

Study on the Root Causes and Solutions of Misunderstandings in Cross-cultural Communication

Huibo Xu^{1*}

¹ Zhejiang Wanli University, Ningbo, China

Abstract. The field that investigates subjects connected to cross-cultural communication, such as diverse cultural origins, linguistic habits, and behavioral patterns, is typically referred to as "cross-cultural communication" from here on out. As a catch-all word for sociology and linguistics, it has more nuanced qualities than psychology while yet having clear use and relevance. To a certain degree, the variety of research methodologies is limited in this area since it is not simple to accomplish deeper inquiry via the use of mathematical models and quantification. Researchers in the field of cross-cultural communication are paying more and more attention to this topic as a result of the rise of globalization and digital technology. The development and use of IT for intercultural communication is illustrative of the growing trend among academics to combine innovation with multidisciplinary methods. Academics must immediately begin to address the pressing matter of how to successfully combine information technology with cross-cultural communication in light of the complexity of the study objectives and difficulties associated with this discipline. In an effort to promote the intersection and creativity of internal and external forces in the field, this research seeks to investigate the practical implementation of the aforementioned ideas.

1 Introduction

Regarding cross-cultural communication, relevant literature clearly states the need to strengthen the connection between cultural differences, which should reflect the continuity and advancement of the communication process. Cross-cultural communicators need to understand the characteristics of students at different cultural stages and the features of cross-cultural communication, to prepare students in advance for further deepening their learning. Cross-cultural communication skills are an important fundamental to students' acquisition of cross-cultural information and the development of cross-cultural conceptions, and an integral part of students' conceptualization of strategies for effective cross-cultural communication [1].

The research techniques used in this study include case analysis, empirical research, and comparative research. Different cultural backgrounds' communication patterns, obstacles, and tactics were compared based on cross-cultural communication abilities. It has been found that there are significant similarities and connections in communication patterns across different cultural backgrounds, and communication barriers are highly correlated. The communication content in the primary stage is relatively simple, while that in the advanced stage is more complex. Cross-cultural communication strategies are the continuation of basic concepts and higher requirements proposed in cross-cultural communication models. Collecting data on communication and communication skills development in different cultural

backgrounds through empirical research. We selected communication scenarios with different cultural levels as the control group, conducted empirical research on and analyzed them, and finally obtained corresponding conclusions by analyzing the existing problems.

2 Basic Concepts of Information Technology for Cross-cultural Communication

2.1 Definition and Scope of Cross-cultural Communication

The two primary foci of studies on cross-cultural communication are: linguistic communication and nonverbal communication. Language communication focuses on the expression and understanding of language, usually using methods such as linguistics and psychology to deeply explore individual language communication, cultural identity, behavioral habits, and values, covering fields such as linguistics, psychology, sociology, anthropology, etc. The field of nonverbal communication studies the phenomena of nonverbal communication across cultures by analyzing the form and function of nonverbal signals such as body language, facial expressions, and gestures. The two forms of communication, "verbal communication" and "nonverbal communication," are practically interdependent despite conceptual distinctions. Cultural differences are an inherent part of any study of cross-

* Corresponding author: BonnieXu0605@163.com

cultural communication, and individual traits play a significant role in shaping this phenomenon. As a result, rather than trying to categorize or differentiate anything, this research will only provide a general outline of what cross-cultural communication is all about [2].

2.2 Classification of Cross-cultural Communication Information and Its Characteristics

The data types involved in cross-cultural communication research are very complex and have different standards.

2.2.1 Perspectives on the Sources of Cross-cultural Communication

The data sources of cross-cultural communication reflect the enormous value inherent in cross-cultural communication data and lead to practical difficulties for the standardization and large-scale utilization of subsequent data standards [3].

2.2.2 Perspectives on the Layout of Cross-cultural Communication

Among them, structured data refers to data with strict standardization, such as records in databases, which can be expressed using structured logic. Standardization and format processing are necessary before this, which is the main characteristic that distinguishes it from other disciplinary data and the prerequisite for the two key processes of "data cleaning" and "data mining" mentioned later [4].

