



Perceptions of Infographics in Mandarin Learning: Student Views and Acceptance

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This study investigates the use of infographics as a supplementary tool for Mandarin language learning among university students. The study aims to explore how infographics influence the instructional design process and assess students' views and acceptance of this approach. A questionnaire was distributed to 70 students, and the findings indicate a moderate level of challenges in learning Mandarin. However, the students highly appreciated the effectiveness of infographics in enhancing their understanding of vocabulary and sentence construction. The research contributes valuable insights to Mandarin language teaching practices and highlights the potential benefits of infographics as an engaging and effective learning aid.

Key words: *Infographics; Chinese Language; Vocabularies; Sentences;* students' views and acceptance



1. INTRODUCTION

The norms of Mandarin language teaching have changed with the rampant global pandemic, which has caused the teaching environment to shift from real life face-to-face classrooms to virtual online platforms. In this new normal education process, teachers need to explore constantly and creatively every plausible up to date design, content, practice, and teaching method, as well as reposition, innovate, and integrate more comprehensive teaching ideas to fulfill this new teaching and learning norms. Hence, online teaching is more challenging for teachers because they need to apply various means to improve the quality of students' learning as well as practicing teaching strategies and methods to promote students' engagement and interest in Mandarin language learning.

To build and develop language fluency, one must become proficient in various language skills, such as listening, speaking, reading, and writing, as well as its knowledge. Moreover, learning vocabulary and sentence structures are crucial to mastering a foreign language since they are the building blocks of communication. A broader knowledge of vocabulary and syntax is required to master grammatical rules, which also helps to further understand the language. In the context of teaching beginner-level Mandarin, it is crucial to guide learners to master the vocabulary and sentence structures related to the learning topics and content. As Li (2011) pointed out, vocabulary is the building material of language and the basic structural unit that makes up sentences. Without vocabulary, information cannot be conveyed, and basic daily communication cannot take place. In addition, since a sentence is the smallest unit of language usage, it is also the basic unit for students to use Mandarin in communicative situations. Therefore, the fundamental goal of teaching Mandarin as a foreign language is to successfully guide students in using sentences for communication. In other words, the ultimate goal of phonetics and vocabulary teaching is to serve sentence teaching (Zhu et al., 2015). Therefore, both vocabulary and sentences are essential for Mandarin learning. Vocabulary is the basic unit of Mandarin learning, while sentences are the basic unit and an important component of Mandarin communication. These two elements are crucial for students; thus, they need to focus on vocabulary and sentence learning to improve their proficiency in Mandarin. If students cannot master enough vocabulary, they will be unable to express or understand accurately, and will also be unable to form correct sentences, which will further affect their other language skills. Wilkins (1972, p.111) pointed out correctly that "Without grammar, very little can be conveyed. Without vocabulary, nothing can be conveyed." Additionally, according to Cameron (2001), "vocabulary, as one of the knowledge areas in language, plays a great role for students in acquiring a language." Since both vocabulary and sentences play a vital role in the process of Mandarin learning, therefore students should prioritize the acquisition of these essential components to enhance their mastery of the language.



Hence, this research has developed a series of infographics as supplementary learning materials for learners, alongside textbooks, handouts, notes, and other reference books. The reason for using infographics in language teaching is because infographics introduce a variety of visual forms such as graphics, charts, and images to display information clearly and intuitively. This can help students better understand and master knowledge, and provide more diverse visual stimuli, making it easier to remember and understand information (Alwadei & Mohsen, 2016). In addition, compared to rigid textbooks and notes, infographics with rich and colorful graphic designs can better stimulate students' interest and initiative in learning, making it easier and more efficient for them to learn language knowledge. These infographics primarily focus on the study of essential vocabulary and key sentences related to specific topics. Additionally, audio components are included, allowing students to listen and practice pronunciation. Distributed in digital format, these infographics serve as cost-effective learning aids that are readily available. Their accessibility also enables convenient referencing for students, making infographics an excellent tool for vocabulary and sentence learning.

