

Bridging the Grammar Gap: Evaluation of a Powtoon-Based Video Innovation for Non-Native Elementary Mandarin Learners in Malaysia

Low Hiang Loon^{1*}, Tan Hua An²

¹Akademi Pengajian Bahasa, Universiti Teknologi MARA (UiTM), 40450 Shah Alam, Selangor, Malaysia,

²Universiti Kuala Lumpur, Malaysian Spanish Institute, Lebuhraya Perdana, 09090 Kulim, Kedah

*Corresponding Author

DOI: <https://doi.org/10.47772/IJRISS.2026.102100096>

Received: 09 July 2026; Accepted: 14 July 2026; Published: 05 August 2026

ABSTRACT

The rapid economic growth of China has significantly increased global demand for Mandarin language acquisition. In Malaysian higher education institutions, Mandarin courses for non-native speakers are widely offered. However, a critical pedagogical gap exists where locally produced Mandarin textbooks have not emphasised grammatical teaching. To address the critical gap in grammatical instruction for non-native elementary Mandarin learners in Malaysia, this study evaluated the effectiveness of innovated Powtoon-based grammatical point videos. A quantitative survey design was administered to 109 non-native elementary Mandarin learners from a Malaysian public university. Data were collected using a structured questionnaire measuring learners' perceptions of grammar instruction importance, overall video experience, and perceived design elements of the Powtoon-based videos. Descriptive statistics (means and standard deviations) were computed for all items. The findings revealed three key outcomes. First, learners strongly valued grammar instruction (Mean=4.42, SD=0.72) and expressed a clear preference for textbooks that include grammatical points (Mean=4.43, SD=0.63). Notably, textbooks without grammatical support received poor ratings (Mean=2.37, SD=1.22), confirming learners' preference for grammar-supported materials. Second, the Powtoon-based videos were rated highly effective and engaging, with overall experience (Mean=4.14, SD=0.76), effectiveness (Mean=4.30, SD=0.69), and enjoyment (Mean=4.30, SD=0.72) receiving strong positive ratings. Third, the perceived design elements were consistently rated highly, with content usefulness (Mean=4.48, SD=0.56), clarity (Mean=4.42, SD=0.63), voice-over quality (Mean=4.34, SD=0.65), and numbering system (Mean=4.33, SD=0.62) receiving the highest scores. Reliability analysis using Cronbach's alpha confirmed that the questionnaire reliably measured the intended constructs across all sections ($\alpha = 0.757$ to 0.881). These findings validate Mayer's (2009) Cognitive Theory of Multimedia Learning and provides original empirical evidence supporting the integration of multimedia grammar instruction into Mandarin language curricula in Malaysia. The innovation offers a replicable model for addressing similar instructional gaps in other foreign language contexts.

Keywords: Mandarin grammar instruction, Powtoon, video innovation, non-native elementary learners, grammar gap

INTRODUCTION

Background

The rapid economic growth of China has significantly increased global demand for Mandarin language acquisition. In response to this growing demand, Malaysian higher education institutions widely offer Mandarin as a foreign language in public universities. For instance, Universiti Teknologi MARA (UiTM), the largest public

university in Malaysia, enrolls over 10,000 students in elementary Mandarin courses per semester (Zhou & Low, 2021). Despite this high enrollment, a critical pedagogical gap exists where locally produced Mandarin textbooks have not emphasised grammatical teaching. Instead, the textbooks used by a large number of learners often focus on vocabulary and sentence patterns while neglecting explicit grammatical explanations (Ho et al., 2024; Mok et al., 2025).

Grammar instruction plays a fundamental role in language acquisition. According to Ellis (2006), explicit grammar instruction helps learners develop metalinguistic awareness and achieve communicative competence. Without a solid grammatical foundation, learners may struggle to produce accurate and meaningful utterances, particularly in Mandarin, which has grammatical structures that differ significantly from Malay and English, the primary languages spoken by Malaysian learners. In response to this pedagogical gap, the present study introduces an innovation: Powtoon-based grammatical point videos. Powtoon is an online animation platform that allows for the creation of engaging, animated videos combining visual elements, text, and narration. This study evaluates the effectiveness of these videos in addressing the grammar instruction gap by examining learners' perceptions of their importance, overall experience, and specific design elements.

Problem Statement

Despite the recognised importance of grammar instruction in language learning, locally produced Mandarin textbooks in Malaysia often lack explicit grammatical explanations. A content analysis of two widely used Mandarin textbooks for elementary learners in Malaysian universities, namely Ho et al. (2024) and Mok et al. (2025), revealed that grammatical explanations occupy less than 5% of total page content on average, with most grammatical information presented incidentally rather than systematically (Ellis, 2006). Explicit instruction is essential as it provides learners with metalinguistic knowledge that facilitates the noticing of grammatical features (Ellis, 2006). However, neither Ho et al. (2024) nor Mok et al. (2025) allocates a dedicated section for explicit grammar learning; instead, both textbooks include fewer than five grammatical points under the section of "Note" across their entire 150-page coverage, respectively.

The grammatical points covered in Ho et al. (2024) include the distinction between 二 (èr) and 两 (liǎng) for numerals, the uses of 了 (le) as an aspect marker and 了吗 (le ma) for question formation, the difference between 号 (hào) and 日 (rì) for dates, and the distinction between 几号 (jǐ hào) and 几月几号 (jǐ yuè jǐ hào) for asking dates. Similarly, Mok et al. (2025) covers the aspect marker 了 (le), the distinction between modal verbs 会 (huì) and 能 (néng), the use of the adverb 也 (yě), and the possessive/modifier particle 的 (de). These few points are insufficient for learners to master elementary Mandarin structures, particularly given the complexity of grammatical features such as aspect markers, sentence particles, and word order distinctions that differ significantly from Malay and English.

