
Multimodal Metaphors and Cultural Symbols in International Chinese Textbooks: A Survey

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Abstract

This survey paper provides a comprehensive examination of multimodal metaphors and cultural symbols in international Chinese textbooks, aiming to enhance cross-cultural communication. The research is structured to systematically investigate how these educational materials facilitate understanding among learners from diverse cultural backgrounds. Employing a mixed-methods approach, the study integrates quantitative analysis with qualitative insights to evaluate the prevalence and effectiveness of multimodal metaphors and cultural symbols. Key findings indicate that while text-based models perform adequately, the integration of multimodal cues in metaphor detection presents challenges, necessitating further research to optimize methodologies. The analysis reveals that cultural symbols, integral to conveying cultural meanings, pose interpretation challenges due to their deeply embedded cultural contexts. The study underscores the importance of cultural literacy in digital communication, particularly in the use of emojis, which can lead to misinterpretations across cultures. Implications for pedagogical practices suggest the need for curriculum development that incorporates multimodal elements to foster cultural awareness. Future research should focus on expanding datasets, refining methodologies, and developing interactive systems that enhance cross-cultural understanding. By addressing these challenges, the study contributes to the development of educational materials that effectively promote cross-cultural communication in an increasingly digital age.

1 Introduction

1.1 Structure of the Survey

This survey systematically examines multimodal metaphors and cultural symbols in international Chinese textbooks, focusing on their role in enhancing cross-cultural communication. The paper is organized into interconnected sections that create a cohesive narrative. The introduction highlights the significance of multimodal metaphors and cultural symbols in education and their potential impact on cross-cultural understanding.

The background and definitions section establishes the theoretical framework, providing clear definitions of key concepts essential for understanding their application in textbooks. The methodology section details the research design and quantitative analysis, including data collection processes and analytical techniques. An in-depth analysis of multimodal metaphors follows, presenting findings that underscore their role in conveying cultural meanings. Subsequently, the analysis of cultural symbols explores their representation and interpretation, discussing their influence on learners from diverse backgrounds.

The implications for cross-cultural communication section discusses how insights from this study can inform pedagogical practices and curriculum development, suggesting strategies to enhance cross-cultural understanding. The conclusion summarizes key findings, reflects on research limitations, and proposes directions for future studies. Each section is crafted to ensure a thorough exploration