Problem Statement

The primary objective of this study is to examine and explore the impact of using infographics as a teaching tool for Mandarin vocabulary and sentence construction learning. The research aims to investigate the way infographics influence the instructional design process, and to assess students' perceptions and acceptance of this approach.

The researchers aim to investigate the way infographics can enhance the learning experience for Mandarin learners. Specifically, they will examine whether infographics effectively communicate vocabulary and sentence construction principles in a visually appealing and engaging manner. Additionally, the study intends to evaluate students' perspectives and acceptance of this instructional method, assessing their perception of its effectiveness and the benefits it offers.

By conducting this instructional design study and gathering feedback from students, the researchers aim to gain a deeper understanding of the potential advantages and challenges associated with integrating infographics into Mandarin education. The findings will provide valuable insights for instructional practices, contributing to the enhancement of teaching methods in the domain of Mandarin language learning.

Purpose of Study

The purposes of this research can be categorized into three criteria. The first aim of this research is to develop and implement an instructional design on using infographics in teaching and learning Mandarin language vocabulary and sentence construction. The second aim is to investigate students' perceptions of using infographics in teaching and learning Mandarin language



vocabulary and sentence construction. Lastly, the third aim is to determine students' acceptance of using infographics in the teaching and learning of Mandarin language vocabulary and sentence construction.

Three research questions corresponding to the three purposes of the study stated above, will be addressed through further analysis on the data collected:

1. What are the challenges of learning the Mandarin language in a Mandarin Level I class?
2. How do students perceive the effectiveness and usefulness of infographics in enhancing their learning of Mandarin vocabulary and sentence construction?
3. How do students accept and value infographics as a valuable tool in the teaching and learning of Mandarin vocabulary and sentence construction, and what are their attitudes and standpoints towards their use?

2. LITERATURE REVIEW

Infographics, a term combining “info” and “graphics”, are defined as visual representations that compress data into a simpler design, which aims to facilitate individuals or organizations to disseminate information concisely (Noh et al., 2017). Generally, infographics consist of pictures, images, diagrams, or charts accompanied by minimal text, allowing readers to comprehend the subject matter in an easier way. Serving as a pictorial depiction of information, infographics enable data to be intelligible at a glance (Parveen & Husain, 2021). The utilization of infographics as an instructional tool in the education field has a significant historical precedent, and its impact on the enhancement of teaching efficacy and student learning outcomes cannot be overstated. Educators have long employed infographics to elucidate and visually represent complex concepts and data. By synthesizing information into visually stimulating and easily memorable formats, infographics captivate student interest, enhance comprehension, and facilitate the assimilation of educational content. Hence, the pedagogical application of infographics has garnered widespread recognition for its effectiveness in augmenting learning outcomes and has become prevalent in educational settings.

Furthermore, the dual-coding theory proposed by Allan Paivio in 1971 explains the positive impact of using infographics on learning performance. According to Paivio (1971), information processing involves two distinct cognitive systems: the verbal system and the imaginal system. This theory elucidates how individuals mentally represent and process information using both verbal and non-verbal (visual) codes. The researcher argues that information represented using both verbal and imaginary codes have a higher likelihood of being remembered and recalled compared to information represented using only one of the codes. Such dual representation in



infographics provides multiple retrieval cues, making it easier to access and retrieve the information. Thus, by utilizing both verbal and imaginal codes, infographics enable information to be presented in a visually compelling and cognitively effective manner. The integration of visual elements and concise text in infographics facilitates better encoding, retrieval, and comprehension of information, leading to improved learning outcomes. Infographics represent visual stories which engage and guide audiences to recognize patterns, relationships, and conclusions, enabling the capture of attention and making complex knowledge understandable. Although infographics have the potential to engage students effectively, they are infrequently used as a teaching-learning strategy due to educators inexperience with this technology (Chicca & Chunta 2020).

However, despite the extensive literature on the benefits of infographics in various subject areas, there is a lack of research specifically focused on using infographics to teach Mandarin as a foreign language. Nevertheless, existing evidence suggests that infographics can facilitate higher-order thinking skills, personalized learning, retention of grammar and vocabulary, and reduction of abstraction.

