Linguistic and cultural authenticity of a Chinese literacy curriculum

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Abstract

The reported study highlights the importance of an L2 curriculum integrating authentic linguistic and cultural input to promote learners' linguistic, communicative, and cultural competencies. Through content analysis, the researchers evaluated the linguistic and cultural authenticity of the Grades K-6 *Mandarin Matrix Curriculum* designed for Chinese DLI and Chinese bilingual students across Asia, the UK, and North America. The analyses revealed a high level of linguistic authenticity in coded word usage, word order, and situational representations (>90%). Over 92% of illustrated scenarios and character behaviors were coded as culturally authentic. Notably, overall linguistic and cultural authenticity increases across Grades K-6 books (88%–99%). However, the illustrated settings in K-5 books exhibited lower authenticity (43%–58%), while the newly revised Grade 6 books' rich emphasis on Chinese history was deemed more authentic. These results offer valuable insights into the significance of highly authentic texts with a developmental sequence to support Chinese language learning.

Keywords: authenticity, dual language immersion, intercultural communicative competence, *Mandarin Matrix*, textbooks

Introduction

Researchers have emphasized the critical role that textbooks play in language classrooms (Ahmadi & Derakhshan, 2016; Ansary & Babaii, 2002; Mohammadi & Abdi, 2014; Richards, 2001). Textbooks afford a systematic framework that helps instructors teach vocabulary, grammar, and cultural information (Weninger, 2018) while supporting students in developing language proficiency (Crawford, 2002). In addition to ensuring consistency and continuity, linguistic and cultural input in textbooks is particularly important for second-language (L2) learners, especially for those distanced from the environments of the target language (TL) and culture.

Textbooks can bridge the gap by presenting TL and cultural content through textual and visual elements (Hong & He, 2015; Xiong & Peng, 2021). In this regard, authentic content can play an indispensable role in L2 textbooks, fostering learners' communicative competence and offering examples for communicative functions in social situations (Mishan, 2005; Widdowson, 1978). Berardo (2006) highlighted that readers engaging with more authentic texts can gain the skills to interpret and respond effectively in real-world situations, such as understanding street signs and restaurant menus, and navigating requests like getting directions or making reservations.

In the context of foreign language (FL) learning, the authenticity of materials refers to content that represents real-world language that is used by native speakers. These materials often incorporate cultural aspects, including traditions, social norms, and everyday practices, either in oral or written formats (Gilmore, 2007; Swaffar, 1985; Widdowson, 1978). The importance of using authentic texts for language teaching has long been recognized, with Henry Sweet

acknowledging this value in 1899 (Skiada, 2021). He referred to authentic texts as natural texts and claimed that such texts provide a greater advantage over less natural or controlled texts because "they do justice to every feature of the language" (Sweet, 1900, p. 178).

Controlled texts emphasize the repetition of selected grammatical elements and language functions (Sweet, 1900). Based on this feature, some scholars have categorized them as pedagogical texts (Qi, 2021; Rahman, 2014) or adapted texts aligned with instructional purposes (Berardo, 2006). Adapted texts can make content more accessible to beginning language learners (Campos, 1991; Libert, 2013, 2016). Repetition that reinforces foundational language skills may accommodate learners' lower language levels and needs for basic linguistic input (Zyzik & Polio, 2017). However, repetition of selected and sequenced grammar, syntax, or vocabulary can fail to represent real-life communication (Berardo, 2006; Gilmore, 2007).

Based on communicative and sociocultural perspectives, existing studies exploring how textbooks entail situational authenticity (real-world contexts), interactional authenticity (using TL appropriately), and cultural authenticity have focused mostly on learning English as a foreign/second language. Relatively few studies have focused on Chinese language learners (S. Huang, 2018; Licandro, 2024; Xian et al., 2012), with research on authentic materials primarily targeting adult learners, particularly college students (P. Huang, 2019; S. Huang, 2018; Qi, 2021). A concern is that students should have sufficient exposure to authentic language use via textbooks and instruction at younger ages to progressively develop their language proficiency.

Mandarin Matrix (MMX) books are designed for Chinese dual language immersion (DLI) and bilingual students, used in schools across Asia, the UK, and North America (Mandarin Matrix, 2025a). MMX is the required Chinese literacy curriculum for K-6 students in Chinese DLI programs across the state in Utah. In this context, the curriculum is mandated at the state level with the expectation that it is a resource to teachers and a benefit to students. Although some previous studies (Berardo, 2006; Bhandari & Bhusal, 2020; S. Huang, 2018; Zyzik & Polio, 2017) have investigated the benefits of using authentic materials in L2 teaching and learning, whether MMX textbooks sufficiently represent authentic use of Chinese language had not been formally evaluated.