2.3 Knowledge Graph Technology and Distinctive Aspects of Cross-cultural Communication Knowledge Graphs

The domain knowledge graph, in contrast to the former, is often built by subject-matter specialists with an emphasis on deep mining of crucial field information. As a result, deep research and decision support benefit greatly from the improved graph accuracy [5].

Natural language processing and other technologies need to be used for information extraction and basic

database construction when constructing knowledge graphs. Secondly, in terms of modeling logic, considering the subjectivity and complexity of cross-cultural communication knowledge, constructing a knowledge graph based on a single dimension of modeling logic may not achieve good results. It is necessary to comprehensively reflect the knowledge architecture through comprehensive strategies and overlapping parameters in practice. This is most obviously seen in the incorporation of "communicators" desires into the knowledge graph building procedure and in the presence of group intelligence algorithms that aim to improve upon individual intelligence by fostering the emergence of group intelligence but do nothing to improve upon the development of individual intelligence. Hence, the self-evolving knowledge graph body cannot accommodate obvious inconsistencies between collective intelligence and single decision-making unless there is substantial enlargement. Thus, the completeness, coverage, and correctness of the domain as a whole are dependent on the domain communicators' previous knowledge at the knowledge graph stage for its successful building. The knowledge graph can only be made more practical, professional, and accurate if people and groups work together.

3 Technical Process for Constructing Cross-cultural Communication Knowledge Graph

3.1 Construction of Cross-cultural Communication Knowledge Framework

Ontology refers to an ontology that describes the structure and organization of a knowledge graph. It defines concepts, entities, and types of entities in the knowledge graph, as well as their relationships, typically represented by a graph. Taking well-known cross-cultural communication as an example, with language communication as the narrative core, the narrative contains a lot of information such as language, culture, behavior, values, etc. It can be abstracted into a simple ontology structure, as shown in Figure 1, based on which the corresponding cross-cultural communication structure can be fully presented [6].

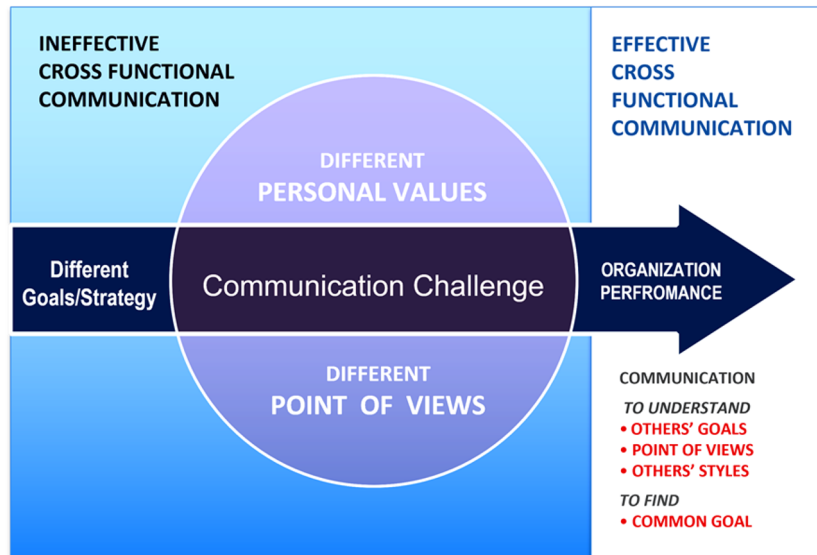


Fig. 1. Framework Diagram of Cross-cultural Communication Knowledge

3.2 Information Extraction Model for Cross-cultural Communication

Entity recognition, relationship extraction, event extraction, and attribute extraction are some of the critical steps in this process, which seeks to store, organize, or analyze data from massive amounts of text by identifying entities, relationships, and attributes and mining the associations between them.