For instance, Dahmash, Al-Hamid, and Alrajhi (2017) found that students demonstrated a positive attitude towards the use of infographics, even though they were initially unfamiliar with the medium. Creating infographics helped students develop various skills, including higher-order thinking skills. Nhan and Yen (2021) reported that infographics improved students' retention of grammar and motivation to learn English grammar. Hamid et al. (2020) highlighted the need for infographics as supporting materials to enhance students' independent learning of Arabic grammar. Chicca and Chunta (2020) emphasized the usefulness of infographics as a teaching and learning strategy in nursing education due to their ability to transform complicated material into more easily digestible, engaging, and visually appealing information.

Infographics can also be used with all levels of undergraduate and graduate students in different settings. The effectiveness of infographics in teaching lower-intermediate English classes was demonstrated in a study by Wu and Kuwajima (2022), in which students in a Japanese university showed higher motivation and interest in English language learning through using the infographics provided. In addition, the same study also revealed that infographics were more effective when used after traditional textbook teaching. Infographics can be used as effective supplements or interventions after textbooks to effectively present and deliver certain grammar points, increase the diversity of grammar and language teaching materials, attract learners' attention, and stimulate learners' language learning motivation. However, of course, infographics are not promoted to replace textbooks.

In addition, Ozdamli and Ozdal (2018) found that both teachers and students had positive opinions about the usage of infographics in learning environments, stating that infographics supported the



learning process, allowed for repetition and reinforcement, and should be introduced at the elementary level. Another study by Alwadei and Mohsen (2023) also demonstrated that infographics aided vocabulary learning and retention among Arabian EFL learners while heightened motivation to improve vocabulary knowledge.

Overall, the literature review highlights the growing popularity and potential of infographics as a versatile and engaging tool to improve learning outcomes by facilitating information delivery, enhancing visual literacy, fostering interest and engagement, as well as promoting positive attitudes in various educational contexts. However, the limited research specifically focused on using infographics to teach Mandarin as a foreign language indicates the need for further studies.

3. METHODOLOGY

Respondents and the background of the study

The targeted participants in this research are three classes of degree students that enrolled in the “Basic Chinese Language I” course at a public university in Selangor. All participants were taught by the same instructor, and the same textbook, *Experiencing Chinese: Ji Chu Jiao Cheng: Vol. 1* (Jiang, 2006), is used in this course. The questionnaire was distributed to a total of 85 students from these three classes, and in the end, a total of 70, or 82.4%, of the students’ responses were successfully returned and validated. There were 17 (24.3%) male students and 53 (75.7%) female students involved in this study, ranging in age from 19 to 27 years old, with an average age of 22. Among them, 65 (94.3%) students are Malaysians, while only four (5.7%) are non-Malaysians.

Instruments

The questionnaire was designed using the Likert’s scale. With the Likert scale, feasible responses for each statement were ranked from 1 to 5, (1) Strongly Disagree, (2) Disagree, (3) Fair, (4) Agree, and (5) Strongly Agree. This questionnaire consists of four sections: (A) Student Information; (B) Students’ Challenges and Issues in Learning Chinese Language; (C) Students’ Perception towards Infographics’ Features; and (D) Students’ Acceptance of Infographics. The first section includes a clear statement of research objectives, an inquiry into personal information, and instructions for answering the questionnaire. There are a total of 5 items under each section, from Section A to Section D, related to the aforementioned topics, respectively. SPSS version 27 was utilized to analyze the collected data.

Reliability Test

Table 1 presents the results of a pilot test conducted to assess the internal consistency and reliability of the study instrument using Cronbach’s Alpha Reliability Test.



Table 1. Reliability Coefficient of Study Instruments

| Instruments | No. of Items | Cronbach's Alpha |
|--------------------------------|---------------------|-------------------------|
| Challenges Issues | 5 | 0.721 |
| View of Infographics' Features | 5 | 0.827 |
| Acceptance of Infographics | 5 | 0.924 |

The Cronbach's alpha values for the instruments listed in Table 1 exceed 0.70, indicating that the scale of all the items in this study exhibits high reliability and validity.