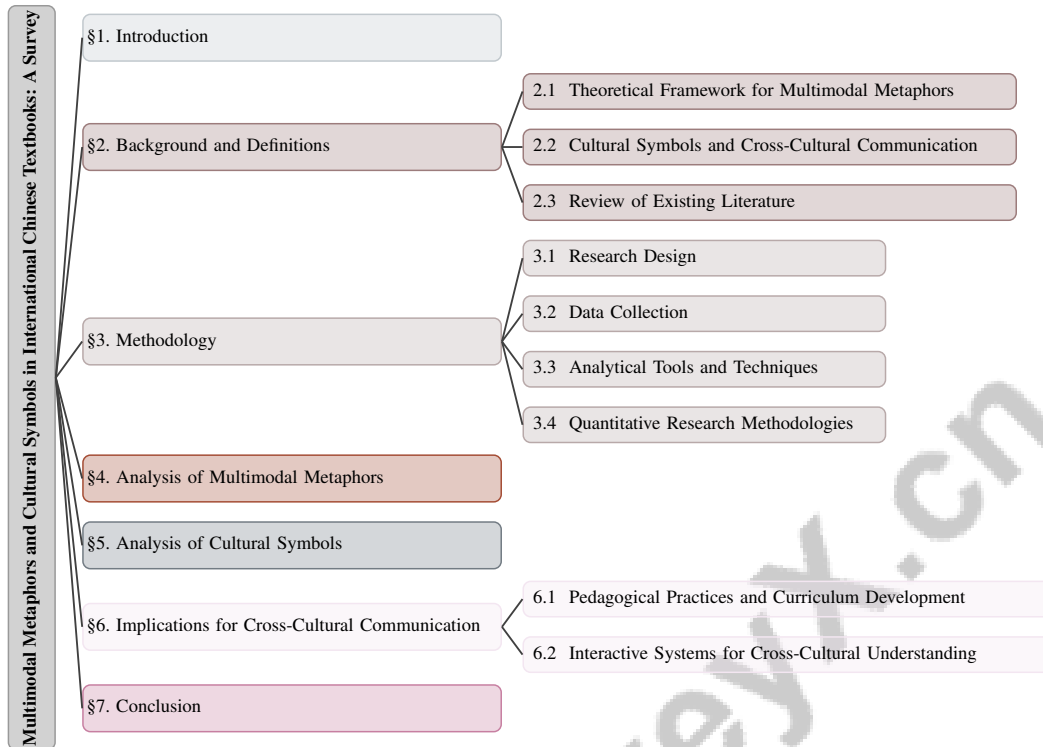


Figure 1: chapter structure

of the topic, facilitating a deeper understanding of multimodal metaphors and cultural symbols in international Chinese textbooks.

1.2 Research Objectives and Quantitative Analysis

The primary objective of this research is to investigate the use of multimodal metaphors and cultural symbols in international Chinese textbooks to enhance cross-cultural communication. This study clarifies how educational materials improve comprehension for learners from diverse cultural backgrounds, drawing on insights from cross-cultural communication tools like emojis and innovative technologies such as Large Language Models (LLMs). By examining the incorporation of various cultural symbols and promoting inclusivity, the study demonstrates their effectiveness in bridging cultural gaps and fostering deeper understanding among students with differing perspectives [1, 2].

Focusing on multimodal metaphors, the research uncovers their potential to convey intricate cultural meanings effectively and examines the representation of cultural symbols in promoting cultural awareness. The quantitative analysis is crucial, systematically assessing the prevalence and effectiveness of these elements in textbooks, thereby enhancing our understanding of their interaction and contribution to cognitive processes in learning, particularly in cross-cultural contexts. This structured approach identifies potential misinterpretations that may arise when metaphors are encountered by individuals from different backgrounds, as highlighted in recent studies on visual and multimodal metaphors [3, 4].

Employing quantitative methodologies allows for a systematic analysis of data collected from textbooks, offering insights into the frequency and context of metaphor and symbol usage. This approach ensures robust analysis and identifies patterns and trends that may not be apparent through qualitative methods alone. Furthermore, the study acknowledges the challenges and opportunities presented by digital communication tools, such as emojis, in cross-cultural contexts. As noted by [2], emojis can be interpreted differently across cultures, impacting communication in educational settings. By integrating these considerations, the research aims to provide a comprehensive analysis of how international Chinese textbooks can be optimized to foster cross-cultural understanding in an increasingly digital age. The following sections are organized as shown in Figure 1.

2 Background and Definitions

2.1 Theoretical Framework for Multimodal Metaphors

Multimodal metaphors operate through the integration of diverse communication modes—text, images, audio, and video—to convey complex meanings, enhancing comprehension in educational contexts by engaging multiple sensory modalities. The benchmark established by [4] highlights challenges in detecting and understanding these metaphors, necessitating the combination of various communicative forms. This interplay is crucial for interpreting context-dependent metaphors that rely on multimodal cues, as emphasized by [5]. In educational settings, these metaphors enrich learning by offering varied perspectives and deeper engagement. The multimodal dataset introduced by [6], incorporating video, audio, and subtitles, exemplifies a comprehensive approach to metaphor detection, surpassing text-only methodologies. This advancement enables educators to create more effective learning environments that cater to diverse cognitive needs, fostering an inclusive and cross-culturally aware educational experience.

2.2 Cultural Symbols and Cross-Cultural Communication

Cultural symbols, encompassing language, gestures, visual imagery, and artifacts, are pivotal in cross-cultural communication, encapsulating the values, beliefs, and norms of specific cultures. However, their interpretation is complex, as meanings are deeply rooted in their originating cultural context. [1] highlight challenges posed by contextual interpretations that can lead to misinterpretations when symbols are viewed outside their native frameworks. In teaching Chinese as a second or foreign language, incorporating cultural symbols is crucial for curriculum development and pedagogical practices. [7] emphasize the need for rigorous research to inform teaching practices that enhance learners' cultural awareness and sensitivity, enabling meaningful engagement with cultural narratives.

