speakers worldwide. There are tens of millions of Chinese language learners worldwide, in addition to more than one billion native speakers (Duff & Li, 2013; Lewis et al., 2015). There are a range of different

varieties of Chinese languages, which are generally classified into seven dialects. Among these, Mandarin is the most widely spoken. Teaching Chinese to international students is a marathon task because of the complex nature of the language (Gong et al., 2020). Firstly, it is a tonal language with four primary tones. It is a logographic writing system that encodes lexical morphemes rather than specific phonemes. Then there are strokes, which are the fundamental building blocks of Chinese characters, classified as integral and compound characters. Character recognition, word segmentation, and lexical access are important skills for Chinese language learners to have, especially while learning to read and write. Word arrangement and functional words serve as representations of syntactic linkages in spoken and contemporary Chinese. Therefore, to help students acquire Chinese characters, grammar, and vocabulary as well as make proper and useful use of the language, international Chinese language teachers had to work very hard. Thus, to ease the tasks of the Chinese language teachers, technological advancements like artificial intelligence must be exploited.

For more than 30 years, artificial intelligence (AI) in education has grown to be a recognized area of scientific research. Not only government agencies but also educational institutions are showing a greater interest than ever in comprehending and enhancing the use of AI technology for teaching purposes (Chen et al., 2020). AI-enhanced digital technology has become indispensable in our day-to-day lives because of its immense ability to alter our thoughts, behaviors, and social interactions. The ongoing discoveries and advancements in a variety of fields, especially in computer science, have had a profound impact on how we teach and learn today (Humble & Mozelius, 2019; Botrel et al., 2015). In both K–-12 and university settings, educators and students are using more and more AI-powered applications and solutions, such as intelligent robots and customized learning systems. AI technologies enable personalized learning, catering to individual needs and unique learning styles. Traditional methods struggle to satisfy every learner due to their independence and unique abilities. AI allows instructors to tailor instruction to each individual, resulting in increased motivation, engagement, and independence in the learning process (Ventura, 2017). As artificial intelligence (AI) is used more and more in education, teachers have the opportunity to eliminate time-consuming and repetitive chores and respond to students promptly, which advances the process of adaptive and customized instruction.

Research Objectives

Under this purview, the researcher wishes to apply AI technology to international Chinese language teaching. Before that, this present study intends to study the probable strengths, weaknesses, opportunities, and threats of using AI from the teachers' perspective. Therefore, the chosen objectives of the study are:

1. To identify the strengths, weaknesses, opportunities, and threats associated with AI integration.
2. To examine the perceptions of teachers regarding the implementation of AI in international Chinese language teaching.

Research Questions

The following research questions are strategically constructed to narrow down the broad objectives of the study (Creswell, 2014) and to make decisions in the consecutive steps of the research methodology (Lipowski, 2008):

1. What are the perceived strengths of integrating artificial intelligence into international Chinese language teaching, according to teachers?
2. What are the main challenges and weaknesses encountered by teachers in implementing artificial intelligence in international Chinese language teaching?
3. What opportunities do teachers identify for enhancing the effectiveness of artificial intelligence in international Chinese language teaching?
4. What are the perceived threats and barriers to the successful implementation of artificial intelligence in international Chinese language teaching from the perspective of teachers?
5. What are teachers' perceived utility and ease of use of AI implementation in international Chinese language teaching?

Significance of the Study

Optimizing Resource Allocation: The research will help to understand the strengths and weaknesses of using AI in Chinese language teaching. This will help the concerned people, institutions, and government departments allocate optimally both monetary and non-monetary resources in AI technologies for language learning. It will also identify the areas where AI can be more beneficial in terms of students' learning outcomes, which need more investment.

Promoting Students' Learning Outcomes and Engagement: Previous studies (Nadeem et al., 2023; Topping et al., 2020) found that the integration of technology, such as AI, in language learning, has improved students' engagement and their learning outcomes. By identifying the strengths and opportunities of using AI in international Chinese teaching from this study, teachers can design their instructional activities that will satisfy individual student's needs and choices. This can increase students' learning engagement by enhancing their motivation and retention. This will reflect on their Chinese language acquisition level.

Greater Access to Chinese Language Learning: AI technologies have the potential to democratize the access of diverse learner groups (Bulathwela et al., 2021) to quality language studies internationally. By knowing the opportunities provided by AI in Chinese language teaching, teachers can arrange more inclusive and accessible learning environments for the diverse student population. By integrating AI into Chinese teaching, personalized support can be provided to individual students.

Modifying Professional Development Programs: Effective and upgraded professional development programs are important for integrating new technologies in education. The SWOT analysis from the teachers' perspective will identify the lacunae where more training is required. Based on the findings, different workshops, seminars, and lectures can be arranged for the teachers so that they can effectively and efficiently use AI technologies in international Chinese language teaching.