As Mok et al. (2019) note in their detailed error analysis of Malaysian Malay students learning Mandarin, common errors include omission of measure words (e.g., saying "一书" instead of "一本书"), reversal of endocentric phrase order (e.g., "饭馆中国" instead of "中国饭馆"), incorrect use of demonstrative pronouns, and excessive or incorrect use of the particle "de" (的). These errors directly stem from insufficient grammatical grounding in instructional materials. To address this gap, the present study introduces an innovation: Powtoon-based grammatical point videos. These videos provide explicit grammatical explanations through engaging, animated content accessible via QR codes or online platforms. The study investigates whether this innovation effectively addresses the grammar instruction gap and meets learners' needs and expectations.

Research Objectives

This study is guided by the following research objectives:

1. To determine how elementary Mandarin learners view the importance of grammar instruction in their textbooks.

2. To assess learners' overall experience and perceived effectiveness of the Powtoon-based grammar videos.
3. To evaluate the perceived design elements of the videos in terms of overall content, content delivery, content capacity, voice-over, and content arrangement.

Research Questions

This study addresses the following research questions:

1. How do elementary Mandarin learners perceive the importance of having grammatical points in their textbooks?
2. How engaging and effective do learners find the Powtoon-based grammar videos?
3. How do learners rate the perceived design elements of the videos in terms of overall content, content delivery, content capacity, voice-over, and content arrangement?

Significance of the Study

The study directly addresses the needs of elementary Mandarin learners who have expressed a strong desire for explicit grammatical instruction in their textbooks. By investigating the effectiveness of Powtoon-based grammatical point videos, this study offers learners an alternative, engaging, and accessible method for mastering Mandarin grammar. The innovation supports self-directed learning, allowing learners to review grammatical concepts at their own pace and convenience. For Mandarin language educators, the findings provide empirical evidence on the effectiveness of multimedia grammar instruction, equipping teachers with a research-based rationale for integrating video-based resources into their pedagogical practices.

This study addresses a notable gap in the literature on Mandarin language education in Malaysia. By evaluating the effectiveness of Powtoon-based grammatical point videos, The study also provides a replicable model for evaluating multimedia grammar resources that can be adapted to other language learning contexts. While this study focuses on Mandarin language education in Malaysia, the findings have relevance to foreign language instruction more broadly. The Powtoon-based innovation offers a reference that can be adapted to other languages and educational contexts, particularly where textbook resources are limited or where learners require additional support for self-directed study.

LITERATURE REVIEW

Grammar Instruction in Language Learning

Explicit grammar instruction plays a fundamental role in language acquisition, particularly for elementary learners who require guidance to understand and apply grammatical rules. According to Ellis (2006), grammar teaching involves any technique that draws learners' attention to grammatical forms, either through explicit rule explanation or implicit exposure in context. Explicit instruction involves direct teaching of grammatical rules, while implicit instruction occurs when learners are exposed to grammatical structures naturally without formal explanation. A meta-analysis by Norris and Ortega (2008) confirmed that explicit instruction produces greater L2 grammar gains than implicit instruction alone. This finding emphasizes the importance of incorporating explicit grammatical explanations in instructional materials, particularly for elementary learners who require structured guidance to grasp structures that differ from their native language.

In the context of Mandarin as a foreign language, explicit grammar instruction is particularly relevant because Mandarin's grammatical structures differ substantially from those of English and Malay, requiring learners to acquire new grammatical concepts. However, many textbooks fail to provide adequate grammatical instruction, as most Mandarin textbooks prioritise vocabulary, sentence patterns, and communicative activities while neglecting explicit grammar explanations. This creates a significant gap between what learners need and what textbooks provide, which is especially problematic for elementary learners. Mok et al. (2019) found that Malay

students learning Mandarin exhibit predictable error patterns directly attributable to insufficient grammatical instruction, including omission of measure words and reversal of endocentric phrase order. These findings underscore the critical need for systematic, explicit grammar instruction in elementary Mandarin curricula, as implicit exposure alone appears insufficient for learners to acquire structures that differ markedly from their native languages.

Effectiveness of Video Instruction and Animated Videos in Language Education

Video-based instruction has been shown to be effective in various educational contexts, as videos provide authentic language input, visual context, and opportunities for repeated viewing. Research by Chandra et al. (2024) evaluated the effectiveness of video-based learning in improving Mandarin grammar skills among 36 students, revealing a significant improvement in Mandarin grammar skills among learners who used video-based learning. Videos are particularly well-suited for self-directed learning, as learners can access them at their convenience, watch them multiple times, and learn at their own pace. This suitability is especially important in language education, where learners need extensive practice and review, and videos can supplement classroom instruction by providing additional opportunities to review grammatical concepts.

Animated videos offer additional benefits for language learning, as animation can illustrate abstract concepts, provide visual context, and maintain learner engagement. Powtoon, the platform used in this innovation, creates animated videos that combine text, narration, and visual elements, aligning with multimedia learning principles to support effective learning and engagement. Guo et al. (2014) analyzed 6.9 million video-watching sessions across four MOOCs on the edX platform and found that shorter videos (3-6 minutes) had significantly higher engagement than longer videos, while videos with high production value (professional animation, clear audio, visual variety) and conversational narration also had higher engagement. These findings directly informed the design of the Powtoon videos in the present innovation.