The integration of digital communication tools, such as emojis, complicates cross-cultural communication further. Emojis, as contemporary cultural symbols, have varying interpretations across cultures, potentially leading to misunderstandings, as discussed by [2]. This underscores the necessity of cultural literacy in digital communication, where educators must be aware of misinterpretation risks and equip learners with skills to navigate these complexities. Visual and multimodal metaphors also play a significant role in cross-cultural communication. [3] indicate that these metaphors can misfire when interpreted by audiences from different cultural backgrounds, emphasizing the need for careful consideration of cultural dimensions in educational content creation. By fostering a nuanced understanding of cultural symbols and their interpretations, educators can better prepare learners for effective cross-cultural communication, promoting a more inclusive and globally aware educational experience.

2.3 Review of Existing Literature

The study of multimodal metaphors and cultural symbols in educational materials has garnered significant scholarly attention, particularly in enhancing cross-cultural communication. A notable gap in existing research is the predominance of monomodal datasets, which overlook the complexities of multimodal metaphor understanding. [4] emphasize the need for automated systems capable of processing these metaphors' multifaceted nature. Addressing this, [5] propose a benchmark to advance metaphor detection through a comprehensive multimodal dataset, facilitating the comparison of various models and methodologies. This highlights the importance of integrating diverse communicative modes for a nuanced understanding of metaphors in educational contexts.

In the realm of teaching Chinese as a second or foreign language (CSL/CFL), [7] survey methodological trends and topical concerns in research from 2005 to 2015, providing insights into pedagogical challenges and opportunities related to incorporating cultural symbols into language education. This enables educators to navigate the evolving landscape of CSL/CFL instruction more effectively. The understanding of visual and multimodal metaphors, particularly in commercial print advertising, has been explored by [3], identifying existing interpretation methods and challenges in their cross-cultural applicability. Visual and multimodal metaphors can be misinterpreted when viewed through different cultural lenses, necessitating careful consideration of cultural dimensions in educational content creation.

These studies collectively underscore the essential role of multimodal metaphors and cultural symbols in educational materials, advocating for a holistic approach that addresses learners' diverse cognitive and cultural needs. As metaphors extend beyond text to include visual and auditory elements, they significantly enhance comprehension and engagement. For instance, datasets like MultiMET aid in understanding metaphors through integrated text and images, while research on visual metaphors in advertising highlights cultural context's influence on interpretation. Moreover, the emergence of emojis as a universal digital language emphasizes the necessity of cultural representation in fostering effective cross-cultural communication, supporting the argument for inclusive educational practices [5, 2, 4, 6, 3]. By synthesizing insights from existing literature, this research aims to contribute to developing more effective educational strategies that enhance cross-cultural understanding and communication.

In examining the intricate relationship between multimodal metaphors and cultural symbols in international Chinese textbooks, it is essential to understand the methodological framework that underpins this study. Figure 2 illustrates this framework, detailing the research design, data collection methods, analytical tools and techniques, as well as the quantitative research methodologies employed. The structure of the figure highlights the integration of mixed-methods approaches and diverse data sources, alongside advanced analytical tools and cultural considerations. This comprehensive methodological approach ultimately aims to enhance cross-cultural communication and education, providing a robust foundation for the exploration of the topics at hand.

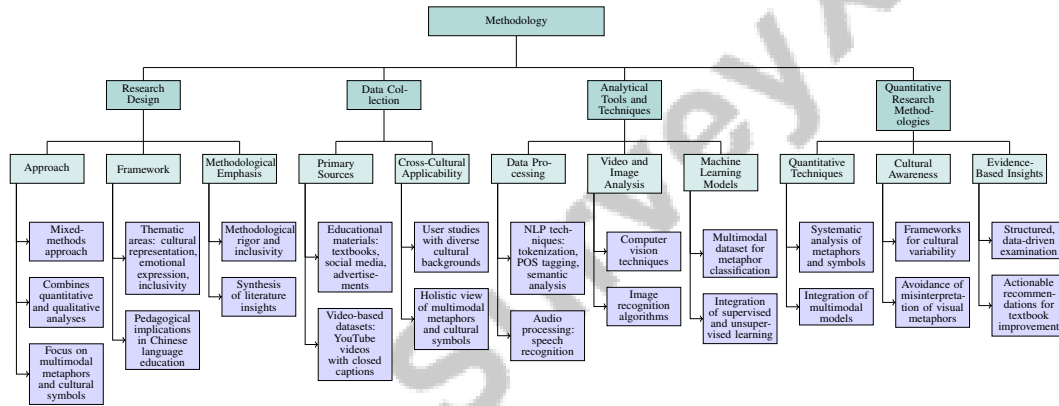


Figure 2: This figure illustrates the methodological framework of the study, detailing the research design, data collection, analytical tools and techniques, and quantitative research methodologies employed to explore multimodal metaphors and cultural symbols in international Chinese textbooks. The structure highlights the integration of mixed-methods approaches, diverse data sources, advanced analytical tools, and cultural considerations, ultimately aiming to enhance cross-cultural communication and education.