Addressing the Challenges: The SWOT analysis will highlight the weaknesses and threats of AI use in Chinese teaching. Apart from that, there are some pre-known challenges regarding

ethical issues and data privacy (Hilton, 2016). This information will guide educators, program developers, and other concerned authorities to develop strategies to mitigate these challenges and foster critical thinking among students as well as teachers to self-evaluate AI-driven content.

Literature Review

Overview of International Chinese Language Teaching

China's increasing worldwide influence and economic importance have led to significant growth and interest in Chinese language learning globally (Chan et al., 2022). Because of this, in academic sectors as well as in the global business and cultural exchange fields, there is a huge demand for international Chinese language teaching. For this purpose, Confucius Institutes and Confucius Classrooms are being established in China and across different countries to promote and teach the Chinese language and its cultural education (Zhou & Luk, 2016). International Chinese language teachers have already evolved their teaching methods and pedagogical approaches to meet the varying needs of diverse learners. They have started integrating technologies like flipped classrooms, blended learning, and so on (Jiang, 2020). However, they are facing some challenges, like a shortage of qualified teachers, varying proficiency levels of the learners, and the complexity of the Chinese language itself (Bao & Liu, 2021).

The Role of Artificial Intelligence in Education

AI is contributing significantly to education. The most impactful area of AI is personalized learning facilities. The diverse needs and choices of the students can be catered to by AI (Osadchyi et al., 2020). By analyzing learners' academic data and behavioral patterns, AI can provide customized learning facilities, feedback, and personalized suggestions (Chiu et al., 2023). AI-mediated evaluation in the field of education has the potential to analyze learners' critical thinking, problem-solving skills, and other high-order cognitive as well as affective skills (Huang et al., 2021). Moreover, it also has the potential to serve the requirements of inclusive education (Zhai et al., 2021).

Previous Studies on AI Integration in Language Teaching

From a global perspective, recent studies have found a significant role for AI in language teaching. AI-mediated language learning platforms have improved students' learning engagement and experience in previous research (Wei, 2023). AI-based tools like chatbots and virtual teachers can act as supplementary teaching agents in language learning (Woo & Choi, 2021). In developing language proficiency among learners, Pokrivcakova (2019) highlighted the role of artificial intelligence and focused on its constant feedback and personalized language instructions.

From the above review of scholarly articles, it is clear to understand that there is a huge demand for international Chinese language learning globally. AI technology is already known to be a significant contributor to language teaching and learning. However, very limited studies have been found on AI technology concerning international Chinese language teaching. Furthermore, being one of the hardest languages to learn and teach, Chinese necessitates the most up-to-date technological integration to lessen the burden on language teachers and enhance students' learning outcomes. Therefore, the researcher intends to do

a SWOT analysis on the implementation of artificial intelligence in international Chinese language teaching, emphasizing teachers' perspectives.

Theoretical Framework

SWOT Analysis Framework

In the early 1950s, organizational strategies were studied using the SWOT framework (Benzaghta et al., 2021). The term stands for 'strengths', 'weaknesses', 'opportunities', and 'threats'. But this model is also being used in the education system for strategy creation and decision-making, considering the perspectives of all its stakeholders (Zhu & Justice Mugenyi, 2015). In this respect, the present study will use the SWOT framework to analyze teachers' perspectives on AI integration in international Chinese language teaching. This will identify the strengths and weaknesses of using AI technology in international Chinese language teaching from the first-hand experiences of the Chinese language teachers. The study will also delineate its future opportunities. The threats of using AI will also be identified, and further actions can be taken accordingly to mitigate those challenges.

Technology Acceptance Model (TAM)

In 1986, this model was designed by Fred Davis. It is based on the idea that the two primary factors influencing an individual's attitude toward technology are perceived ease of use and perceived utility. Perceived ease of use refers to its perceived simplicity and ease, whereas perceived utility refers to one's belief that technology will enhance performance or help in achieving goals. TAM claims that these two elements are the main influences on our intention to utilize a technology, which means that we are more inclined to adopt and use a technology if we think it is practical and simple to use. This model will serve as the basis for determining how teachers perceive AI integration in Chinese teaching concerning utility and ease of use.

The overall theoretical framework for the study is schematically represented in Figure 1.