Literature Review

Scholars have advocated the effects of authentic texts in L2 instructional settings from multiple viewpoints. Taylor (1994) argued that authenticity serves both as a tool and a goal in language classrooms, with authentic texts and tasks helping learners develop communicative competence in the TL. Echoing Taylor's view, Mishan (2004) and Hung and Chen (2007) emphasized using realistic contexts in language classrooms, such as booking tickets or making emergency calls.

Enhancing Motivation Through Authentic Texts

Engaging with authentic texts and achieving meaningful outcomes, such as language skills and cultural knowledge, can enhance learners' motivation (Mishan, 2005). Zohoorian (2015) demonstrated that instruction involving authentic texts and tasks can increase English learners' motivation in an English for Academic Purposes (EAP) course. The study compared the self-rated motivation levels of two participant groups, each consisting of 30 college students, by analyzing data from student questionnaires, diaries, and focus-group interviews. Via independent t-test analysis, the mean scores of students who were exposed to authentic texts (found on different

online resources) and tasks related to authentic contexts demonstrated higher motivation levels (M = 275.77) than those who received instruction based solely on the EAP textbook (M = 232.77). The analysis of qualitative data from diaries and interviews revealed that the group receiving more authentic instruction had more favorable perceptions of the course compared to the control group. Using functional language derived from authentic texts and tasks corresponded with higher learning motivation in the experimental group. Conversely, many students in the control group expressed dissatisfaction with textbook passages, finding them outdated, challenging, and disconnected from their interests, which presumably impeded their engagement with the course.

Using a quasi-experimental pretest-posttest design, Namaziandost et al. (2021) found that students taught with both coursebooks and authentic texts reported significantly lower learning anxiety (M = 34.24) than those without authentic materials (M = 57.68). Foreign language anxiety can arise due to various factors, such as low FL learning motivation, poor performance, and inadequate achievement (Horwitz et al., 1986). However, the relationships among FL reading anxiety, motivation, and comprehension are subject to various influences such as teacher-student interactions, learners' beliefs, and teacher support or feedback (Asif, 2017; Horwitz et al., 1986). Although a complex issue, Namaziandost et al. highlighted that the nature of texts that learners encounter likely plays a role in shaping positive or negative experiences in FL reading.

Authentic Texts Can Enhance Reading Comprehension

Research indicates that using authentic texts can positively influence students' reading comprehension (Assiddig, 2019; Islam & Santoso, 2018; Namaziandost et al., 2021). Islam and Santoso (2018) investigated 255 Negeri Grade 8 students' reading comprehension in nine English classes. Within a quasi-experimental and pretest-posttest research design, the experimental group received instruction integrating authentic texts (articles taken from The Jakarta Post, Hello Bali Magazine, and some online resources), while the control group was taught with adapted texts. The pretest of reading comprehension showed that the two groups were equivalent in reading abilities. After eight sessions of instruction, the results indicated that the authentic texts contributed to the experimental group's significantly higher mean score (M = 59.8) on a reading comprehension posttest compared to the control group (M = 46.7). The researchers suggested that incorporating realistic language might have motivated participants to increase their engagement with the content. A concern in this study is that the selected topics for the control group might not have been directly comparable to what the experimental group had encountered. This variable had the potential to influence the observed positive effects within the treatment group.

Support Needed for Reading Authentic Texts

Authentic texts can provide advantages for FL or L2 learning, while factors such as teachers' instruction, text difficulty, scaffolding, and students' grade levels can also influence language acquisition (Bennett, 2008; Qi, 2021). For example, Shastina et al. (2017) reported that 35% of participants (99 college students) learning German as their second FL expressed decreased motivation when struggling to comprehend authentic texts without teacher support.

Using a survey and semi-structured interviews, S. Huang (2018) investigated 14 third-year university students' perceptions of reading authentic texts in an L2 Chinese course. The results indicated that students perceived that integrating authentic texts as supplementary reading materials improved their reading skills, practical grammar and vocabulary, cultural understanding, and learning motivation. However, data from interviews showed that some students preferred a

more balanced use of coursebooks and authentic materials. The reason was that coursebooks reinforced their language practice, but authentic materials helped them connect to Chinese culture. Like Shastina et al.'s (2017) study, the students did not read authentic texts independently. Difficult structures in the selected authentic texts necessitated timely scaffolded instruction from the teachers, including previewing new words, explaining complex language structures, and facilitating the comprehension of main ideas (Namaziandost et al., 2021). Text comprehension is fundamental for learners to enjoy learning and gain meaningful outcomes from authentic content (Namaziandost et al., 2021; Shastina et al., 2017). Thus, the use of authentic texts requires some consideration in how the teacher would support learners' comprehension to maximize transactions with them.

Developing Intercultural Communicative Competence via Authenticity in L2 Textbooks

The Intercultural Communicative Competence (ICC) model was proposed by Byram (1997, 2021) and developed from the theory of Communicative Competence. It includes components of intercultural attitudes, social practices, interpreting and relating, discovery and interaction, and critical cultural awareness (Byram, 1997, pp. 50-53).