Powtoon as an Educational Tool

Powtoon is a cloud-based animation platform launched in 2012 that enables educators to create professional-quality animated videos without specialized technical skills. Its features include customizable characters, backgrounds, props, transitions, text animations, and voice-over integration, with users able to choose from hundreds of templates or create videos from scratch using a drag-and-drop interface. Powtoon videos can be exported to YouTube, downloaded as MP4 files, or embedded in learning management systems like Moodle or Canvas. Research on Powtoon in education has grown rapidly over the past decade. Veerasamy and Ramasamy (2023) conducted a literature review on the use of Powtoon animated videos for teaching Tamil grammar in Malaysian secondary schools, synthesising findings from multiple studies that demonstrate Powtoon enhances learner engagement, motivation, and comprehension. The authors highlighted that Powtoon's animated features make learning more interesting and interactive, providing a theoretical rationale for integrating Powtoon into grammar instruction. Similarly, Yunia et al. (2025) developed and validated Powtoon-based learning media for Pancasila Education in Indonesian elementary schools using the ADDIE model, demonstrating that systematically developed Powtoon media achieved high validity (89.3%) and exceptional practicality (teacher ratings 93.3%, student ratings 84.4%). The study contributed empirical evidence supporting social agency theory and cognitive load theory in animated learning media design, demonstrating that well-designed animated content enhances student engagement while managing cognitive resources effectively.

THEORETICAL FRAMEWORK

This study is informed by an integrated theoretical framework combining Mayer's (2009) Cognitive Theory of Multimedia Learning, Paivio's (1986) Dual Coding Theory, and Sweller's (1988) Cognitive Load Theory.

Mayer's (2009) Cognitive Theory of Multimedia Learning is based on three core assumptions: dual channels (visual and auditory), limited capacity, and active processing. Mayer proposes several design principles including coherence, signaling, redundancy, spatial contiguity, temporal contiguity, and segmenting. Zhang's (2022) pilot study demonstrated that a multimedia module based on Mayer's theory significantly improved CFL

learners' understanding of the "shì...de" construction. The present study applies these principles to Powtoon-based videos, combining narration, animation, and text while segmenting content and signaling key information.

Paivio's (1986) Dual Coding Theory posits that information processed through both verbal and visual systems is more likely to be retained. Chapelle (2003) concluded that multimedia resources integrating visual, auditory, and textual input significantly outperform text-only materials. The videos in this study utilise both channels to support dual coding of grammatical information. Sweller's (1988) Cognitive Load Theory emphasises that instruction should minimise extraneous cognitive load while optimising germane load through clear presentation, chunking, and effective use of dual channels. The Powtoon-based videos are designed accordingly, with content presented clearly, segmented into manageable portions, and utilising both visual and verbal channels.

CONCEPTUAL FRAMEWORK

INPUT

LACK OF GRAMMAR INSTRUCTION IN TEXTBOOKS

Locally produced Mandarin textbooks lack explicit grammatical explanations Ho et al. (2024) nor Mok et al. (2025)



POWTOON-BASED GRAMMATICAL POINT VIDEOS

Innovation designed to address the grammar gap through animated content, narration, text, scaffolded arrangement, and HSK alignment.

OUTPUT



LEARNER PERCEPTIONS AND EVALUATIONS

DIMENSION 1:PERCEIVED IMPORTANCE OF GRAMMAR IN TEXTBOOKS Indicators:

- Importance of grammar
- Textbook inclusion
- Rating of textbook formats



DIMENSION 2:OVERALL EXPERIENCE AND PERCEIVED EFFECTIVENESS Indicators:

- Overall experience
- Effectiveness
- Content design
- Graphic design
- Enjoyment/Fun
- Increased interest
- Self-directed learning suitability



DIMENSION 3:PERCEIVED DESIGN ELEMENTS OF VIDEOS Indicators:

- Content usefulness
- Content clarity
- Content capacity
- Voice-over clarity
- Content arrangement
- ("key phrases" to "complex sentences")
- Approach of "increasing difficulties step by step"
- Numbering system

Description of the Conceptual Framework

The conceptual framework follows a top-to-bottom flow from the identified problem, through the proposed innovation, to learner perceptions and evaluations across three dimensions. The input component consists of two interconnected elements. First, the lack of grammar instruction in locally produced Mandarin textbooks, characterised by minimal explicit explanations, emphasis on vocabulary over grammar, and learners' lack of metalinguistic knowledge. Second, this study introduces an innovation of the Powtoon-based grammatical point videos featuring animated content, professional narration, on-screen text, scaffolded arrangement, and numbering system. The theoretical foundation is grounded in Mayer's (2009) Cognitive Theory of Multimedia Learning and Paivio's (1986) Dual Coding Theory.

The output component captures learner perceptions across three dimensions. Dimension 1 examines perceived importance of grammar in textbooks through indicators including interest in learning Mandarin, importance of grammar, textbook inclusion, and rating of textbook formats. Dimension 2 assesses overall experience and perceived effectiveness through indicators of overall experience, effectiveness, content design, graphic design, enjoyment, increased interest, self-directed learning suitability, and audio-visual method endorsement. Dimension 3 evaluates perceived design elements through indicators of content usefulness, content clarity, content capacity, voice-over clarity, content arrangement ("key phrases" to "complex sentences"), approach of "increasing difficulties step by step", and numbering system.