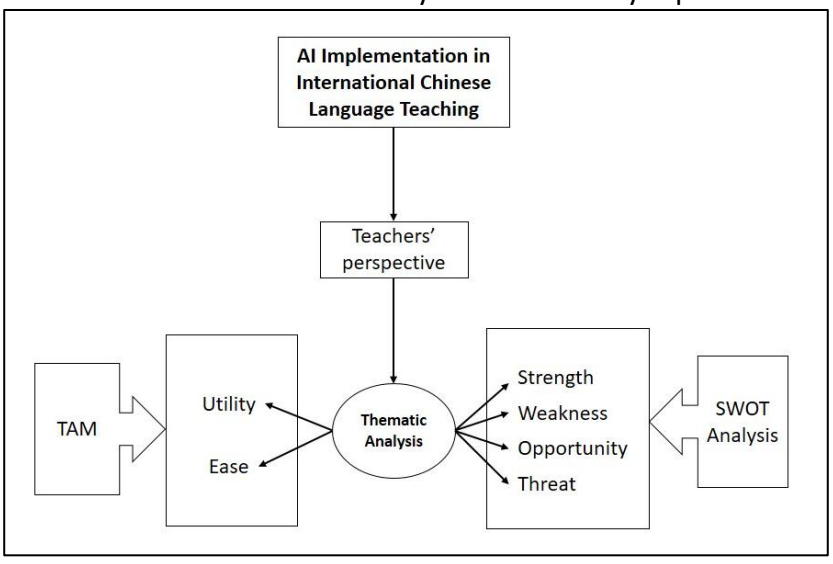

Figure 1: *Theoretical Framework of the Study*

Methodology

Research Design

This study has employed a qualitative research design using a case study approach to explore the role of AI in international Chinese language teaching. According to Tenny (2022),

qualitative research design can thoroughly examine the perception, behavior, and experiences of the subjects. The study will focus on Chinese language teachers' perspectives, and for that purpose, a semi-structured interview will be conducted. The researcher intends to study AI implementation in Chinese language teaching in-depth concerning its strengths, weaknesses, opportunities, threats, perceived utility, and perceived ease of use.

Participants

The study has used two sampling techniques, viz., purposive sampling and snowball sampling. Considering the researcher's location, three universities have been chosen from Beijing and Tianjin, which are known for their contributions to artificial intelligence as well as being centers for the international Chinese language. These universities are Peking University, Tsinghua University, and Tianjin International Culture College. From each university, one Chinese language teacher has been selected purposively. Next, using snowball sampling, four more teachers were chosen from each university. This makes a total sample of 15 international Chinese language teachers. During the selection of the sample, two criteria were considered. Firstly, the teachers must possess a minimum of 3 years of teaching experience, and secondly, they must have used AI technologies in their teaching sessions. Both male and female teachers have been considered for the study. A brief description of the sample teachers is presented in Table 1.

Table 1
Profile of International Chinese Language Teachers

Sample	Gender	Age (Yrs)	Teaching Experience (Yrs)	Teaching Institute
Participant 1	Male	39	7	Peking University
Participant 2	Male	38	7	Peking University
Participant 3	Female	40	9	Peking University
Participant 4	Male	38	8	Peking University
Participant 5	Female	34	3	Peking University
Participant 6	Male	40	8	Tsinghua University
Participant 7	Female	40	9	Tsinghua University
Participant 8	Male	36	3	Tsinghua University
Participant 9	Female	38	5	Tsinghua University
Participant 10	Female	35	3	Tsinghua University
Participant 11	Male	38	6	Tianjin International Culture College
Participant 12	Female	40	8	Tianjin International Culture College
Participant 13	Female	38	6	Tianjin International Culture College
Participant 14	Male	41	9	Tianjin International Culture College
Participant 15	Male	35	4	Tianjin International Culture College

Semi-Structured Interview Schedule

To understand the Chinese language teachers' perspective on AI implementation in international Chinese language teaching, a semi-structured interview schedule has been constructed, including a total of 12 structured questions. Among these 11 are open-ended qualitative types, and one is a rating scale type. The questionnaire is constructed based on four dimensions of the SWOT framework and two dimensions of TAM. The dimension-wise distribution of the interview questions is presented in Table 2. The interview schedule has been validated by two subject experts.

Table 2
Dimension-wise Distribution of the Interview Questions

Theoretical Basis	Dimension	Interview Questions
SWOT framework	Strengths	1. Can you describe any positive experiences or successes you've had with integrating AI technologies in Chinese language teaching? 2. What do you perceive as the main advantages or benefits of using AI in language instruction?
	Weaknesses	3. What challenges or limitations have you encountered when using AI tools in your teaching practice? 4. Are there any specific areas where you feel AI technologies fall short or are not effective?
	Opportunities	5. How do you see AI technologies enhancing language teaching in the future? 6. Are there any emerging opportunities or trends in AI integration that you think could benefit language educators?
	Threats	7. What concerns or risks do you have regarding the use of AI in language education? 8. Are there any potential negative consequences or challenges associated with AI implementation that worry you?
Technology Acceptance Model (TAM)	Perceived Utility	9. How do you perceive the usefulness of AI technologies in supporting Chinese language instruction? 10. In what ways do you believe AI tools can enhance your teaching effectiveness or students' learning outcomes?
	Perceived Ease of Use	11. On a scale of 1 to 10, how would you rate the ease of use of AI applications in your teaching practice? 12. Have you encountered any difficulties or obstacles when using AI technologies? If so, what were they?