The Infographics

This research focuses on the design and development of Infographics as educational materials. There are seven (7) sets of Infographics that were created, based on two lessons selected from the textbook "Experiencing Chinese: Ji Chu Jiao Cheng: Vol. 1" (Jiang, 2006) by Jiang Liping. The Infographics were crafted using Canva and essential vocabulary was included ; other than that, the sentences were accompanied by relevant graphics or pictures, and audio elements. The audio was generated using the Neural text-to-speech (NTS) system available on the Microsoft Azure platform. These audio files were stored in the cloud for easy access.

To enable convenient audio access for students, each infographic is equipped with a QR code. By scanning the QR code, students can effortlessly listen to the corresponding audio related to each lesson. In addition to uploading the infographics to Google Classroom, instructors may also share them in a WhatsApp group prior to the commencement of a class session, facilitating pre-class review and post-class revision. Furthermore, during class, the instructor utilizes and displays the infographics for effective teaching purposes.

Below are examples of the developed infographics:



Figure 1. Two Samples of Instructional Infographics

Procedure

This research designs and develops instructional infographics as a learning material to present new Mandarin vocabulary and sentences to students, who are given access to a wide array of static infographics that facilitate their interaction with the information. Two lessons from the selected students' textbooks were designed as instructional infographics using the Canva website, resulting in a total of seven infographic modules. To design and create such effective instructional infographics, four steps were observed and followed in this research: (1) plan, (2) start designing, (3) check, and (4) produce and finish (Kaya Hamza & Beheshti Fezile, 2017). In the first step, learning requirements were identified to enhance students' learning of Mandarin vocabulary and sentences and to address their learning problems. The second step involved preparing the prerequisites for designing and producing infographics for the selected lessons, including identifying the key vocabulary and sentences, and defining the procedural objectives for each lesson. Canva was then used to create instructional infographics for the course, with each infographic displaying the essential vocabulary and sentences for the relevant unit. The content of the infographics (the key vocabularies and sentences) is designed and developed based on the textbook "Experiencing Chinese: Ji Chu Jiao Cheng: Vol. 1 (Jiang, 2006)," edited by Jiang Liping.



The selected texts for this research are from Lesson 4: “What nationality are you?” and Lesson 5: “Where Do You Live?”. To enhance students’ learning effectiveness, this research incorporates audio elements for all key vocabularies and sentences in the infographics. The audio is generated using the Neural text-to-speech (NTS) system available on the Microsoft Azure platform. The generated audio files are stored in the cloud. Students can easily access and listen to the relevant audio for each lesson by scanning the provided QR code on the infographics. Thirdly, upon completing the infographics for each lesson, a comparison was made between the content and information sequence in the infographics and that of the textbook to ensure consistency. Finally, after the infographics were produced, the instructor downloaded them from Canva and uploaded them to Google Classroom or sent them in a WhatsApp group to students before class. These infographics could be used for pre-class review or post-class revision. The instructor also displayed and used the infographics in class for teaching purposes, and a post questionnaire was distributed to students to collect feedback on the use of infographics for teaching and learning Chinese vocabulary and sentences.

4. RESULTS AND DISCUSSION

Results were obtained from the questionnaire created through Google Forms regarding students’ challenges in learning Mandarin and their perception and acceptance of using infographics in Mandarin level I class. The questionnaire consists of five questions in total. A group of students ranging in age from 19 to 27 years old were given the questionnaire to answer after using the infographics in their Mandarin level I class. Out of 70 respondents, 53 were female students.