In addition, there are various methods such as statistical analysis, deep learning or support vector machine processes using machine learning techniques, and natural language processing (NLP). In practical applications, these methods often combine to form a comprehensive knowledge graph system [7].

3.3 Cross-cultural Communication Information-Gathering Methods

3.3.1 Cross-cultural Communication Entity Pairing Strategy

Modules such as these are included in the framework diagram: initially, the module that primarily handles requests for link retrieval—the request scheduling module. Secondly, the bulk of the processing and extraction of the necessary request linkages is done by the acquisition module. Finally, there's the download module, whose primary job it is to save the acquired material to a user's computer. Fourthly, processing the data acquired and managing the related requests are the primary responsibilities of the data processing module. The main workflow is: the engine obtains the sending request sent by the acquisition module and passes it to the scheduler, which then accepts the sent request and passes it to the downloader. The download module downloads and acquires the corresponding data

from the Internet. The data is filtered returned to the engine, and finally transferred to the acquisition module. This module needs to extract the required data, pass it to the data processing module, and after actual processing, make the data available in a usable form [8].

3.3.2 Cross-cultural Communication Entity Linking Technology

When building a knowledge graph, we usually start with direct and indirect relationships. Direct relationships can be extracted directly from raw data, while indirect relationships require complex calculations on existing data to obtain, which can reveal deeper dynamics between entities. After constructing a multi-level knowledge graph, it is necessary to make correctness judgments and quality evaluations of the domain entities added to the graph to ensure the construction of a highly accurate knowledge graph. Compared with a single-level knowledge graph, a multi-level knowledge graph is more complex in structure, capable of storing more entities, and with complex entity relationships. Therefore, a graph neural network model can be used for validation, which is a shared variable graph neural network model with a smaller parameter scale and higher application advantages compared to other models.

3.4 Methods of Acquiring Cross-cultural Communication Information

Cross-cultural communication directly reflects the communication status between individuals and groups. The constituent elements of cross-cultural communication development are gradually taking shape, and cross-cultural communication and various evaluation systems are also gradually receiving attention. Nevertheless, when looking at cross-cultural communication practices, it is important to note that some of them are still in their early stages; furthermore, there are still inconsistencies in the underlying logic and

generation mechanism of cross-cultural communication, which can result in misunderstandings between cultures [9].

4 Integration of Cross-cultural Communication and Information Technology: A Case Study of Multicultural Classrooms

4.1 Information Gathering in Multicultural Classrooms

Reasoning in multicultural classrooms is mostly based on students' ability to communicate across cultural boundaries. Multicultural classrooms rely heavily on cross-cultural communication as a component and implementation topic. From the vantage point of intercultural dialogue, there are now three primary strategies for enhancing classroom management in multiethnic settings: The first is language teaching, which clarifies that language teaching achieves information exchange between cultural exchange and knowledge transmission. The second is cultural introduction, which aims to standardize cross-cultural communication by establishing standards for cultural introduction and values and publicly disclosing these standards to students. The third is the internal process reengineering of classroom interaction. In recent years, language courses have been using information technology to enhance classroom interaction and improve cross-cultural communication. However, compared to the ideal state, cross-cultural communication in current multicultural classrooms still needs to be further improved [10].

4.2 Knowledge Refinement in Multicultural Classroom Settings

The fundamental difference between cross-cultural communication and cultural differences lies in their communicative attributes. Effective communication is the goal of the rules and regulations governing cross-cultural communication, and the evolution of this field is mostly reflective of verbal and nonverbal cues.

4.3 Summary of Multicultural Classroom Knowledge

4.3.1 Design Logic of Cross-cultural Communication Construction

Multicultural classrooms fail to adequately impart the knowledge necessary for effective cross-cultural communication, according to experts in the field. Due to a lack of appropriate data and assessment tools, students' levels of satisfaction with cross-cultural communication in multicultural classrooms are mostly determined by this factor. At its heart, this issue lies in communicating across cultural boundaries. One way in which the communication status of people and groups is reflected

in cross-cultural communication is via the term "effective communication," which is often used to characterize it in multicultural classrooms. Unfortunately, cross-cultural communication is severely lacking in multicultural schools, which primarily concentrate on language instruction. Obtaining and measuring cross-cultural communication is often challenging. Asymmetric information and imperfect evaluation mechanisms directly lead to obstacles in cross-cultural communication [11].