Data Collection Procedure

The research involves the semi-structured interview of fifteen sample participants representing Chinese language teachers in Chinese universities who have a minimum of three years of experience and have used AI tools during their language teaching. All the selected participants have taken part voluntarily. They have been interviewed face-to-face at their respective institutes. The complete interview session is audio-recorded. For each participant, a maximum of 45 minutes has been allotted. All fifteen audio recordings are transcribed by qualified research assistants and subjected to further analysis.

Data Analysis Plan

The qualitative data from the interview transcripts is analyzed thematically. In this process, the responses are coded and categorized under different dimensions based on the SWOT framework and TAM. All the interpretations have been carried out based on the two models mentioned.

Ethical Considerations

After informing each participant of the study's purpose, their written agreement is obtained. Maintaining participant confidentiality is essential from an ethical standpoint. Tight confidentiality guidelines have been put in place to guarantee the security of teachers' private information. All data records, including transcriptions of interviews and observational notes, have safeguarded the identities of research participants. The right to privacy of participants has been respected, and a safe and encouraging environment has been preserved to promote an open and truthful conversation.

Research Findings

The sample of the research study consists of 8 male teachers and 7 female teachers who teach international Chinese. The age ranges from 34 to 41 years. Their work experience in the language teaching field ranges from a minimum of 3 years to 9 years. All of them are assured that they have used AI tools during their Chinese language classes. All the findings of the interviews are presented below, dimension-wise.

Strengths

As mentioned by the sample in the interview, AI technologies in Chinese language teaching have multi-faceted potential to improve Chinese language learning. One mentioned using AI technologies for personalized vocabulary practice with his students. These apps can adapt to the language proficiency and learning speed of individual students and allow them to learn and practice at their own pace. AI tools are also very helpful in translating Chinese to the learner's native language or vice versa. It helps in understanding the language more easily and improves overall Chinese language skills. One participant told about an AI chatbox that helps her learners converse in Mandarin in a simulated real-life situation. Chinese is a tonal language, conversation is important to improve the overall fluency of the language. Another participant mentioned that she often uses AI-mediated speech recognition software, which can analyze the pronunciation of the learners and give instant feedback. She also mentioned that it not only helps the students correct their mispronunciation but also gives them a lot of confidence to talk publicly in Chinese. Moreover, beyond their classroom teaching, AI-based Chinese language tutoring programs can supplement the learning of the students back at home. One of the responses worth mentioning is: "Implementing AI-powered virtual reality simulations in my Chinese language lessons has been a game-changer. These simulations immerse my students in authentic cultural contexts, such as ordering food in a Chinese restaurant or navigating a market, making their language learning more engaging and experiential." These reflect interactivity, personalized instructions, and instant feedback of AI which seems to be the biggest strength of AI implementation in Chinese language teaching. Besides this, AI technology is also found to assist teachers in assessing and grading students' written assignments as well. The Chinese language teachers have mentioned a few particular AI apps, whose names and helpful features are presented in Table 3.

Table 3
AI Apps for Chinese Language Teaching

Participant Teacher	AI App	Functionality
Participant 1	FluentU	The app's AI-powered content selection algorithm curates authentic Chinese videos with interactive subtitles, making language learning engaging and immersive.
Participant 4	Skritter	The app's AI-based handwriting recognition feature provides instant feedback on stroke accuracy, helping students master writing skills more effectively.
Participant 5	StoryWeaver	The app's AI-generated story recommendations cater to students' interests and reading levels, fostering a love for reading and improving language proficiency.
Participant 7	Tandem	The app's AI matching algorithm connects students with native speakers for real-time language practice and cultural exchange.
Participant 10	HelloChinese	The app's AI-powered exercises and quizzes provide interactive practice opportunities that engage students and enhance their learning experience.
Participant 11	Babbel	The app's AI-based review system schedules personalized review sessions to reinforce learning and improve long-term retention.
Participant 12	Lingodeer	The app's AI-powered speech recognition feature helps students improve their pronunciation by providing instant feedback and correction.
Participant 14	Duolingo	The app's AI-driven adaptive learning system personalizes lessons based on students' proficiency levels, allowing for tailored instruction and meaningful progress tracking.

When asked about the benefits of using AI tools in their language teaching, they mentioned and explained several advantages of AI use. Participant 14 said that one of the significant advantages of using AI in this respect is its ability to provide a personalized learning experience for every individual learner according to their needs, proficiency level, and speed. It gives instant real-time feedback along with instant correction and suggestions as they practice speaking and writing Chinese using AI tools (Participant 12). This accelerates the learning process with improved learning outcomes. Participant 2 mentioned that the AI system has a pool of authentic data that provides the students with a huge source of articles, videos, and audio to improve their proficiency level along with their cultural understanding. This is of great significance, as cultural understanding is an indispensable part of language learning. Not only for students' sake, but AI also eases the repetitive grading and assessment tasks of the teachers as well. With AI tools, teachers can easily set different difficulty levels to exercise and check learners' language competency levels. Participant 15 reminded us of a very significant contribution of AI, which is its inclusivity and accessibility by incorporating varied learning styles and preferences.