The interconnections illustrated by the arrows show that the grammar gap necessitates the development of Powtoon-based videos as a potential solution, the videos are evaluated by learners resulting in perceptions across three dimensions, and the dimensions are interconnected as learners who recognise the grammar gap are likely to be more receptive to the innovation, while those with positive experiences are likely to rate design elements highly.

METHODOLOGY

Research Design

This study employed a quantitative survey research design, which is appropriate for measuring learners' perceptions and evaluating the effectiveness of instructional innovations while enabling descriptive statistical analysis of learners' responses (Creswell & Creswell, 2018). The design was suitable for measuring learners' current perceptions of grammar instruction and their experiences with the Powtoon-based videos. The target population comprised non-native elementary Mandarin learners at a Malaysian public university, and a convenience sampling method was employed with 109 learners participating in the study. This included 91 female (83.5%) and 18 male (16.5%) participants. Their ages ranged from 20 to 28 years, with an average age of 21.89 (SD=1.54). Disciplinary backgrounds included business (34%), engineering (28%), law (15%), social sciences (12%), and others (11%).

A structured questionnaire was developed to collect data on learners' perceptions and experiences, designed based on the research objectives, research questions, and theoretical framework. The questionnaire comprised four sections covering respondents' background, perceived importance of grammar in textbooks, overall experience and effectiveness of the Powtoon-based videos, and perceived design elements of the videos. Various response scales were utilised, including Likert-type scales for interest, importance, agreement, and rating, as well as specific scales for content capacity (3=just right).

Validity and Reliability

The questionnaire was reviewed by an expert in Mandarin language education to establish face and content validity. The experts assessed the clarity, relevance, and comprehensiveness of the items. No revision was made based on the feedback. The questionnaire demonstrated acceptable to excellent internal consistency across all sections. Cronbach's alpha values were 0.757 for Section 2 (Perceived Importance of Grammar in Textbooks) 0.881 for Section 3 (Overall Experience and Effectiveness), and 0.845 for Section 4 (Perceived Design Elements).

These values indicate that the instrument reliably measured the intended constructs for this study (George & Mallery, 2003).

Innovation: Powtoon-Based Grammatical Point Videos

The innovation comprised Powtoon-based videos covering 4 grammatical points for elementary Mandarin learners. The videos were created using the Powtoon animation platform, combining animated visuals, text, and narration. The videos covered grammatical points appropriate for elementary learners, including the functions of a) "To be" - linking subject with noun/noun phrase, b) Possession, modification, nominalisation, c) "Who" - asking about people and d) "What" - asking about things, actions, ideas. The videos were designed following multimedia learning principles (Mayer, 2009) of a) Content was segmented into manageable portions, b) Key information was signaled, c) Visual and verbal channels were used effectively, and d) Extraneous material was minimised. The videos were arranged from "key phrases" to "complex sentences," following a scaffolded approach (Bruner, 1966). This arrangement was designed to support learners in building gradually from simple to more complex grammatical structures.

Table 1 The four grammatical points selected for the innovation videos

Video No	Grammatical Point	Function	Key Structure
1	是 (shì)	"To be" - linking subject with noun/noun phrase	Subject + 是 + Noun/Noun Phrase
2	的 (de)	Possession, modification, nominalisation	Noun/Pronoun/Adj/Clause + 的 + Noun
3	谁 (shéi)	"Who" - asking about people	Question Word + Verb / Subject + 是 + 谁
4	什么 (shénme)	"What" - asking about things, actions, ideas	Subject + Verb + 什么 / 什么 + Noun

Data Collection and Data Analysis

For data collection, learners were introduced to the Powtoon-based grammatical point videos and given access to them over a 2 week period. Following their viewing of the videos, learners completed the questionnaire, which was administered via an online platform. Completed questionnaires were then collected and screened for completeness. For data analysis, descriptive statistics were computed for all items, with frequencies and percentages calculated for categorical variables and means and standard deviations computed for ordinal variables. Data were analysed according to the three research questions, with mean scores and standard deviations computed for all items under each research question. Cronbach's alpha was computed for each section of the questionnaire to assess internal consistency reliability, with analyses performed using Microsoft Excel and SPSS.

FINDINGS & DISCUSSION

Respondents' Background

The demographic profile of the 109 respondents is presented in Table 2. The sample was predominantly female (83.5%), reflecting patterns commonly observed in foreign language enrollment. The age distribution showed that the majority of respondents were young adults between 20 and 23 years old, with a mean age of 21.89 years (SD=1.54), characteristic of university-level elementary language courses where students typically enroll during their first or second year of undergraduate studies. The sample captured a broad cross-section of the university's Mandarin language program, with diverse representation across four main disciplinary backgrounds including business (34%), engineering (28%), law (15%), social sciences (12%), and others (11%). This diversity enhances the generalizability of findings within the institutional context, as it encompasses learners from different faculties with varying exposure to Mandarin instruction.

The findings reveal that the majority of respondents (85.3%) expressed either "Very interested" (37.6%) or "Interested" (47.7%) in learning Mandarin, with a mean score of 4.16 (SD=0.69) on a 5-point scale. According to Gardner's (1985) Socio-Educational Model, learners with high interest and positive attitudes toward the target language tend to be more motivated and successful in language acquisition, as integrative motivation, is a key predictor of language learning success. The high interest levels observed in this study suggest that learners are genuinely engaged with Mandarin language learning, providing a strong motivational foundation for implementing instructional innovations such as the Powtoon-based grammatical point videos.

Table 2. Gender Distribution

Gender	Frequency	Percentage
Female	91	83.5%
Male	18	16.5%
Total	109	100%

Please rate your interest in learning Mandarin?