Table 2. Interpretation of Mean Scores of the Students’ Viewpoints

| Scale | Agreement Range | Mean Range | Interpretation |
|-------|-------------------|------------|----------------|
| 5 | Strongly Agree | 4.20-5.00 | Very High |
| 4 | Agree | 3.40-4.19 | High |
| 3 | Fair | 2.60-3.39 | Moderate |
| 2 | Disagree | 1.80-2.59 | Low |
| 1 | Strongly Disagree | 1.00-1.79 | Very Low |

This study refers to and modifies the interpretation table developed by Abragan (2021) to analyze the students' perspective on the challenges they encounter while learning the Mandarin language. Additionally, it investigates the students’ perception and acceptance of integrating infographics into the Mandarin Level I class.

Research Question 1: What are the challenges of learning the Mandarin language in a Mandarin Level I class?

Table 3. Students' Challenges in Learning the Mandarin Language

| No | Challenges Issues | Mean | SD | Level |
|----|---|------|-------|----------|
| 1 | I find it difficult to understand a lot of textual information when learning Chinese. | 3.40 | 1.069 | High |
| 2 | I find it difficult to understand the lecturer's explanation of the Chinese learning process. | 2.34 | 0.915 | Low |
| 3 | I find it difficult and feel unmotivated to perform revision on Chinese language with only textbook or lecture notes. | 2.91 | 1.018 | Moderate |
| 4 | I find it difficult and feel unmotivated to perform revision on Chinese language without videos and audio aid. | 3.59 | 1.070 | High |
| 5 | I find it difficult to learn Chinese vocabularies and sentences in overall. | 3.31 | 1.043 | Moderate |
| | Overall | 3.11 | 0.704 | Moderate |

Based on the findings presented in Table 3, it is evident that the overall mean score ($M=3.11$, $SD=0.704$) of the students indicates a “moderate level” of challenges faced in learning Mandarin language. Based on the findings, students experienced a “moderate level” of difficulty while learning Mandarin overall, as well as doing revision with only textbook or lecture notes. Nevertheless, one of their most significant challenges is understanding a large amount of text information when learning Mandarin, indicating a “high level” of difficulty. Additionally, students expressed a lack of motivation to engage in revision without the assistance of videos and audio aids. However, students reported finding it relatively easier to comprehend the lecturer's explanations during the Mandarin language learning process. In conclusion, the high volume of text information and the lack of visual and audio aids are the two main deterrents for students who aim to learn Mandarin effectively.

Findings of this study corroborate the results of previous research conducted by Tang and Rangis (2017), which demonstrated the effectiveness of audio-visual aids in enhancing students' understanding of the topic of reproduction. The use of such aids led to improved marks in post-assessment evaluations. Additionally, a separate study conducted by Pretorius (2005) indicated that students with poor reading skills often struggle to achieve academic success. His research revealed that these students frequently fail to employ effective reading strategies that would enable them to comprehend the material at the required level of learning. This deficiency becomes evident

when students are presented with a substantial amount of textual information to read, as they are unable to handle it effectively.

Research Question 2: How do students perceive the effectiveness and usefulness of infographics in enhancing their learning of Mandarin vocabulary and sentence construction?

Table 4. Students' View of Infographics' Features

| No | View of Infographics' Features | Mean | SD | Level |
|----|--|------|-------|-----------|
| 1 | I tend to understand Chinese vocabularies and sentences better through visual/ image/ symbol. | 4.39 | 0.687 | Very High |
| 2 | I tend to understand Chinese vocabularies and sentences better through a simple text. | 4.09 | 0.974 | High |
| 3 | I tend to understand Chinese vocabularies and sentences better through a diagram. | 4.20 | 0.827 | Very High |
| 4 | I tend to understand Chinese vocabularies and sentences better with the use of attractive colours. | 4.43 | 0.753 | Very High |
| 5 | I tend to understand Chinese vocabularies and sentences better if the information is well-organized with audio provided in infographics. | 4.53 | 0.653 | Very High |
| | Overall | 4.33 | 0.605 | Very High |

Based on the findings presented in Table 4, it is proven that the features found in infographics indicate a very high level of influence on learners in Mandarin language learning based on the overall mean score ($M=4.33$, $SD=0.605$). Based on the findings, students demonstrated a “high level” of acceptance in utilizing infographic features that were presented through simple text. Moreover, other items indicated a “very high level” of agreement, indicating that the students found the features available in infographics to be highly suitable for facilitating their learning process.