- Intercultural attitude refers to an individual's receptiveness to understand cultural beliefs and values different from their own. This entails actively seeking knowledge about the historical and contemporary relationships between one's own culture and others.
- The skills of interpreting and relating involve understanding and explaining events or documents from other cultures while connecting them to one's own.
- Skills of discovery and interaction refer to abilities to acquire knowledge of other cultural practices and effectively apply it with intercultural attitudes during real-time communication.
- Critical cultural awareness denotes an individual's ability to analyze documents and events, employing reasoning to interpret both explicit and implicit values within one's own culture and others.

Bennett (2008) indicated that the ICC model integrates three interconnected dimensions cognitive, affective, and behavioral—to support L2 learners' development of linguistic and cultural competencies. Certain researchers have addressed how L2 instructional materials, including authentic language and culture, can support learners in the development of ICC (Al-Najjar, 2020; Bhandari & Bhusal, 2020; Handayani & Wirza, 2021; Reid, 2014).

Al-Najjar (2020) employed content analysis to examine how English textbooks promoted Palestinian Grade 7 students' ICC. The researcher identified the extent to which each unit manifests the five components of Byram's (1997) ICC model. Adapting Gómez's (2015) study, Al-Najjar categorized instructional topics as source culture (i.e., learner's own culture), target culture (English culture), and international culture (cultures in countries where people use English as an international language or lingua franca). Moreover, each unit was categorized by three levels of culture: surface culture (food, holidays, or sports), intermediate culture (giving people instructions or advice, expressing promises), and deep culture (less obvious perspectives that a certain community embraces). Results of the analyses showed that the content evidenced Byram's five components of ICC with balanced distributions of categories and levels. Students were exposed to diverse cultural contexts with insights into global and social issues (i.e., civilization, the influence of technology in different countries, and ways of communicating in other cultures). The researcher

suggested that such textbook design has the potential to foster students' respect for themselves and others, intercultural identity, and a sense of social responsibility to cooperate with different cultural groups.

Gómez (2015) argued that for ICC enhancement, textbooks should include both surface and deep forms of culture. Students need to learn cultural aspects related to daily life and have chances to develop less visible sociocultural perspectives that a group of people holds. For example, the Chinese proverb 人算不如天算 (Trans., heaven overrules despite human plans) reflects a cultural attitude held by many Chinese people—that life is ultimately governed by heavenly powers (Zhao, 2013). Deep levels of culture can be difficult to understand for beginning learners or those focused solely on linguistic elements. Content communicating deeper aspects of culture may need to be embedded in authentic texts in a developmental way while considering learners' needs and levels (Al-Najjar, 2020; Gilmore, 2004, 2007). Therefore, the complexity of linguistic structure, vocabulary difficulty, length of texts, and topic familiarity are critical elements that should be carefully edited in textbooks tailored for language learners (Zyzik & Polio, 2017).

Reid (2014) highlighted that incorporating authentic content and structures in textbooks fosters learners' development of pragmatic competence and sociolinguistic knowledge. Learners can grasp language within its cultural context, mitigating the risk of misinterpreted meanings or communication breakdowns. Reid also emphasized that understanding both functional language and culturally relevant non-verbal communication is important. This aligns with the notion of ICC, which includes interpreting and employing non-verbal messages, such as appropriate gestures, facial expressions, haptics, and indicators of approval. These paralinguistic features can vary across cultures, making it a vital competence to avoid impoliteness or confusion during intercultural interactions.

Authentic Texts for Different Levels of Learners

Incorporating authentic texts into L2 instruction is controversial due to their potential difficulty for lower-level learners (Ciornei & Dina, 2015; Rahman, 2014). To address this, some scholars highlight the need for developmentally progressive leveling of authenticity (Long & Ross, 1993; Rets & Rogaten, 2021). Brown and Menasche in 2005, as cited in Tatsuki (2006), proposed five levels of authenticity within texts: genuine, altered, adapted, simulated, and inauthentic texts. This framework suggests scaffolding learners' exposure to authentic language by gradually increasing the complexity and realism of texts. The genuine level of authenticity refers to texts intended for native speakers, not for classroom language instruction per se. On the other hand, the inauthentic level pertains to texts created only for the classroom with few authentic characteristics. The altered, adapted, and simulated levels of authenticity are modified texts for teaching purposes. These three levels of texts represent a continuum of linguistic forms that include shorter or simplified sentences with less difficult vocabulary and language structures. Simplifying vocabulary and language structure can decrease the complexity of sentences, making texts more accessible for less advanced language learners (Simensen, 1987). In essence, despite degrees of modification, the modification "should be well-executed" (Guariento & Morley, 2001, p. 348) to contribute to communicative competence in the TL.