3 Methodology

3.1 Research Design

This study utilizes a mixed-methods approach to explore multimodal metaphors and cultural symbols in international Chinese textbooks, aiming to improve cross-cultural communication. By combining quantitative and qualitative analyses, the research captures the multifaceted nature of these metaphors, as emphasized by [4], who stress the importance of integrating text and images for metaphor comprehension. The investigation is structured around thematic areas identified in existing literature, such as cultural representation, emotional expression, and inclusivity, as categorized by [2], providing a framework for analyzing educational materials' impact on diverse learners.

As illustrated in Figure 3, the research design highlights the methodological approach, thematic areas of focus, and pedagogical implications, thereby offering a structured framework for improving cross-cultural communication through education. Pedagogical implications are examined through established research categories in Chinese language education, identified by [7], covering language pedagogy, policy, and teacher development. This situates the study within broader language educa-

tion and cross-cultural communication discourse. The detection of metaphorical language follows benchmarks from [5] and [6], addressing challenges in interpreting metaphors in multimodal contexts, crucial for understanding how different communicative modes convey cultural meanings.

The research design emphasizes methodological rigor and inclusivity, ensuring applicability across diverse educational contexts. By synthesizing insights from literature on teaching Chinese as a second language and innovative applications in cultural studies, the study aims to offer practical recommendations for creating international Chinese textbooks that promote cross-cultural understanding amidst the complexities of language and cultural interpretation [1, 7].

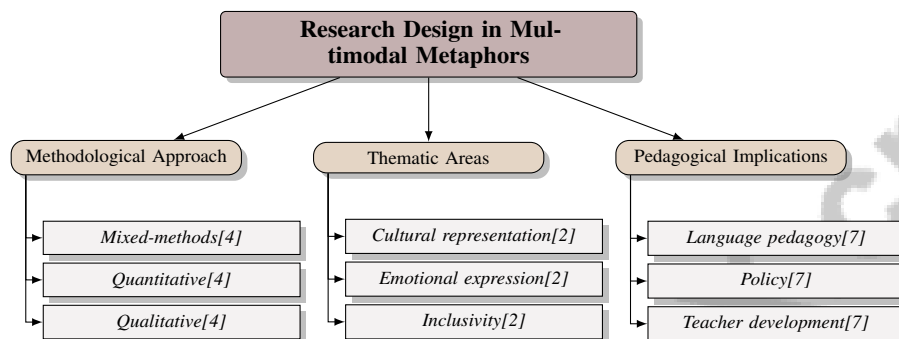


Figure 3: This figure illustrates the research design for studying multimodal metaphors and cultural symbols in international Chinese textbooks. It highlights the methodological approach, thematic areas of focus, and pedagogical implications, providing a structured framework for improving cross-cultural communication through education.

3.2 Data Collection

Data collection was meticulously designed to represent multimodal metaphors and cultural symbols in international Chinese textbooks comprehensively. Primary sources included diverse educational materials, such as widely used textbooks for teaching Chinese as a second or foreign language. To capture metaphorical expressions’ richness, methodologies from prior research were employed, including collecting text-image pairs from social media platforms like Twitter and Facebook, as well as advertisements [4].

Insights from video-based datasets were also integrated, utilizing CC-BY licensed YouTube videos with human-authored closed captions, enriching the dataset with multimodal expressions, totaling approximately 3 hours and 53 minutes of video content to analyze visual and textual elements interplay [5, 6]. User studies with participants from diverse cultural backgrounds explored the interpretation of cultural symbols and metaphors within educational materials, ensuring cross-cultural applicability and understanding [1]. By integrating these diverse data sources, the study aims to provide a holistic view of multimodal metaphors and cultural symbols representation and understanding in international Chinese textbooks, ultimately enhancing cross-cultural communication.