Such findings coincide with previous research conducted by Parveen and Husain (2021), which emphasized that infographics comprise of visual elements such as pictures, images, diagrams, or charts, and they are supplemented by minimal text. This combination allows readers to comprehend the subject matter more easily and effectively. Hence, although using simple text to present information can be viewed as a steppingstone towards a successful infographics design, the inclusion of other features such as visual images, diagrams, attractive colours, and audio aids

are of paramount importance as well in the comprehension of Mandarin language vocabulary and sentence.

Research Question 3: How do students accept and value infographics as a valuable tool in the teaching and learning of Mandarin vocabulary and sentence construction, and what are their attitudes and standpoints towards their use?

Table 5. Students' Acceptance of Infographics

| No | Acceptance of Infographic | Mean | SD | Level |
|----|---|------|-------|-----------|
| 1 | Infographics are more suitable to be used during Chinese teaching and learning sessions. | 4.39 | 0.728 | Very High |
| 2 | Infographics can make learning and remembering Chinese vocabularies and sentences easier and simpler. | 4.46 | 0.652 | Very High |
| 3 | Infographics can increase my focus on learning. | 4.29 | 0.725 | Very High |
| 4 | Infographics can improve my understanding of Chinese learning. | 4.36 | 0.660 | Very High |
| 5 | Infographics can enhance my mastery of Chinese vocabularies and sentences effectively. | 4.26 | 0.755 | Very High |
| | Overall | 4.35 | 0.617 | Very High |

Based on the findings presented in Table 5, the overall mean score ($M=4.35$, $SD=0.617$) indicates a very high level of acceptance among students regarding the use of infographics as a tool to facilitate their learning. Moreover, every item in the findings demonstrates a consistent and significant “very high level” of agreement, suggesting that students perceive infographics to be highly suitable for enhancing their learning process, in terms of making learning and remembering Mandarin vocabularies and sentences easier and simpler, heighten learning focus, improving language understanding, as well as enhancing language mastery. It should also be noted that compared to the traditionally used textbook or lecture notes, most students believe infographics are more suitable to be utilized during teaching and learning sessions, signaling a huge shift in students' learning pattern of different periods.

The findings of this study are aligned with previous research conducted by Parveen and Husain (2021), which highlighted the widespread recognition of infographics for enhancing learning outcomes and their prevalence in educational settings. Similarly, Chicca and Chunta (2020) mentioned that infographics have the potential to effectively engage students; however, they are



often underutilized as a teaching-learning strategy due to educators' limited experience with this technology.

5. CONCLUSION

Based on the above analysis, infographics can be concluded as an effective tool that helps students to learn, comprehend and memorize Mandarin language vocabulary and sentences, with heightened focus and much easier effort. The effectiveness of infographics are established on its various features, in which simple text, visual images, diagrams, attractive colours, and audio aids are all indispensable. These findings are consistent with previous research conducted by Wu and Kuwajima (2022), who demonstrated the positive impact of infographics in English language learning, resulting in increased motivation and interest among students in a Japanese university. Similarly, Ozdamli and Ozdal (2018) found that both teachers and students expressed positive opinions about the use of infographics in learning environments, highlighting their support for the learning process and their suitability for various proficiency levels.

Additionally, Mohsen (2023) demonstrated the beneficial role of infographics in vocabulary learning and retention among Arabian EFL learners, leading to increased motivation to improve vocabulary knowledge. However, despite these positive findings, the quality of infographics may require improvement. One potential enhancement for this study is the incorporation of interactive features, such as the "flip" feature, to enhance the learning experience, particularly in grammar.

To provide a better learning experience for Mandarin language students, it is recommended to draw lessons from the past experience and previous studies of infographics used in the teaching and learning of foreign languages and to improve the unique quality of Mandarin language infographics by integrating interactive features and incorporating after-class exercises. Further studies are needed to explore and enhance the quality of infographics and their impact on language learning outcomes.



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