Weaknesses

Chinese language teachers have also identified some challenges to using AI in language teaching. Participant 3, who is 40 years old, mentioned that at the initial phase, she had encountered difficulties getting accustomed to AI tools' features and functionality, as she was not that familiar with technology use. Infrastructure is another issue for the students.

Teachers mentioned that, though they have all the infrastructural facilities in universities, students at home always do not have steady internet connections and other high-end infrastructure. This restricted the use of AI in language teaching. To use AI tools efficiently, teachers must have the credibility to integrate the technology within the existing curriculum judiciously. This is a daunting task, and not every teacher has that expertise. The cost part can be a great challenge for AI implementation in Chinese language teaching. There is an initial cost for setting up the infrastructure. Though most apps come with a basic free version, their functionality is quite limited. For advanced programs, either subscriptions have to be taken or they have to be bought. This pricing is quite high for individual students to bear and sometimes exceeds the budget allocation of the university as well. Participant 9 said that he could not use much of the AI technology due to these monetary issues. Apart from these, many of the teachers recalled that many times they faced software bugs and technical glitches that hampered their steady class teaching and wasted their class time.

One mentioned specifically that AI software mostly falls short in giving accurate feedback on complicated Chinese language skills like writing a composition and speaking fluency. The AI algorithm still struggles beyond basic grammar and vocabulary. Though AI apps provide learners with real-life situations, they fail to provide authentic socio-cultural background. It sometimes leads to confusion in understanding a language perspective. AI technologies mostly assess language proficiency on quantitative matrices but overlook the qualitative aspect. Therefore, it is unable to cater to the aesthetic part of Chinese language learning. Like any other technological input in education, AI programs lack the human touch such as interpersonal relations and empathy, which makes them less effective in terms of providing emotional support and motivation to the students (Participant 13).

Opportunities

The interview gives scope to understand the perspectives of the teachers who are taking part in the implementation of AI in international Chinese language teaching and get first-hand experience with its effectiveness. The interview also stressed what else these teachers are thinking or expecting from AI technology concerning Chinese language teaching. Participants 5 and 11 said that AI technology can be used for lifelong learning. It can be used to provide support beyond a formal classroom setting. There is a huge scope for exploiting Natural language generation (NLG) algorithms in AI technology to automatically generate customized and personalized practice sets, quizzes, and learning content for learners based on their individual interests, needs, and achievement levels. Therefore, it requires the development of more sophisticated natural language processing technologies. AI-mediated language teaching can play a crucial role in catering to the requirements of students from diverse language backgrounds, with different abilities, and with special needs. AI technology can be further improved by incorporating more cultural and social elements because these are essential for having a perspective during any language learning. Participant 12 opined, “Virtual reality (VR) and augmented reality (AR) applications powered by AI could simulate real-world language contexts and cultural experiences, allowing students to practice language skills in authentic settings." Presently, most of the AI tools can accurately assess the base-level vocabulary and grammar of the Chinese language. There is scope to evolve a more accurate and comprehensive assessment mechanism to evaluate advanced-level language proficiency. Needless to mention, many of the interviewees said that AI apps on mobile devices can be used for on-the-go Chinese language practice, Chinese vocabulary

development, and writing practice. One suggested that AI can be implemented to collaborate between Chinese language learners and native speakers (Participant 7). This will help them to clear their doubts, have support, and be confident. AI-powered machine translation technologies are revolutionizing language education by providing new tools for Chinese language teachers to create and adapt learning materials, making them more accessible to diverse learner populations by translating study materials into multiple languages. As pronunciation and tones are major parts of Chinese language learning, where most learners stumble upon them, AI advancement can provide them with more real-life opportunities to practice them and give them accurate feedback.

Threats

Besides its beneficial contribution to international Chinese language teaching, artificial intelligence also brings certain risks. The one important aspect that almost all the participants mentioned is privacy and data security. Using AI can breach students' personal data security. This also violates ethical considerations when using any technology in education. The over-dependence of teachers on AI-driven tools for their teaching can reduce their own creativity and capabilities. Participant 6 thought that too much machine learning might hamper interpersonal relationships among teachers, students, and peers. If teachers start to rely upon only AI tools for teaching Chinese, there is a possibility of a digital divide and inequitable access to AI technologies (Participant 1). Participant 15 reminded that overuse of this AI technology can reduce the natural critical thinking, creativity, and curiosity of language learners. Those with many years of teaching experience think AI can generate a huge number of study contents, exercises, practice sets, etc. instantly, but being machine-generated, it will not be at par in terms of quality. Some of the interviewees were a little apprehensive about the fact that if AI can do so much of their task by itself, it might cause job displacement and de-professionalization among them.