3.3 Analytical Tools and Techniques

The study employed analytical tools and techniques tailored to process and analyze diverse data from international Chinese textbooks, focusing on multimodal metaphors and cultural symbols. This analysis leveraged textual, audio, and video data, necessitating specific preprocessing steps for each modality, as informed by [6], emphasizing integrating multiple communicative modes for comprehensive metaphorical understanding.

Natural language processing (NLP) techniques were applied to textual data to identify and categorize metaphorical language, utilizing tokenization, part-of-speech tagging, and semantic analysis. Audio data underwent processing with speech recognition software to transcribe spoken content, facilitating verbal metaphors and cultural symbols analysis. Synchronizing audio with textual and visual elements is critical for accurately detecting and interpreting metaphors, as these often rely on contextual cues from both audio (e.g., prosody) and visual components (e.g., gestures) [5, 6, 4].

Video data analysis utilized advanced computer vision techniques to identify and interpret visual metaphors and cultural symbols, incorporating a newly developed multimodal metaphor annotated corpus with expert-annotated videos. Despite achieving a notable F1-score of 62

Additionally, machine learning models trained on this multimodal dataset were developed to predict and classify metaphorical expressions. This innovative integration of supervised and unsupervised learning techniques enabled detecting intricate patterns in metaphor usage across various cultural contexts. By analyzing diverse cultural artifacts, these models provide deeper insights into the cognitive and contextual nuances of metaphorical expressions [1, 5, 6, 4]. The integration of these analytical tools and techniques enabled a robust analysis of the data, yielding valuable insights into the role of multimodal metaphors and cultural symbols in enhancing cross-cultural communication in educational settings.

3.4 Quantitative Research Methodologies

The quantitative research methodologies employed in this study were essential for systematically analyzing multimodal metaphors and cultural symbols in international Chinese textbooks. A variety of quantitative techniques were utilized to analyze the prevalence and effectiveness of these metaphors, drawing on empirical data to support findings. This approach aligns with trends identified by [7], highlighting the significant reliance on quantitative methodologies in CSL/CFL research, reflecting a broader positivist paradigm.

The integration of multimodal models was a key component of the quantitative analysis, demonstrating that these models significantly outperform monomodal approaches, underscoring the importance of incorporating both text and image features [4]. This approach allowed for capturing the intricate interplay between communicative modes, providing a comprehensive understanding of how metaphors and cultural symbols function within educational materials.

The analysis also addressed the potential for misinterpretation of visual metaphors, as discussed by [3], emphasizing the necessity of cultural awareness in designing and interpreting educational content. This consideration informed the development of analytical frameworks that accounted for cultural variability and diverse interpretations.

Overall, the quantitative methodologies applied in this study provided a structured, data-driven examination of multimodal metaphors and cultural symbols, contributing to a deeper understanding of their role in enhancing cross-cultural communication and education. By employing comprehensive methodologies, this research offered evidence-based insights and actionable recommendations aimed at improving the effectiveness of international Chinese textbooks, reflecting the increasing global demand for Chinese language education and the critical issues identified in the literature on teaching Chinese as a second or foreign language [1, 7, 6, 4].

4 Analysis of Multimodal Metaphors

4.1 Effectiveness of Metaphors in Cultural Contexts

The scholarly exploration of multimodal metaphors in educational materials emphasizes their potential to enhance learners' interpretative skills and cultural appreciation by integrating text, images, and audio. Despite this potential, studies such as [5] reveal that multimodal approaches do not consistently surpass text-based models in metaphor detection, indicating a need for further research. Specific cultural contexts demonstrate the efficacy of multimodal metaphors; for instance, the CultiVerse project significantly improved cross-cultural understanding of Traditional Chinese Paintings, as detailed by [1]. However, performance metrics from [6] show the best metaphor detection model achieved an F1-score of 62

4.2 Multimodal Approaches to Metaphor Detection

Sophisticated methodologies are required to detect and analyze multimodal metaphors in educational contexts, integrating text, images, and audio to capture the nuanced interplay of cultural meanings. [5] emphasizes the use of multimodal datasets, combining video, audio, and subtitles, to establish a comprehensive framework for metaphor detection that surpasses traditional text-only methods by incorporating contextual cues from visual and auditory elements. The integration of multimodal

models, as discussed by [4], demonstrates their potential to enhance metaphor detection outcomes by merging text and image features, surpassing monomodal approaches.