109 responses

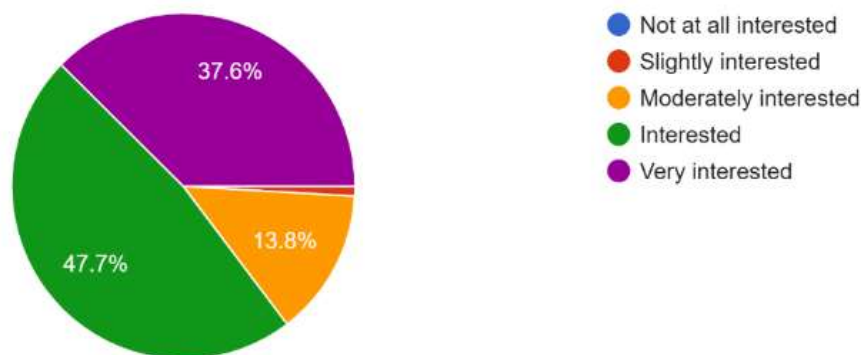


Figure 1 Learners' interest in learning Mandarin

Reliability Analysis

The internal consistency of the questionnaire was assessed using Cronbach's alpha across all three sections. As presented in Table 3, Section 2 of "Perceived Importance of Grammar in Textbooks" demonstrated acceptable reliability with a Cronbach's alpha of 0.757, indicating that the seven items consistently measured learners' perceptions of grammar importance in textbooks. Section 3 of "Overall Experience and Effectiveness" exhibited good to excellent reliability with a Cronbach's alpha of 0.881, confirming that the eight items consistently measured learners' engagement with and perceived effectiveness of the Powtoon-based videos. Section 4 of "Perceived Design Elements" demonstrated good reliability with a Cronbach's alpha of 0.845, indicating that the nine items consistently measured learners' evaluations of the videos' design quality. Overall, the Cronbach's alpha values ranging from 0.757 to 0.881 confirm that the questionnaire reliably measured the intended constructs for this study (George & Mallery, 2003).

Table 3. Cronbach's Alpha Reliability Analysis

Section	Items	Cronbach's Alpha	Interpretation
Perceived Importance of Grammar in Textbooks	7	0.757	Acceptable
Overall Experience & Effectiveness	8	0.881	Good / Excellent
Perceived Design Elements	9	0.845	Good

Importance of Grammar (Research Question 1)

Research Question 1: How do elementary Mandarin learners perceive the importance of having grammatical points in their textbooks?

This research question addresses the core problem identified in the literature: the lack of grammatical instruction in locally produced Mandarin textbooks in Malaysia. The findings for Research Question 1 provide compelling evidence that elementary Mandarin learners in Malaysia perceive grammar instruction as highly important and recognise a significant gap in current textbook provisions. The following sections present detailed findings and discussion for each aspect of learner perceptions regarding grammar instruction. The findings for Research Question 1 are presented in the Table 4.

Table 4. Importance of Grammar

Item	Mean	SD	Interpretation
Importance of grammar to master Mandarin	4.42	0.72	Very High
Textbook should include grammatical points	4.43	0.63	Very High
Rating: Textbook with videos via QR codes	4.20	0.70	High
Rating: Textbook with paper guidance	4.01	0.77	High
Rating: Textbook with no grammatical points	2.37	1.22	Low

Note:

Item 1: Coded on a 5-point scale (Very important=5, Important=4, Moderately Important=3, Slightly Important=2, Not important=1)

Item 2: Coded on a 5-point scale (Strongly agree=5, Agree=4, Neutral=3, Disagree=1, Strongly disagree)

Item 3-5: Coded on a 5-point scale (Excellent=5, Good=4, Fair=3, Poor=2, Very poor=1)

Recognition of Grammar's Importance

The mean score of 4.42 (SD=0.72) reflects a very high recognition of grammar's importance, strongly supporting the theoretical position that explicit grammar instruction is valued by language learners. The high ratings reflect learners' awareness that grammatical knowledge is fundamental to achieving communicative competence in Mandarin, which is particularly significant given that Mandarin's grammatical structures differ substantially from Malay and English, the primary languages spoken by Malaysian MFL learners. Without explicit instruction in areas such as word order, aspect markers, and sentence particles, learners may struggle to produce accurate and meaningful utterances.

Recent research reinforces the critical role of explicit grammar instruction in second language acquisition. Austen and Fayram (2025) argued that explicit form-focused grammar instruction is not only desirable but may be essential to meet diverse learner needs, as it facilitates "noticing," a key component in developing grammatical competence. Additionally, a study on Korean EFL learners (Kim, 2014) found that explicit grammar instruction positively affected the development of implicit L2 knowledge, whereas incidental exposure alone did not provide sufficient conditions for such development. These findings collectively affirm that explicit grammar instruction.

Agreement on Textbook Inclusion

The finding that learners strongly agreed that textbooks should include grammatical points (Mean=4.43, SD=0.63) represents a clear mandate for curriculum developers and textbook authors. The mean of 4.43, approaching the maximum of 5, suggests that the lack of grammatical instruction in textbooks is not merely a minor concern but a significant pedagogical gap that learners themselves recognise and wish to see addressed. This finding directly supports the research problem identified in the literature, where Malaysian Mandarin

textbooks often emphasise vocabulary and sentence patterns without explicit grammatical explanations (Ho et al., 2024; Mok et al., 2025).