Perceived Utility

When the teachers were asked about their opinion about the usefulness of integrating AI-driven tools in their teaching, they gave both responses, concerning students' learning and also concerning their teaching. Talking about learners' outcomes, Participant 8 added that AI is highly helpful in providing personalized learning experiences for students that a traditional classroom cannot. AI tools are useful because they can analyze students' strengths and weaknesses from their performances and curate customized content and activities for them. This eventually helps the teachers assess them properly. AI apps can be used outside the classroom as well, which increases their utility because students can practice Chinese language reading, speaking, and writing anywhere, anytime. In the absence of actual Chinese language teachers, AI-mediated tools can provide instant feedback to the learners. This gives the learners a sense of autonomy and self-regulation in their Chinese language learning journey, which is indeed a tough one. Participant 9 explained how AI makes abstract Chinese learning easier by providing virtual contexts. She has noticed improvements in learners' engagement and motivation.

In the case of teachers, these AI tools automate their regular tasks like lesson planning, grading, and giving feedback. This frees up more time for them to focus more on effective teaching strategies, content development, and mentoring individually, as told by Participant 14. After using AI technologies, teachers mentioned that they do not struggle anymore to

maintain a large number of students' progress and performances. During the analysis of student data, AI tools are quite useful. Participant 10 said that AI-generated reports also help her to improve her language teaching strategies and to take targeted interventions when required.

Perceived Ease of Use

As presented in Figure 2, the majority (60 percent) of the representative Chinese language teachers perceive the implementation of AI in their regular Chinese teaching as quite easy. 27 percent find its difficulty level of use moderate. Among them, most added that at the starting point, they encountered difficulty, but it eased out with practice. Only 2 of the sample (13 percent) still find it difficult to use in their regular tasks. It is important to mention here that one is 41 years old and not tech-savvy, and the other is new to this profession.

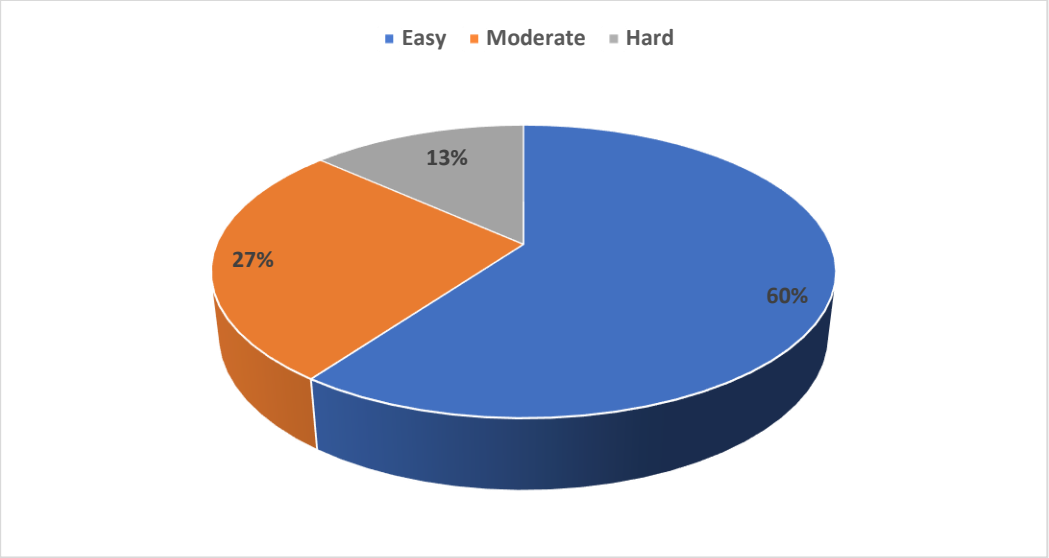

Figure 2 Percentage of Perceived Ease of Use

The 41-year-old teacher mentioned that handling and commanding AI tools was not that easy for her in the initial period, but after tech support, she has learned how to appropriately use them. Participant 5, who is relatively new in this career, found it difficult to integrate AI-mediated content with the existing international Chinese language curriculum. It requires more planning and strategy-making, which makes her job more complicated.

Discussion

Perceived Strengths of Integrating Artificial Intelligence in International Chinese Language Teaching

Huang et al. (2023) found by bibliometric analysis of research studies from 2000 to 2019 that AI was widely utilized to help children learn vocabulary, grammar, writing, reading, speaking, and listening. Automatic speech recognition, learner profiling, and natural language processing were frequently used to create intelligent tutoring, tailored learning, and automatic writing evaluation systems. The present in-depth interview with international Chinese language teachers reveals the multidimensional benefits of using AI in their teaching. The majority of them highlighted AI-mediated personalized learning experiences, instant feedback, streamlined assessment processes, and inclusivity in Chinese language learning. These brought progress in terms of their students' learning outcomes, and that eventually

increased their learning engagement and motivation. The study found that during language study, regular interaction with 'chatbox' can increase students' enthusiasm which in turn increases their listening skills and confidence level (Dargan, 2019). Following the same thread, the teachers of the present study also mentioned that instant feedback improved students' confidence levels, especially in public speaking. However, there is a concern regarding authenticity, truthfulness, and plagiarism when using AI for assessment (Hong, 2023). AI systems in Chinese language classrooms enable global knowledge sharing, eliminating classroom walls, and promoting global learning experiences through instant translations and subtitles (Boulay, 2016).