To illustrate these concepts, Figure 4 presents a figure that encapsulates the key methodologies, challenges, and potential of multimodal approaches to metaphor detection. This figure highlights the integration of diverse modalities and the cultural insights they provide, reinforcing the argument for a comprehensive approach to metaphor analysis. Yet, challenges persist; findings from [6] suggest that current multimodal approaches have not significantly advanced beyond text-based models in certain scenarios. Despite these challenges, the potential of multimodal approaches to deepen the understanding of metaphors in educational materials is significant. The ability to detect and analyze metaphors across various communication modes offers valuable insights into the cultural dimensions of educational content, as evidenced by the successful application of multimodal strategies in the Cultiverse project, which enhanced cross-cultural engagement with cultural artifacts [1].

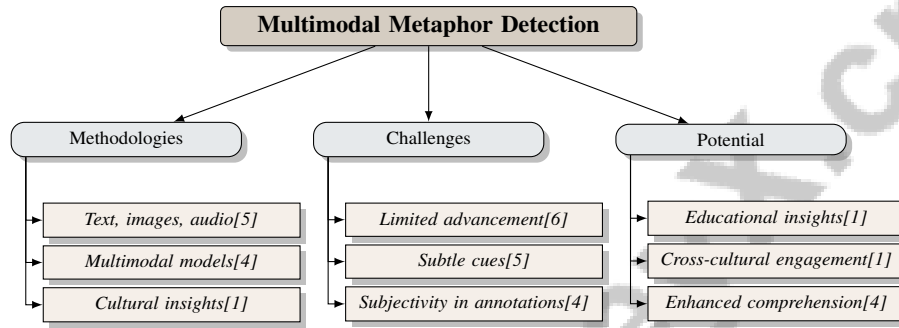


Figure 4: This figure illustrates the key methodologies, challenges, and potential of multimodal approaches to metaphor detection, highlighting the integration of diverse modalities and the cultural insights they provide.

5 Analysis of Cultural Symbols

5.1 Interpretation Challenges of Cultural Symbols

Interpreting cultural symbols across diverse cultures presents significant challenges due to their complex meanings, deeply rooted in specific cultural values, beliefs, and historical experiences. Such complexity complicates understanding from external perspectives, particularly in educational contexts targeting a varied audience [1]. Misinterpretation risks arise when symbols are removed from their cultural contexts, as exemplified by digital communication tools like emojis, whose meanings can vary significantly across cultures, leading to misunderstandings [2].

Incorporating cultural symbols into educational materials requires careful consideration of their cultural dimensions to promote cultural awareness and sensitivity among learners. Educators must understand the narratives these symbols represent, as highlighted by [7], ensuring that they foster a nuanced appreciation of cultural stories. Oversimplification or misrepresentation of these symbols poses substantial educational challenges. Visual and multimodal metaphors, for instance, may be misinterpreted by audiences from different cultural backgrounds, emphasizing the need for educators to consider cultural contexts [3]. A nuanced understanding of cultural symbols and their interpretations can better prepare learners for effective cross-cultural communication, fostering a more inclusive educational experience.

5.2 Cultural Awareness and Misinterpretation

Misinterpretation of cultural symbols significantly impedes cultural awareness, especially in educational settings designed to enhance cross-cultural understanding. Cultural symbols, embodying specific cultural values and beliefs, may be misunderstood outside their native contexts, resulting in misconceptions and diminished appreciation for cultural diversity. This variability is evident in interpretations of digital tools like emojis, which can differ widely across cultures [2].

Accurate representation and interpretation of cultural symbols are vital for fostering cultural awareness among learners. Incorporating these symbols into language education should promote cultural sensitivity, as emphasized by [7]. However, oversimplification or misrepresentation risks undermining educational objectives. Visual and multimodal metaphors, for example, can lead to unintended interpretations and reinforce stereotypes when viewed by diverse audiences [3]. Educators must consider the cultural dimensions and contexts of these symbols to ensure accurate and meaningful presentation [1].