Preference for Grammar-Supported Textbooks

The comparison of textbook format ratings reveals a clear hierarchy of learner preferences. Textbooks with videos via QR codes received the highest rating (Mean=4.20, SD=0.70), followed by textbooks with paper-based guidance (Mean=4.01, SD=0.77), while textbooks with no grammatical points received the lowest rating (Mean=2.37, SD=1.22). The higher rating for video-based guidance compared to paper-based guidance suggests that multimedia grammar instruction is perceived as more valuable than traditional print-based explanations, supporting Mayer's (2009) Cognitive Theory of Multimedia Learning, which posits that learners learn more effectively from words and pictures than from words alone.

The significant difference between ratings for grammar-supported and unsupported textbooks (a difference of 1.83) identified in the present study demonstrates that learners' satisfaction with instructional materials is strongly influenced by the presence of grammatical support. This finding is consistent with Ozdemir's (2024) recent experimental study, which found that students in the experimental group who participated in structured grammar instruction activities achieved significantly higher grammar scores than the control group. This suggests that explicit grammar instruction integrated with meaningful activities can significantly enhance learners' grammatical achievement.

Overall Experience on Powtoon-based Grammar Videos (Research Question 2)

Research Question 2: How engaging and effective do learners find the Powtoon-based grammar videos?

The findings for Research Question 2 demonstrate that learners found the Powtoon-based grammatical point videos to be both highly engaging and effective. All seven measured items received mean scores above 4.10 on a 5-point scale, indicating consistently positive responses across all evaluation criteria. The following sections present detailed findings and discussion for each aspect of the learner experience. The findings for Research Question 2 are presented in Table 5.

Table 5. Overall Experience on Powtoon-based Grammar Videos

Item	Mean	SD	Interpretation
Overall experience learning through videos	4.14	0.76	High
Videos effective to guide elementary learners	4.30	0.69	Very High
Videos well designed - content	4.31	0.68	Very High
Videos well designed - graphic	4.27	0.76	Very High
Learning through Powtoon was fun	4.30	0.72	Very High
Powtoon increased interest in learning	4.29	0.68	Very High
Audio-visual method for better mastery	4.29	0.75	Very High

Note:

Item 1 Coded on a 5-point scale (Excellent=5, Very good=4, Good=3, Average=2, Poor=1)

Item 2-7 Coded on a 5-point scale (Strongly agree=5, Agree=4, Neutral=3, Disagree=1, Strongly disagree)

Overall Experience

The overall experience received a mean score of 4.14 (SD=0.76), indicating that the Powtoon-based innovation was well-received. The combination of animation, audio, and visual elements aligns with Paivio's (1986) Dual Coding Theory, which suggests that information processed through both verbal and visual channels enhances retention and understanding. When learners see grammatical concepts illustrated through animation while simultaneously hearing explanations, they are more likely to encode and retain the information.

Perceived Effectiveness

Learners strongly agreed that the videos were effective for guiding elementary learners, with a mean of 4.30 (SD=0.69). This confirms the pedagogical value of the innovation and is consistent with studies demonstrating the effectiveness of video-based grammar instruction. Zhang (2022) found that a multimedia module significantly improved CFL learners' understanding and use of the "shi...de" construction, with students showing marked improvement from pre-test to post-test. The study also reported that students enjoyed using the module and appreciated its comprehensive design and clear presentation, confirming that well-designed multimedia grammar modules effectively enhance language learning outcomes.

Content and Graphic Design Ratings

Content design received a mean of 4.31 (SD=0.68), while graphic design received 4.27 (SD=0.76). These high ratings indicate that the Powtoon animation effectively delivered grammatical content in an engaging visual format. The slightly higher rating for content suggests that learners valued the accuracy and clarity of grammatical explanations slightly more than aesthetic elements. The strong graphic design ratings are significant because they indicate that the Powtoon platform, which uses animated characters and visual effects, successfully captured and maintained learner attention. According to Mayer's (2009) Cognitive Theory of Multimedia Learning, well-designed graphics can reduce extraneous cognitive load by directing attention to the most relevant information.

Enjoyment and Increased Interest

The finding that learning through Powtoon animation was rated as fun (Mean=4.30, SD=0.72) and increased interest in learning (Mean=4.29, SD=0.68) highlights the motivational benefits of animated content. These findings support Dörnyei's (2001) L2 Motivational Self System, which emphasises the importance of positive learning experiences in shaping learners' motivation. The high enjoyment ratings are particularly important given that grammar instruction can sometimes be perceived as dry or tedious. By making grammar learning more enjoyable through animation and engaging visuals, the innovation addresses a key challenge in language teaching.

Suitability for Self-Directed Learning

The videos were rated suitable for self-directed learning with a mean of 4.27 (SD=0.70). This is particularly important given the constraints of face-to-face instruction and the need for autonomous learning opportunities. Technology-enhanced resources have been shown to significantly support autonomous learning by providing accessible, self-paced materials that empower learners to take control of their learning process. The high suitability rating suggests that the videos are designed in a way that supports independent learning, with clear content delivery and appropriate pacing. The combination of high effectiveness and self-directed learning suitability ratings indicates that the videos could serve as a valuable resource for both in-class instruction and independent study.

Endorsement of Audio-Visual Method

Learners strongly agreed that elementary Mandarin learners will master Mandarin better through audio-visual methods (Mean=4.29, SD=0.75). This finding validates the theoretical premise of multimedia learning (Mayer, 2009) and supports the innovation's objective of addressing grammar instruction gaps through video-based teaching.