Mandarin Matrix Curriculum

The MMX Chinese literacy curriculum (Mandarin Matrix, 2025b) progresses from the foundational level for Grades K-1 and novice level for Grades 2-4 to the intermediate level for Grades 5-8. The content of MMX books is scenario-based, engaging students with authentic and relatable contexts such as school, family, and neighborhood activities to mirror real-life communication (Mandarin Matrix, 2025b, para. 9). The series follows a spiraled approach, repeating commonly used vocabulary, grammar, and sentence structures across levels to strengthen foundational understanding (Mandarin Matrix, 2025b, para. 9).

Purpose of the Current Study

While the structured, contextual approach of the MMX curriculum likely builds linguistic skills, how this progression supports learners' ICC remains a design and research concern (Andarab & Rahimi, 2013; Tatsuki, 2006). The extent and proportion of authentic texts incorporated in the curriculum are yet unknown. There is limited research on textual authenticity in mastering languages other than English—including Chinese (S. Huang, 2018; Zhang & Leahy, 2022), French (Eghtesad, 2018), German (Shastina et al., 2017), and Portuguese (Bateman et al., 2020). To address this gap, this study investigated the extent to which MMX textbooks integrate linguistic and cultural authenticity to support students' development of both language proficiency and cultural understanding. The following research questions guided this investigation:

- 1) To what extent is the linguistic content of the MMX K-6 textbooks authentic to native Chinese speakers' usage at the word and sentence levels?
- 2) To what extent are the scenarios, settings, and character behaviors presented in the MMX K-6 textbooks culturally authentic to native Chinese speakers?
- 3) Do the MMX textbooks progressively increase in linguistic and cultural authenticity across the K-6 grade levels?

Methodology

This study employed content analyses to investigate the extent of linguistic and cultural authenticity embedded in K-6 MMX books. Analytical processes focused on identifying and examining authentic words, word order, representative situations, and cultural norms, including language-based data and images.

Data Collecting Procedures

The selected texts were designed for Grades K-6 students in Utah's Chinese DLI programs. At the time of the study, the series was undergoing revisions. The newer edition of K-6 MMX textbooks was published in 2021, and they were printed and distributed to Utah DLI teachers (P. Xie, personal communication, March 19, 2024). Many schools had not yet purchased the updated K-5 editions due to limited funding. This study investigated the editions most used in Utah schools; thus, it used the older K-5 texts and the newer Grade 6 texts. Each grade uses several leveled booklets or books, as shown in Table 1.

To commence the data coding procedure of K-6 textbook content, we calculated the quantities of basic components, including units, pages, focus words, grammar patterns, and stories for each grade-level book (see Table 2).

Table 1 *Grades K-6 Mandarin Matrix Textbooks*

Grade level	Amounts
K-1	20 booklets and 2 big books
2	30 booklets
3	30 booklets
4	30 booklets
5	10 books
6	8 books
K-6	110 booklets and 20 books

Note. Adapted from Mandarin Matrix (2025c).

Table 2Descriptions of Grades K-6 Mandarin Matrix Textbooks

Textbook level	Grade	Units	Focus words	Grammar patterns	Numbers of stories	Mean pages per story	Total pages per grade level
Foundation	K-1	10	47	19	30	10	300
Novice Low	2	10	62	20	30	10	300
Novice Mid	3	10	79	24	30	10	300
Novice High	4	10	85	26	30	10	300
Intermediate Low	5	10	116	30	30	13	380
Intermediate Mid	6	10	149	33	24	19	466
Total	K-6	60	538	152	174	72	2,046

Note. Adapted from Mandarin Matrix (2025b).

Linguistic authenticity was evaluated at the word level and sentence by sentence by coding YES or NO based on (1) appropriate word choice, (2) natural sentence structure, and (3) contextual alignment with native speakers' everyday communication. These categories were selected because the *MMX*'s texts are designed to build foundational communication skills through contextual exposure, rather than explicit grammatical rules. Given the scenario-based lessons, linguistic coding focused on whether the words and sentences represented native speech and whether the messages represented how native speakers might communicate in the picture scenarios.

Cultural authenticity was examined by analyzing whether each illustration depicted (1) scenarios reflecting Chinese culture, (2) settings (repeated settings within each book were counted only once), representative of Chinese culture, and whether the (3) human characters exhibited behaviors typical of Chinese cultural norms. These six categories, aligned with the research questions mentioned above, guided the coding process.