To reduce misinterpretation risks, a comprehensive strategy enhancing cultural literacy and awareness is essential. Initiatives like CultiVerse, which uses Large Language Models for cross-cultural understanding, alongside studies on emojis' role in fostering inclusivity, exemplify such efforts [1, 2]. By cultivating an educational environment that values cultural diversity, educators can equip learners with skills to navigate cross-cultural communication complexities, contributing to a more inclusive and globally aware society.

6 Implications for Cross-Cultural Communication

6.1 Pedagogical Practices and Curriculum Development

Integrating multimodal metaphors and cultural symbols into educational practices enriches cross-cultural communication. Educators should incorporate strategies that emphasize understanding cultural nuances and background knowledge, crucial for interpreting visual and multimodal metaphors in contexts like language education and advertising. This approach not only enhances learning but also supports the growing emphasis on teaching Chinese as a second or foreign language, highlighting the need for cultural awareness and effective communication strategies in a globalized world [7, 3].

Establishing guidelines for the use of digital communication tools, such as emojis, is essential in educational contexts. Emojis can be interpreted differently across cultures, leading to potential misunderstandings [2]. Future research should focus on developing comprehensive guidelines for emoji usage in cross-cultural settings to ensure these symbols facilitate rather than hinder communication. This includes exploring emoji integration in educational and professional communication, equipping learners with skills to navigate digital interactions with cultural awareness.

Curricula should reflect learners' diverse cultural backgrounds by incorporating multimodal metaphors and cultural symbols. Selecting culturally representative educational materials and presenting content sensitively fosters awareness and appreciation. Inclusive teaching practices, supported by technologies like Large Language Models (LLMs), can create environments that celebrate cultural diversity and enhance student engagement. This approach allows students to explore complex cultural contexts, such as the nuanced symbolism in Traditional Chinese Paintings, fostering deeper cross-cultural understanding and meaningful interactions with diverse perspectives. Interactive tools like CultiVerse can further bridge language barriers and promote inclusivity, ensuring students engage with content in a contextually informed manner [1, 7, 6, 2].

Enhancing professional development programs for educators with comprehensive training on the strategic use of multimodal metaphors and cultural symbols is crucial. This training should emphasize integrating visual, auditory, and textual elements to deepen understanding of metaphors, serving as cognitive tools shaping human thought (Lakoff Johnson, 1980). By equipping educators to analyze and apply these metaphors, especially in culturally diverse contexts, programs can promote more inclusive and effective communication strategies resonating with students' varied backgrounds and experiences [6, 5, 4, 3]. Empowering educators with these skills ensures pedagogical practices align with the goal of enhancing cross-cultural communication.

The integration of multimodal metaphors and cultural symbols in pedagogical practices and curriculum development requires a concerted effort to embrace cultural diversity and foster cross-cultural understanding. By implementing these strategies, educators can significantly contribute to a more inclusive educational environment, equipping students with the skills and cultural competencies needed to thrive in a globalized world, where the importance of languages such as Chinese underscores the value of diverse linguistic and cultural education [6, 7, 4].

6.2 Interactive Systems for Cross-Cultural Understanding

Developing interactive systems to enhance cross-cultural understanding is crucial in today's globalized educational landscape. Digital communication tools, like emojis, facilitate emotional expression across diverse cultural contexts, while platforms such as CultiVerse leverage large language models to bridge cultural and language gaps in art appreciation. These advancements highlight the importance of integrating technology with cultural studies to promote inclusivity and a deeper comprehension of various cultural symbols and meanings [2, 4, 1, 7, 6]. Systems should be designed to accommodate learners' diverse cultural backgrounds, fostering an inclusive environment that promotes cultural awareness and sensitivity. One promising avenue for such systems is the integration of visual metaphors, which can convey complex cultural meanings across different contexts.

Visual metaphors can misfire when interpreted by audiences from diverse cultural backgrounds [3]. Therefore, designing interactive systems must prioritize accurately representing and interpreting these metaphors to effectively bridge cultural divides. This involves developing algorithms capable of detecting and adapting visual metaphors to suit the cultural preferences of different user groups, enhancing the system's capacity for effective cross-cultural communication.

Future research should focus on creating inclusive advertising strategies that account for cultural diversity [3]. By investigating trends in visual metaphor usage across global markets, researchers can inform the design of interactive systems that are responsive to cultural nuances and capable of engaging users from various backgrounds. This research will be crucial in creating systems that facilitate cross-cultural understanding while resonating with users on a personal and cultural level.