The strong endorsement of audio-visual methods aligns with a growing body of research demonstrating the efficacy of animated content in language instruction. Studies have consistently shown that the combination of visual and auditory elements in animated videos enhances learner engagement, motivation, and comprehension by making learning more interactive and cognitively stimulating (Veerasamy & Ramasamy, 2023).

Perceived Design Elements (Research Question 3)

Research Question 3: How do learners rate the perceived design elements of the videos in terms of overall content, content delivery, content capacity, voice-over, and content arrangement?

The findings provide detailed insights into learners' perceptions of the perceived design elements of the Powtoon-based grammatical point videos. All measured items received mean scores above 4.25 on a 5-point scale, indicating consistently strong positive ratings across all design dimensions. The findings for Research Question 3 are presented in Table 6.

Table 5. Perceived design elements on Powtoon-based Grammar Videos

Item	Mean	SD	Interpretation
Content usefulness	4.48	0.56	Very High
Content clear and easy to understand	4.42	0.63	Very High
Content capacity (3=Just right)	3.29	0.77	Just right
Voice over clear and precise	4.34	0.65	Very High
Content arrangement benefits learners ("key phrases" to "complex sentences")	4.28	0.65	Very High
Arrangement fulfils learning theory ("increasing difficulties step by step")	4.25	0.66	Very High
Numbering system benefits learners	4.33	0.62	Very High

Note:

Item 1 Coded on a 5-point scale (Very useful=5, Useful=4, Moderately useful=3, Slightly useful=2, Not useful=1)

Item 2, 4-7 Coded on a 5-point scale (Strongly agree=5, Agree=4, Neutral=3, Disagree=2, Strongly disagree=1)

Item 3 Coded on a 5-point scale (Much lighter=1, Lighter=2, Just right=3, Heavier=4, Much heavier=5)

Content Usefulness

Content usefulness received the highest mean score among all items in the survey (4.48, SD=0.56), indicating that learners found the videos valuable for their learning. The exceptionally low standard deviation (0.56) suggests near-consensus among respondents. This finding aligns with Sweller's (1988) Cognitive Load Theory, which emphasises that instructional materials should present information in a way that minimises extraneous cognitive load and maximises learning. The high usefulness ratings suggest that the videos succeeded in presenting grammatical information in a way that facilitated understanding and retention.

Clarity and Ease of Understanding

The finding that content was clear and easy to understand (Mean=4.42, SD=0.63) is crucial for effective instruction. If learners cannot understand the content, the videos would fail in their pedagogical purpose regardless of how engaging they are. This finding supports Mayer's (2009) principles of multimedia design, particularly the coherence principle (avoiding extraneous material) and the signaling principle (highlighting key information). The videos innovated in this study appear to have been designed in accordance with these principles, resulting in clear and understandable content.

Content Capacity

The content capacity was rated with a mean of 3.29 on a scale where 3 indicates "Just right," with a standard deviation of 0.77. This indicates that the amount of grammatical content per video was appropriate, not overwhelming or insufficient, which is crucial for maintaining learner engagement and preventing cognitive overload (Sweller, 1988).

Voice-Over Quality

The voice-over was rated as clear and precise with a mean of 4.34 (SD=0.65). This is significant because the voice-over is the primary channel through which grammatical content is delivered; poor voice-over quality would render the videos ineffective regardless of visual elements. The voice-over clarity is particularly important for language learning, where pronunciation and intonation play a crucial role in understanding. By providing clear, well-pronounced explanations, the videos may also serve as models for correct Mandarin pronunciation.

Content Arrangement

The arrangement from "key phrases" to "complex sentences" was rated highly (Mean=4.28, SD=0.65), and the approach of "increasing difficulties step by step" received a mean of 4.25 (SD=0.66). Both findings reflect the successful application of Bruner's (1966) spiral curriculum approach, where learners build on prior knowledge to master increasingly complex content. This scaffolded approach is fundamental to effective language instruction, as moving from key phrases to complex sentences provides appropriate scaffolding that guides learners through increasingly challenging content. The findings align with Nonthamand (2024), who demonstrated that scaffolded instructional videos significantly improve learner achievement and self-efficacy compared to non-scaffolded videos, as the gradual progression from simple to complex content reduces cognitive load and enhances comprehension.

Numbering System

The numbering system for matching Mandarin and English vocabulary received strong endorsement (Mean=4.33, SD=0.62). The numbering system likely reduces cognitive load by clearly signalling the correspondence between Mandarin and English vocabulary, consistent with Mayer's (2009) signaling principle, which suggests that learners benefit from cues that highlight the organisation of essential material. The high ratings for this feature also suggest that learners appreciate supports that make the language learning process more transparent and less confusing.

CONCLUSION

This study addressed the critical gap in grammatical instruction for elementary Mandarin learners in Malaysia by investigating the effectiveness of innovated Powtoon-based grammatical point videos. The findings unequivocally demonstrate that elementary Mandarin learners highly value grammar instruction (Mean=4.42, SD=0.72) and strongly desire grammatical explanations in their textbooks (Mean=4.43, SD=0.63). The Powtoon-based videos were highly effective and engaging, with learners rating their overall experience positively (Mean=4.14, SD=0.76) and strongly agreeing that the videos were effective (Mean=4.30, SD=0.69), enjoyable (Mean=4.30, SD=0.72), and supportive of self-directed learning (Mean=4.27, SD=0.70). The perceived design quality was consistently high across all components, with content usefulness (Mean=4.48, SD=0.56), clarity (Mean=4.42, SD=0.63), and voice-over quality (Mean=4.34, SD=0.65) receiving the highest ratings. The questionnaire reliably measured the intended constructs, with Cronbach's alpha values ranging from 0.757 to 0.881, confirming the robustness of the findings.