Inter-Rater Reliability

To establish inter-rater reliability, data were coded by the researcher and another Chinese teacher, a native Chinese speaker with expertise in teaching Chinese literacy and Chinese as a L2 (CSL) to non-native Chinese speakers. The co-coder's academic background in CSL education

equipped her with sufficient professional knowledge and perspectives to examine Chinese linguistics and culture. The researcher and the co-coder engaged in parallel coding of a randomly selected text sample (5% of the content), using the six categories for linguistic and cultural authenticity. Together, the coders conducted a sentence-by-sentence analysis, addressing any questions as they arose. To guide the coding process, a codebook was developed, ensuring a shared understanding before proceeding to code three units from the Grades K-2, Grades 3-4, and Grades 5-6 textbooks. Upon achieving a stable coding system, the two coders separately coded 10% of randomly selected texts and met to discuss findings and address disagreements (Gisev et al., 2013).

Inter-rater reliability (IRR) for the co-coded selections was calculated using the agreement percentage. The target was to achieve an IRR exceeding 80%, which is considered acceptable (Lim et al., 2012; Stemler, 2019). If the IRR for any of the six categories fell below 80%, the two coders revisited the codebook and coding process to refine the definition of the categories regarding authenticity. To address discrepancies, the coders recoded examples from the 10% of data together to ensure consensus. Afterward, separate coding was resumed for another 5% of the data to reassess the reliability of the coding process. Once the IRR exceeded 80% for all six categories, the researcher proceeded to code the remaining data from the K-6 textbooks. Following the completion of the coding procedures, the coded data were analyzed to identify patterns and trends.

Translations of Chinese Sentences

Each textbook sentence was documented in Chinese and English translation (provided by *MMX* online platform) in a spreadsheet. For some Grade 5 books without available translations from *MMX*, an online tool generated initial versions. The researcher and the co-coder verified the accuracy of these translations and ensured the English translations accurately reflected the meaning of the Chinese content.

Data Analyses

Each sentence in the MMX K-6 textbooks was coded as YES or NO per the six aspects below:

- a. The words used in the sentence represent native-Chinese speakers' usage in real-life communication.
- b. The word order in the sentence presents native-Chinese speakers' usage in real-life communication.
- c. The situational context of each sentence represents native-Chinese speakers' real-life communication.
- d. The illustration portrays a genuine scenario reflecting native-Chinese speakers' common experiences and cultural norms.
- e. The settings (housing style, living environments, and decorations) depicted in the illustration reflect native-Chinese speakers' perspectives shaped by Chinese culture.
- f. The human characters in the illustration demonstrate behaviors of native-Chinese speakers conveying messages in real-life communicative contexts.

Linguistic authenticity was examined through aspects a, b, and c, yielding word and sentence-level tallies. Cultural authenticity was examined through aspects d, e, and f pertaining to non-repeated images. Percentages were calculated for each of the six categories to determine the extent of linguistic and cultural authenticity, addressing Research Questions 1 and 2. Frequencies and percentages by grade level were compared to identify patterns across the textbooks and assess

whether linguistic and cultural authenticity progressively increases from Kindergarten through Grade 6 to explore Research Question 3.

Coding Examples of Linguistic Authenticity

Each sentence was marked "YES" for authentic Chinese usage or "NO" for nonstandard, awkward, or culturally inappropriate phrasing. For example, the sentence "小男孩在土里,小女孩 在土里,爸爸在土里" (Trans., Little boy is in the mud, little girl is in the mud; Dad is in the mud) was coded "YES" for word order, while "NO" for word selection and representative situations, as "土里 (in the mud)" carries a potential interpretation of someone interred in the earth. Such connotations can be considered taboo within Chinese culture and avoided in conversation (Hsu et al., 2009).

Another example, "这都是中国人爱吃的东西,来,你坐这边,我们一起吃" (Trans., These are all things that Chinese people love to eat. Come, you sit here, let's eat together) was coded "YES" for all three categories of linguistic authenticity. It reflects an authentic Chinese expression in communication, and a situation where meals are an opportunity for bonding in social interactions (Ma, 2015).

A Coding Example of Cultural Authenticity

Each image or scenario was coded "YES" if it authentically reflected Chinese cultural elements and "NO" if it depicted Western or culturally inappropriate representations. An image from a Grade 3 book was coded "YES" for all three categories of cultural authenticity (see Figure 1).

Figure 1 Example Text and Image from the Grade 3 MMX Textbook



- 中国妈妈:这都是中国人爱吃的东西·来·你坐这边·我们一起吃。
- 美国男孩:谢谢!这么多好吃的,我每个都想吃!
- Chinese Mom: These are all things that Chinese people love to eat. Come, you sit here, let's eat together. American boy: Thank you! So (en) much delicious food, I want to try all of it!

The illustration features a gold word (福, fortune) on red paper, a common decoration in Chinese households symbolizing the desire for good fortune to be brought into the house. Additionally, the rice, food display, and bamboo streamer highlight elements of Chinese food culture, allowing the viewer to associate with this specific dining tradition (Kramsch, 1998; Moss et al., 2015). Moreover, the woman's hand depicts an inviting and welcoming gesture, representing hospitality and a willingness to engage in communication with the guest.