Incorporating multimodal elements, such as audio and textual content, into interactive systems is essential for providing a comprehensive and immersive learning experience. These systems can leverage advanced natural language processing and machine learning techniques to deliver personalized content tailored to individual cultural and linguistic preferences, thereby enhancing user engagement and understanding. By integrating multimodal data—text, audio, and visual elements—these systems can interpret complex concepts like metaphors, which are influenced by cultural context and cognitive processes. This approach not only improves content relevance but also fosters inclusivity in communication across diverse cultural landscapes [5, 2, 4, 1, 6]. Such systems can create dynamic learning environments that encourage users to explore and appreciate cultural diversity, ultimately fostering a deeper understanding and respect for different cultures.

The development of interactive systems for cross-cultural understanding necessitates a multidisciplinary approach combining insights from linguistics, cultural studies, and technology. By harnessing insights from recent research on digital communication tools like emojis and innovative technologies such as large language models (LLMs), educators and developers can design groundbreaking solutions that enhance cross-cultural communication and promote inclusivity. For instance, the evolving representation of diverse cultures in emojis fosters emotional and identity expression across various contexts. Similarly, platforms like CultiVerse utilize LLMs to bridge cultural and language barriers, enabling deeper appreciation and understanding of traditional art forms, such as Traditional Chinese Paintings (TCPs). These advancements contribute to creating a more interconnected world by facilitating meaningful cross-cultural dialogues and enriching the interpretative experience of cultural artifacts [1, 2].

7 Conclusion

7.1 Challenges and Future Directions

The investigation into multimodal metaphors and cultural symbols within international Chinese textbooks has illuminated several areas that require further exploration. A significant challenge lies in effectively integrating multimodal cues to enhance metaphor detection, as current models have not consistently surpassed their text-based counterparts. The existing datasets often lack the necessary diversity to capture the full spectrum of metaphorical expressions, underscoring the need for expansion to encompass a wider variety of sources and cultural contexts.

Advancing multimodal methods for metaphor detection remains crucial. Incorporating additional contextual cues from modalities such as audio and visual elements could lead to more sophisticated methodologies that better capture the complexities of multimodal communication. This refinement is

essential for improving the accuracy of metaphor detection and understanding across diverse cultural landscapes.

Interpreting cultural symbols across varied backgrounds presents a persistent challenge, particularly in educational settings where these symbols are integral to fostering cultural awareness. Future research should focus on developing frameworks that ensure accurate representation and interpretation of cultural symbols, thereby promoting effective cross-cultural understanding. This involves not only refining existing methodologies but also exploring innovative approaches that leverage technology and interdisciplinary insights to enhance the educational experience.

7.2 Enhancing Methodological Rigor

The methodological rigor of this study is fundamental to its contribution to educational research, especially regarding multimodal metaphors and cultural symbols in international Chinese textbooks. A thorough evaluation of the employed methodologies highlights several opportunities for enhancement that could significantly strengthen future research efforts.

Improving methodological rigor begins with expanding and diversifying the datasets used in analyzing multimodal metaphors. Current datasets may not fully capture the diversity of metaphorical expressions necessary for comprehensive analysis. Future research should prioritize the inclusion of a wider array of multimodal sources, such as social media, films, and interactive digital media, to enrich datasets and provide a more holistic understanding of metaphor usage across cultural contexts.

Additionally, integrating advanced analytical tools and techniques is vital for enhancing the accuracy and depth of metaphor detection. The use of machine learning models that incorporate both supervised and unsupervised learning techniques can significantly improve the detection of complex multimodal metaphors. These sophisticated models enable a more nuanced analysis that considers the interplay among different communicative modes.

Furthermore, methodological rigor can be bolstered through interdisciplinary approaches that incorporate insights from linguistics, cultural studies, and cognitive science. This perspective offers valuable frameworks for understanding the cultural dimensions of metaphors and symbols and their implications for cross-cultural communication. By embracing diverse perspectives, future research can yield more comprehensive and culturally informed analyses.

Finally, developing standardized guidelines and benchmarks for analyzing multimodal metaphors and cultural symbols is essential to ensure methodological consistency and comparability across studies. Establishing such benchmarks can facilitate the evaluation and comparison of various models and methodologies, ultimately advancing the field.

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