4.3.2 Cross-cultural Communication Functional Component Arrangement

In cross-cultural communication, classroom settings have long constrained cross-cultural communication skills. Since the 21st century, multicultural classrooms that integrate information technology have reshaped classroom settings through information technology. However, the drawbacks of traditional classroom settings still constrain cross-cultural communication. Due to technological limitations and cultural differences, cross-cultural communication still needs improvement. Under the premise of multicultural classrooms, cross-cultural communication is regarded as a direct way of knowledge transmission. However, the practical role of multicultural classrooms that focus on language teaching in cross-cultural communication still needs discussion.

4.4 Construction of Information Architecture for Multicultural Classroom

It is inevitable that multicultural classrooms will play a pivotal role in facilitating communication across cultural boundaries. When it comes to multicultural classrooms, one of the most critical tools for efficient communication is cross-cultural communication. This also makes cross-cultural communication not only a technical concept but also an educational concept. Therefore, multicultural classrooms that prioritize effective communication have become a practical mechanism for cross-cultural communication. Multicultural classrooms have a lot of work to do, one of which is improving cross-cultural communication amongst students and there are other areas where multicultural classrooms might use development as well [12].

5 Conclusion

The use of IT allows us to methodically examine the areas of strength and growth in cross-cultural communication study. By providing guiding recommendations for the study, this analysis does double duty: it enhances the research and helps researchers understand the possibilities for new paths and innovations in the field. Therefore, it is particularly important to explore in depth how to effectively integrate information technology into cross-cultural communication research, which can not only reveal the

potential value of this technology in new fields, and promote its wider application and development.

References

1. Gore V. The importance of cross-cultural communication[J]. *IUP Journal of Soft Skills*, 2013, 7(1).
2. Frijda N, Jahoda G. On The Scope And Methods Of Cross - Cultural Research 1[J]. *International Journal of Psychology*, 1966, 1(2): 109-127.
3. Carbaugh D. Communication in cross-cultural perspective[J]. *The handbook of communication in cross-cultural perspective*, 2017: 1-17.
4. Jopek-Bosiacka A. Legal communication: A cross-cultural perspective[M]. Wydawnictwa Uniwersytetu Warszawskiego, 2010.
5. Hsu P S, Van Dyke M, Chen Y, et al. A cross - cultural study of the effect of a graph - oriented computer - assisted project - based learning environment on middle school students' science knowledge and argumentation skills[J]. *Journal of Computer Assisted Learning*, 2016, 32(1): 51-76.
6. Zhu Y, Hildebrandt H. Developing a theoretical framework to measure cross-cultural discourse and cultural adaptation[J]. *Ross School of Business Paper*, 2007 (1092).
7. Wu Y. Automatic Extraction Algorithm of English-Chinese Translation Template Based on Cross-cultural Perspective[C]//2022 2nd International Conference on Networking, Communications and Information Technology (NetCIT). IEEE, 2022: 318-321.
8. Brislin R W. Cross-cultural research methods: Strategies, problems, applications[M]//*Environment and culture*. Boston, MA: Springer US, 1980: 47-82.
9. Kayes D C, Kayes A B, Yamazaki Y. Essential competencies for cross - cultural knowledge absorption[J]. *Journal of Managerial Psychology*, 2005, 20(7): 578-589.
10. Dalglish C L. Promoting effective learning in a multicultural classroom[J]. *EDINEB*, 2002.
11. Sun H. Cross-cultural technology design: Creating culture-sensitive technology for local users[M]. OUP USA, 2012.
12. Hoffman K D, Norman S P. *The Multicultural Classroom: Plan, Build, Renew-Librarian as Constructivist Architect*[J]. 2010.