Results

The co-coders analyzed a total of 20% of the texts randomly selected from Grades K-6, resolving disagreements to ensure a shared understanding. Table 3 details the inter-rater reliability results for the six coded elements. With reliability established and potential issues clarified, the researcher proceeded to code the remaining texts.

Table 3 *Inter-rater Reliabilities for Three Rounds of Independent Coding by Category*

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	Sentences			Illustrations			
	Word Used	Word Order	Situation	Scenario	Setting	Human Characters	
		(Y/N)		(Y/N)	(Y/N)	(Y/N)	
Coding Categories	Represents real-world usage by native-Chinese speakers		Portrays a genuine scenario reflecting common experiences in Chinese culture	Reflects perspectives of native- Chinese speakers shape by Chinese culture	Human characters demonstrate behaviors of native- Chinese speakers in real-world contexts		
Grades 3 and 4 books	94.84%	100%	100%	100%	86.36%	100%	
Grades K-2 books	95.38%	100%	100%	100%	88.88%	100%	
Grades 5 and 6 books	96.74%	100%	100%	100%	96.29%	100%	

Results of Analysis of Linguistic Authenticity

The detailed breakdown of the frequencies per code for the linguistic authenticity is shown in Table 4.

Word Selection

The word selection results for Grades K-6 MMX textbooks showed more than 90% authenticity, reflecting real-life vocabulary used by native Chinese speakers. Grades K-1 achieved 90.41% authenticity across 438 sentences, while Grade 6 reached nearly 100% across 1,277 sentences. A progression in word-use authenticity is evident from Grades 3 to 6, increasing from 91.40% to 99.21%.

Table 4 *Frequencies and Percentages of Word Selection, Word Order, and Situations in K-6 Textbooks*

Word Selection								
Grades	Grades K-1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6		
Frequencies	396/438	652/709	830/908	711/763	1041/1087	1267/1277		
Percentages	90.41%	91.96%	91.40%	93.18%	95.76%	99.21%		
Word Order								
Grades	Grades K-1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6		
Frequencies	407/407	673/679	895/899	742/748	1086/1087	1277/1277		
Percentages	100%	99.11%	99.55%	99.19%	99.90%	100%		
			Situations					
Grades	Grades K-1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6		
Frequencies	419/438	707/709	907/908	739/763	1058/1087	1277/1277		
Percentages	95.66%	99.71%	99.88%	96.85%	97.33%	100%		
Total								
Grades	Grades K-1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6		
Frequencies	1222/1283	2032/2097	2632/2715	2192/2274	3185/3261	3821/3831		
Percentages	95.24%	96.90%	96.94%	96.39%	97.66%	99.73%		

Sentence Structure

The syntax in the Grades K-6 textbooks was deemed consistently authentic across grades, with minimal differences in Grades K-4 books. Significantly, the syntax in Grades K-1 and Grade 6 was deemed 100% authentic. For Grades K-1, the high authenticity score could be attributed to the simplicity and utilization of basic syntactic structures, tailored to meet the developmental needs of younger learners (Campos, 1991; Libert, 2013, 2016; Zyzik & Polio, 2017). In contrast, the Grade 6 textbooks maintain 100% authenticity while incorporating more sentences and complex structures, suggesting they are designed to equip students to perform more challenging language tasks.

Analysis of Communicative Situations

The sentences representing situations across Grades K-6 were consistently authentic (95.66% to 100%), reflecting native Chinese speakers' usage in similar contexts. Authenticity increased from 95.66% in Grades K-1 to 99.88% in Grade 3, then declined in Grades 4-5, due to content representing Western culture activities. Grade 5 and Grade 6 books achieved authenticity rates of 97.33% and 100%, respectively. The high authenticity of language for situations in Grade 6 stems from the incorporation of substantial content describing Chinese historical sites, tourist attractions, local cuisine, and comparisons between old and new Beijing.

Extent of Cultural Authenticity

The evaluation of cultural authenticity encompassed an analysis of scenarios, settings (housing style, living environments, and decorations), and the behaviors of human characters in each illustration. The detailed results, including frequencies and percentages across Grades K-6, are presented in Table 5.

Table 5Frequencies and Percentages of Authenticity of Scenarios, Settings, and Characters in Grades K-6 Textbooks

			Scenarios				
Grades	Grades K-1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	
Frequencies	305/330	327/330	314/330	305/330	190/198	239/242	
Percentages	92.42%	99.09%	95.15%	92.42%	95.95%	98.76%	
Settings							
Grades	Grades K-1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	
Frequencies	40/73	45/78	44/96	42/97	35/60	88/90	
Percentages	54.79%	57.69%	45.83%	43.29%	58.33%	97.77%	
Behaviors of Human Characters							
Grades	Grades K-1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	
Frequencies	250/253	318/319	329/330	326/330	198/198	242/242	
Percentages	98.81%	99.68%	99.69%	98.78%	100%	100%	
Total							
Grades	Grades K-1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	
Frequencies	595/656	690/727	687/756	673/757	423/456	569/574	
Percentages	90.70%	94.91%	90.87%	88.90%	92.76%	99.12%	

The number of illustrations in textbooks decreases from 330 in Grades K-1 to 198 in Grade 5, then increases to 242 in Grade 6. The higher number of illustrations in lower grades likely supports reading comprehension for students with novice language proficiency. In Grades K-4, images typically correspond to 1-3 sentences, while in Grades 5 and 6, they align with 2-10 sentences.