The study contributes empirical evidence supporting the integration of multimedia grammar instruction into elementary Mandarin curricula in Malaysia. The innovation serves as a replicable model for addressing similar instructional gaps in other foreign language contexts where grammar instruction resources are limited. In conclusion, the Powtoon-based grammatical point videos represent a viable, effective, and well-received innovation that addresses a genuine pedagogical need in Malaysian Mandarin language education. The findings support investment in technology-enhanced grammar instruction to improve learner outcomes, satisfaction, and motivation.

ACKNOWLEDGEMENTS

We thank all the students who participated in this study; this research would not have been possible without their contributions.

REFERENCES

1. Austen, S., & Fayram, J. (2025). Explicit form-focussed pedagogies in hybrid contexts. *TESL Canada Journal*, 42(1), 89–110. <https://doi.org/10.18806/tesl.v42i1/1421>.
2. Bruner, J. S. (1966). *Toward a theory of instruction*. Harvard University Press.
3. Chandra, M. R., Luciana, A., Susilo, P. M., & Cindy. (2024). The use of video-based learning to improve Chinese grammar ability. In *2024 9th International Conference on Business and Industrial Research (ICBIR)* (pp. 1–4). Bangkok, Thailand. <https://doi.org/10.1109/ICBIR61386.2024.10875052>
4. Chapelle, C. A. (2003). *English language learning and technology*. John Benjamins Publishing.
5. Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
6. Dörnyei, Z. (2001). *Motivational strategies in the language classroom*. Cambridge University Press.
7. Ellis, R. (2006). *The study of second language acquisition* (2nd ed.). Oxford University Press.
8. Gardner, R. C. (1985). *Social psychology and second language learning*. Edward Arnold.
9. George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference* (4th ed.). Allyn & Bacon.
10. Guo, P. J., Kim, J., & Rubin, R. (2014). How video production affects student engagement: An empirical study of MOOC videos. In *Proceedings of the First ACM Conference on Learning @ Scale Conference (L@S '14)* (pp. 41–50). ACM. <https://doi.org/10.1145/2556325.2566239>
11. Ho, W. C., Lee, A. C., Teo, A. M., Chan, J. Y., & Tay, C. W. (2024). *Comprehensive modern Mandarin language* (1). UiTM Press.
12. Kim, J. (2014). Explicit grammar instruction and development of implicit knowledge. *English language & Literature Teaching*, 20(1), 93–112.
13. Krashen, S. D. (1985). *The input hypothesis: Issues and implications*. Longman.
14. Mayer, R. E. (2009). *Multimedia learning* (2nd ed.). Cambridge University Press.
15. Mok, S. S., Goh, C. S., Tengku Shamsudden, T. A., Neo, Y. F., & On, Y. M. (2025). *Comprehensive modern Mandarin language* (1). UiTM Press.
16. Mok, S. S., Lau, S. K., & K. Sankaran, S. S. (2019). The error analysis of learning Mandarin endocentric phrases among the Malay students in Malaysia. *Journal of Language and Modern Linguistics*, 3(2), 49–62.
17. Nonthamand, N. (2024). Designing the video-based learning environments using workflow and scaffolding to enhance self-instructional video production ability of pre-service teacher. *Contemporary Educational Technology*, 16(1), ep492. <https://doi.org/10.30935/cedtech/14102>
18. Norris, J., & Ortega, L. (2008). Effectiveness of L2 Instruction: A Research Synthesis and Quantitative Meta-Analysis. *Language Learning*, 50, 417-528. <https://doi.org/10.1111/0023-8333.00136>
19. Özdemir, O. (2024). The effect of layered curriculum on grammatical competence of students in learning English as a foreign language. *Mersin University Journal of the Faculty of Education/ Mersin Üniversitesi Eğitim Fakültesi Dergisi*, 20(3), 427–454. <https://doi.org/10.17860/mersinefd.1466223>
20. Paivio, A. (1986). *Mental representations: A dual coding approach*. Oxford University Press.
21. Ramachandiran, C. R., & Mahmud, M. M. (2019). The role of Powtoon as a formative assessment tool for higher education institutions. In *2nd International Conference on Educational Assessment and Policy*, 292–299.
22. Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science*, 12(2), 257–285.
23. Veerasamy, S. D. A. P., & Ramasamy, M. D. (2023). Powtoon animated video for teaching Tamil grammar skills to students in Malaysian secondary schools: A literature review. *Muallim Journal of Social Sciences and Humanities*, 2023(XVI), 1–13.
24. Yunia, K. I., Reinita, Nisa, S., & Waldi, A. (2025). Development of Powtoon-based learning media for Pancasila education in grade IV elementary schools. *Journal of Innovation in Research, Practice, and Education*, 4(4), 3245–3256. <https://doi.org/10.56916/jirpe.v4i4.2336>
25. Zhang, S. (2022). Enhancing grammar learning with a multimedia instructional module: Design and teaching of "Shi...de" construction for CFL learners. *Chinese Language Teaching Methodology and Technology*, 5(1), Article 2. <https://engagedscholarship.csuohio.edu/cltmt/vol5/iss1/2>

-
26. Zhou, X. S., & Low, H. L. (2021). Mandarin acquisition of non-Chinese in Malaysia: Definition and reflection of Mandarin as a second language and as a third language [Paper presentation]. 17th International Conference on Chinese Language Education (ICCSL-17), Beijing Language and Culture University, Beijing, China.