Challenges and Weaknesses Encountered by Teachers in Implementing Artificial Intelligence in International Chinese Language Teaching

International Chinese language teachers encountered several hurdles during the application of AI technology in language teaching. It included a lack of familiarity with the technology, infrastructural restrictions, and competence needs. High cost is another limitation, where initial setup costs exceed budget. As AI software lacks the true socio-cultural context as well as the human touch and empathy, it struggles to deliver appropriate feedback, especially on complicated Chinese language assignments. Moreover, AI technologies very often miss the qualitative components of language competency and aesthetics. This in turn blocks the effective emotional support and motivation for the learners. On the same note, Zhai and Wibowo (2023) also stated that there are two important missing elements in the AI system which are the integration of humor, empathy, and cultural part and components of problem-solving.

Identified Opportunities for Enhancing the Effectiveness of Artificial Intelligence in International Chinese Language Teaching

This qualitative study also explores the opportunities of artificial intelligence in international Chinese language teaching, highlighting its ability to cater to lifelong learning, customized learning experiences, and incorporating multiple linguistic origins. AI tools enhance learning environments by promoting inclusive management, flexible instruction, and personalized learning (Pokrivcakova, 2019), reducing the need for a 'one size fits all' model (Sumo & Bah, 2021). Teachers stress the use of 'Natural Language Generation' algorithms to develop customized practice sets and learning materials. AI tools on mobile devices are very handy in improving vocabulary and writing skills. AI-mediated translation solutions make the accessibility for a wide range of learners easy. The interview also highlighted the muti-dimensinal potential of AI in language training, like, in improving pronunciation and tone practice. Zhang (2023) created an international platform for Chinese language instruction using AI analysis technology that can help Chinese language learning grow and become more diversified, and better serve the requirements of a wider range of learners.

Perceived Threats and Barriers to the Successful Implementation of Artificial Intelligence in International Chinese Language Teaching

This is still an early phase for the creation and application of an AI system in foreign language learning (Zhai & Wibowo, 2023). As stated by the participating Chinese language teachers, privacy, data security, and a decrease in teacher creativity are concerning areas in this context. This technology offers both opportunities and challenges when it comes to processing and interpreting data. Therefore, teachers need to be accustomed to the use of

modern information technology in addition to their normal academic credentials (Zhang, 2019). Over-dependence on AI can give rise to multiple problems like the digital gap, unequal access to AI technologies, and poor-quality machine-generated materials. Teachers are also apprehensive about their job displacement. Under this purview, the study asks for social, professional, and ethical considerations while integrating AI Chinese language teaching.

Perceived Utility and Ease of Use of AI Implementation in International Chinese Language Teaching

This study highlights the utility of incorporating AI-mediation in Chinese language teaching. It emphasizes mainly teaching efficiency and student learning outcomes. It can promote autonomy and self-regulation by customizing learning experiences. By offering virtual environments, it helps in abstract language acquisition. Automated chores save teachers time and allow them to focus on effective teaching tactics and material development. According to a study (Khare et al., 2018), the incorporation of artificial intelligence has the potential to improve the effectiveness of educational institutions in carrying out their core responsibilities of research, teaching, and learning. Overall, AI-driven teaching approaches increase the efficiency and efficacy of Chinese language teachers. AI's future lies in freeing up time for educators and students to concentrate on improving cross-cultural communication abilities like conversational fluency (Sumo & Bah, 2021).

Though the majority of Chinese language teachers found it easy to moderate using AI-mediated instructions in their teaching, a few found it hard. The probable cause could be due to old-fashioned teaching techniques, conceptual lag in education, inadequate financial and technical support, challenges putting incentive mechanisms in place, and a dearth of assessment tools. Many foreign language instructors are ignorant of how artificial intelligence (AI) technology works. This prevents them from investigating intelligent products available on the market (Zhang, 2019).

Conclusion

The main intent of the study is to conduct an in-depth study to find the effectiveness of AI implementation in international Chinese language teaching from teachers' perspectives. For this purpose, a SWOT analysis has been carried out involving a semi-structured interview. The findings indicate the 'Strengths' of AI overpower its 'weaknesses'. Moreover, there is a huge 'opportunity' in the future to mitigate these weaknesses and flourish more to improve the outcome of international Chinese language teaching as well as learning. However, there are certain 'threats' that must be taken care of while using AI technologies in language learning. This is an era of artificial intelligence, and the study underscores the significance of using it judiciously in Chinese language learning, which will benefit both teachers and learners. The overall findings of the study are consolidated in the following Figure 3.