Authenticity of Scenarios Across Grades

Coding scenarios for Grades K-6 texts revealed high authenticity (over 92%), with an increase in Grades K-2 books followed by a decline in Grades 3-4 books. Grade 2 book illustrations are nearly 100% authentic, focusing on school and family life with minimal inclusion of Western cultural elements. Grades 3 and 4 maintain high authenticity while blending Western and Chinese cultural elements, reflecting the *MMX* editors' approach of introducing familiar themes before expanding to Chinese culture. Grade 5 scenarios focus on student-centered themes like school life, neighborhoods, and sports, while Grade 6 shifts to Chinese cultural activities, including visits to the Terracotta Army, Du Fu's Cottage, and descriptions of traditional dishes and street food. This thematic development demonstrates a gradual integration of Chinese culture while maintaining relatable content.

Authenticity of Illustrated Settings

The authenticity percentages for settings were the lowest among categories across Grades K-5 books, with Grades K-2 books below 60%, with Grades 3-4 books below 50%, due to inclusion of Western living environments (e.g., backyards and home styles) and holiday decorations (e.g., Halloween and Easter). Grade 5 authenticity for settings improved to nearly 60%, remaining relatively low compared to Grade 6, which achieved 97.77%. Notably, the authenticity of settings increased by over 30% from Grade 5 to Grade 6, reflecting a deeper integration of

Chinese cultural depictions like Kuanzhai Alley (Wide and Narrow Alley) and Siheyuan (courtyard house).

Authenticity of Human Characters in Illustrations

The human characters were analyzed for their actions, gestures, and interactions with other characters in the illustrations, excluding ethnicity to focus on observable behaviors rather than subjective appearances. This analysis revealed a narrow range of coded frequencies, with percentages between 98.78% and 100% (see Table 5). In Grades K-1 illustrations, personalized animals were coded if their behaviors mirrored those of humans. Among 30 books analyzed, six feature such illustrations, including one with cubes playing on a playground. In Grade 2, one book features a cloud personified with human traits. While such portrayals engage young readers, the anthropomorphized characters weaken the overall cultural authenticity. Contrarily, Grades 3-6 textbooks consistently portray realistic human behaviors, with no anthropomorphized animals or non-human entities, reflecting a more realistic array of human interactions as students advance through grades.

Discussion

Via content analysis, this study revealed high levels of linguistic authenticity in MMX books across grades in word choice (M = 94.50%), word order (M = 99.66%), and situational context (M = 98.55%). Most sentences accurately reflect native-Chinese communication, although word choice was deemed slightly less authentic in Grades K-3 books (90%-91%) due to the use of simpler vocabulary compared to Grades 4-6 books (93%–99%). For example, Grades K-1 books contain simplified word labels and incomplete sentences, such as "女生, 四 (Trans., Girl, four), leaving ambiguity. "女生, 四" could be interpreted as either "a girl whose number is four" or "girls get four of something". The simple words and sentence structure lack clear context, posing challenges in understanding the intended meaning and situation. Contrarily, idioms like "百闻不 如一见 (Trans., seeing is believing)" and "不到长城非好汉 (Trans., If you don't reach the Great Wall, you are not a hero)" in Grade 6 books convey implied meanings. The character "百 (one hundred)" implies "a lot of" rather than its literal meaning of "hundred." The literal meaning of "闻" is "to smell," but it signifies "to hear" in this context. Moreover, "不到长城非好汉" describes a person's willingness to confront obstacles and adversity, demonstrating courage and perseverance. Such figurative phrases enrich students' authentic language exposure and help them learn the varied meanings of words in context.

The near 100% authenticity in word arrangement across K-6 books suggests that students are exposed to grammatically standard sentence structures. The high authenticity in depicted situations (M = 98.55%) likely stems from most texts focusing on relatable scenarios—such as school life, family events, and peer interactions—with few fanciful situations. Additionally, the high linguistic authenticity (95%-99%) across grade levels shows gradual increase, exposing students to more authentic language as they progress.

The coded images showed high cultural authenticity in scenarios (M = 95.45%) and human character behaviors (M = 99.46%). These results can be attributed to most illustrations depicting common life experiences, such as eating, following simple instructions from adults, family trips, and friendships. However, these universal activities remain at the surface and intermediate cultural

levels, while deeper elements—such as Confucianism, the concept of preserving face, and the emphasis on harmony—are largely absent (Al-Najjar, 2020).

The lower frequency of cultural authenticity of settings (M = 59.51%) indicates a decision made by publishers to use familiar aspects of Western culture. Using familiar settings may allow learners to access the less familiar language featured and demonstrated a deliberate attempt to support comprehension (as exemplified in Figure 2).

Figure 2
Examples of Grades K-5 Illustrations From MMX



The MMX K-5 series' emphasis on familiar settings may, however, limit students' exposure to the richness of Chinese culture. Interestingly, the newly revised Grade 6 books introduce more culturally rich content, including Chinese history, classical poetry, and architectural marvels. These additions may reflect the MMX editors' efforts to incrementally broaden students' understanding of China's heritage and history, promoting appreciation for the cultural legacy that continues to shape Chinese society today.

Although prior research has invoked the concept of ICC, few studies have explicitly operationalized this framework (Al-Najjar, 2020) or employed a comprehensive six-content analysis. Previous research emphasized strengthening cultural authenticity in L2 textbooks by integrating Chinese cultural values (Hong & He, 2015; Xiong & Peng, 2021) and improving textimage authenticity (Zhang & Leahy, 2022). This present study extends the conversation, focusing on both linguistic and cultural authenticity and its progression across grade levels. The analysis of word choice, word order, and situational language usage demonstrates meticulous attention to delivering highly authentic language for students. Moreover, this study demonstrates the progression of authenticity across grade levels—a dimension that previous research has rarely considered.

With ICC as both a theory and educational goal, it is encouraging that this series was deemed highly authentic. The analysis contributes to the body of research emphasizing that the dialogues and scenarios need to represent socially appropriate communication. This is important for students' development of ICC that includes interpreting and producing language and image within culturally meaningful contexts. An extension of this study would be to analyze the newer editions for Grades K-5 to determine whether they introduce more Chinese culture and how language content aligns with them for younger learners.

However, applying ICC as a theoretical lens raises challenges in analyzing how standardized notions of authenticity reflect or fail to reflect the diversity of Chinese-speaking communities. Relevance and currency are textbook-design issues, as well as pedagogical challenges. Will current editions continue to share relevant content or be quickly outdated? How should teachers augment the text with the accompanying online resources (which were not analyzed). Although not a focus in this study, it could be useful to look closely at which and how topics, such as technology use and manufacturing, are introduced to determine additional cultural elements to introduce beyond textbook construction.

Conclusion

This study serves as a pilot investigation into the linguistic and cultural authenticity in textbooks, specifically MMX, used in elementary-grade Chinese language education. While modest in scope, it enhances understanding of how the MMX curriculum fosters authentic language learning. This content analysis of the K-6 series has evidenced MMX's value as instructional materials for Chinese language learners. The exploration of cultural authenticity uncovered a nuanced portrayal of human scenarios and behaviors in the illustrations, although authentic Chinese settings remain underrepresented.

Limitations

Despite its merits, this study has several limitations. First, its exclusive focus on the MMX curriculum used in Utah's K-6 Chinese DLI programs limits the generalizability of findings to other curricula while establishing a coding method and providing a model for comparing with other textbooks. Second, determining linguistic authenticity relied on researcher's coding decision rather than using objective, published references like a corpus. Finally, this study was based on printed language. Not comparing the content with current native speaker oral language could be problematic, potentially yielding idealized judgments and an overestimation of the authenticity of texts.

Future Research

Future research could continue to delve into the complexity of vocabulary, language structure, and the integration of deep cultural elements within language textbooks to better understand how it fosters students' language skills and cultural knowledge. Additionally, investigating how teachers use such books in the classroom and gathering students' feedback on tasks or cultural content could provide valuable insights for improving instruction. Understanding students' perceptions could guide teachers in using textbook content effectively, informing language instruction and future editions of the MMX books. Future analysis could also compare teachers' insights from different contexts (e.g., Asia vs. the UK) to explore how MMX supports students' ICC in different contexts, offering more nuanced practical implications. Ideally, studies such as this one can challenge researchers and educators to scrutinize instructional texts and materials to better promote high-quality language instruction.

Instructional Implications

Language textbooks serve dual roles as both "curricular artefacts and a pedagogic genre" (Weninger, 2021, p. 143). Their effectiveness depends largely on how well they are utilized by teachers. Teachers may need support, such as professional development, to thoroughly understand the texts, assess the strengths and weaknesses, and supplement these materials with additional

resources to maximize their influence. Teachers should promote linguistic authenticity and convey cultural knowledge by helping students engage with the language and understand the culture embedded in authentic texts. Ultimately, students should be better equipped to apply their skills with authentic materials both inside and beyond the classroom.

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