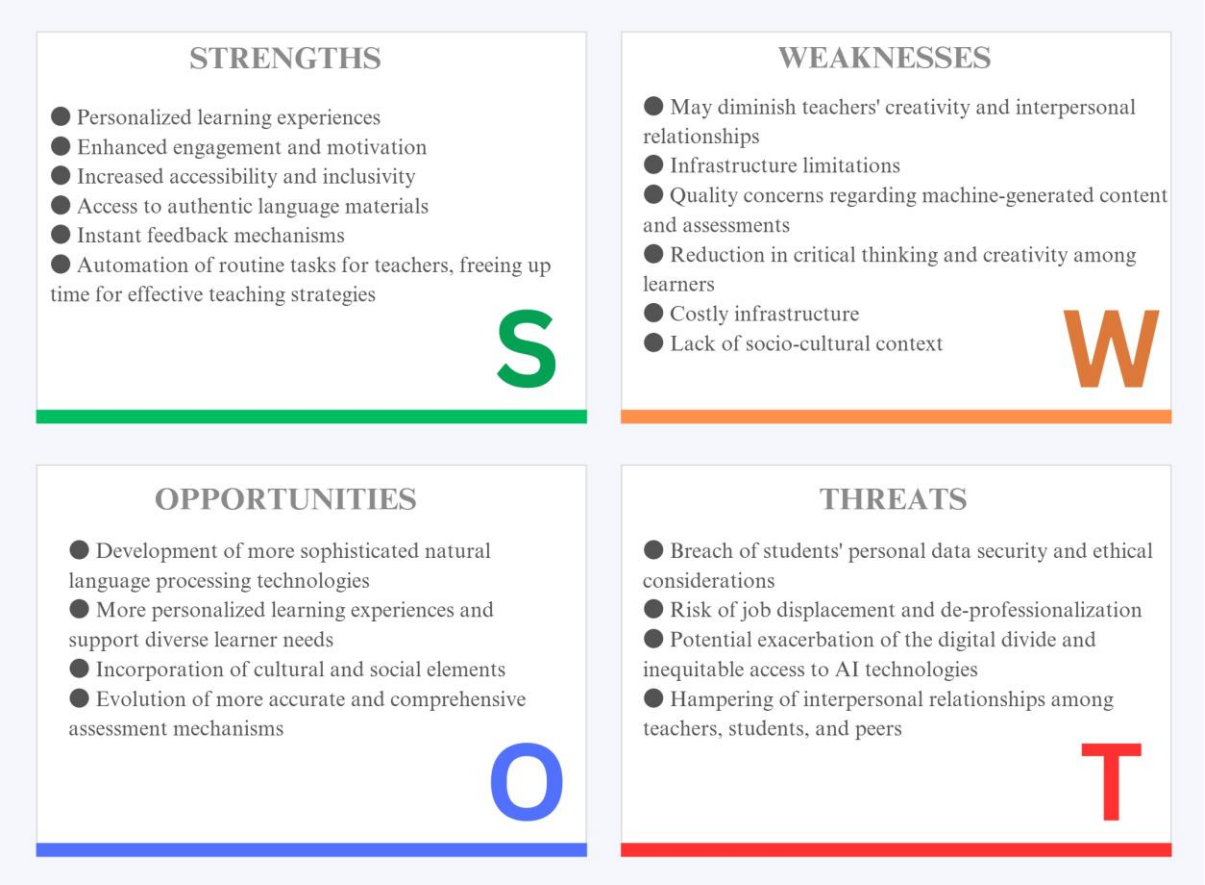

Figure 3 SWOT Analysis of AI implementation in International Chinese Language Teaching

Limitations and Recommendations for Future Studies

The shortcomings of the study and suggestions for future studies in this field are explained briefly in Table 4

Table 4
Limitations and Recommendations for Future Studies

Limitations of the Study	**Recommendations for Future Studies**
Limited Sample Size (n=15) can reduce the generalizability.	By recruiting more participants from a wider range of institutions, educational levels and geographic locations, generalizability can be enhanced in future studies.
Self-Reported Data can leads to potential bias.	Interviews can be supplemented with objective measures or observations, such as classroom observations or student performance metrics, to validate self-reported information. Diverse data collection methods, such as surveys or focus groups, can be employed to triangulate findings and mitigate potential bias.
Lack of Longitudinal Data.	Follow-up studies should be conducted to track the long-term effects of AI integration in Chinese language teaching, providing insights into sustainability and effectiveness over time.
	Quasi-experimental research can be conducted using specific AI tools to find its effectiveness in a particular domain of Chinese language teaching.

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