

Determinants of Intercultural Communication Awareness: Evidence from PISA 2018

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Abstract Developing awareness of intercultural communication is becoming increasingly important in our globalized world, especially in educational settings where individuals from diverse cultures interact daily. This article studies determinants of intercultural communication awareness among 15-year-old students. The three determinants were students' sense of agency regarding global issues, their interest in learning about other cultures, and their awareness of global issues. Based on previous academic literature, a research model was introduced. The research model included six hypotheses for empirical testing. The empirical data were based on the publicly available Program for International Student Assessment (PISA) 2018 dataset. The sample included responses from 180,114 students representing 26 OECD countries. Structural Equation Modeling (SEM) was applied to analyze the data. The tested hypotheses revealed significant relationships between the four studied constructs. The results of empirical testing confirm the suggested research model and emphasize the importance of students' global competence and development as global citizens. The findings suggest that students with a higher degree of interest in learning about other cultures are more likely to possess a greater awareness of global issues and a stronger sense of agency. Also, the results support the hypothesis that individuals interested in learning about other cultures are more likely to have a broader global perspective and a greater sense of agency. The paper suggests several concrete measures for educators to support students' awareness of intercultural communication. The study contributes to the emerging area of global citizenship and global competence.

Keywords Global Competence, Global Citizenship, Intercultural Communication, PISA

1. Introduction

In recent years, there has been a growing emphasis on global citizenship [1]. Intercultural communication is a critical competence for individuals and organizations [2] and is among the key elements of global citizenship. It involves communicating effectively with people from diverse cultural backgrounds. Through intercultural communication, individuals can develop a deeper understanding of other cultures, challenge their assumptions and biases, and work toward creating a more inclusive and equitable society. Hoff [3] argues for the importance of developing intercultural communication competence and considers it fundamental for 21st-century global citizens, both in and beyond the classroom.

Emphasizing the global citizenship perspective among students may enhance their awareness of intercultural communication. Encouraging students to view themselves as global citizens can help them develop the skills and mindset needed to navigate an increasingly complex and interconnected world. Effective intercultural communication requires a broad knowledge of different cultures and the ability to adjust communication styles to suit the needs of specific cultural groups [4].

Researchers have recently explored the relationship between various personal and contextual factors, and awareness of intercultural communication. This paper

studies various determinants of intercultural communication awareness by exploring their relationships. Prior studies have not comprehensively covered these relationships. Empirical data are derived from the Global Competence section of the OECD's Program for International Student Assessment (PISA) 2018. The study's findings may offer helpful information on how educators can better prepare students for active participation in the global community.

2. Theoretical Framework

This section covers the key concepts' theoretical underpinnings by drawing on relevant academic literature. Based on the previous literature, a research model is introduced.

2.1. Awareness of Intercultural Communication

Students living in the global world should be aware of intercultural communication to be able to interact with other people representing other cultures. Awareness of intercultural communication helps individuals understand and appreciate cultural differences, and fosters mutual respect and empathy [5,6]. Moreover, intercultural communication skills can help individuals avoid misunderstandings and conflicts, thereby enhancing academic and professional opportunities in many industries and academic fields.

Intercultural communication competence involves developing the knowledge, skills, and attitudes necessary to communicate effectively across cultures. This intercultural communication competence also includes values, norms, and communication styles [7]. Besides language proficiency, nonverbal communication skills are also essential [8].

2.2. Students' Sense of Agency Regarding Global Issues

Ghazavi [9] suggests that students' agency is important while promoting a more collective and inclusive approach to global issues. Sense of agency refers to the subjective experience of being the agent or initiator of one's actions [10]. Students who view themselves as global citizens with unique responsibilities to others and the world have a sense of agency [11]. Agency refers to the ability to make decisions and persist in tasks even in case of difficulties [12]. David et al. [13] define agency as a subjective feeling of being the initiator of one's actions and consequences. Learning about other cultures is important when it comes to developing students' sense of agency regarding global issues.

2.3. Students' Interest in Learning about Other Cultures

Students interested in learning about other cultures also have a better understanding of their own culture and identity, leading to self-awareness and critical thinking skills [14]. Cultural awareness is critical to communication and understanding in a diverse world, and is essential for personal and academic growth [15,16,14]. Exposure to new ideas and perspectives can make students more open-minded and flexible in their thinking, challenging their beliefs and assumptions [17]. This exposure to new ideas, in turn, can contribute to a student's sense of agency or the ability to make decisions and take action [11].

2.4. Students' Awareness of Global Issues

Promoting responsible and knowledgeable global citizenship among students can be aided by incorporating cultural variety and global awareness into the classroom. This promotion may entail educating children about significant global concerns, including gender equality, global health, migration, conflicts, and climate change. Students who comprehend these difficulties may become more empathetic and have a different outlook on the world. Also, teaching students about cultural diversity helps improve their intercultural sensitivity and comprehension of many cultures, communities, languages, traditions, and customs. Research by [18-24] supports the idea that promoting global awareness and cultural diversity in education can help prepare students to become active, responsible, and engaged global citizens.

2.5. Research Model

This study's research model encompasses the four perspectives of global competence described above and it was hypothesized that the three perspectives predict students' intercultural communication awareness. Additionally, to gain deeper insights into the relationships between the constructs, the study aimed to determine if the three perspectives of global competence can predict the remaining two perspectives.

Hence, it is hypothesized that:

H1: Students' interest in learning about other cultures predicts their awareness of global issues.

H2: Students' interest in learning about other cultures predicts their sense of agency.

H3: Students' awareness of global issues predicts their sense of agency.

H4: Students' interest in learning about other cultures predicts their awareness of intercultural communication.

H5: Students' awareness of global issues predicts their awareness of intercultural communication.

H6: Students' sense of agency predicts their awareness of intercultural communication.

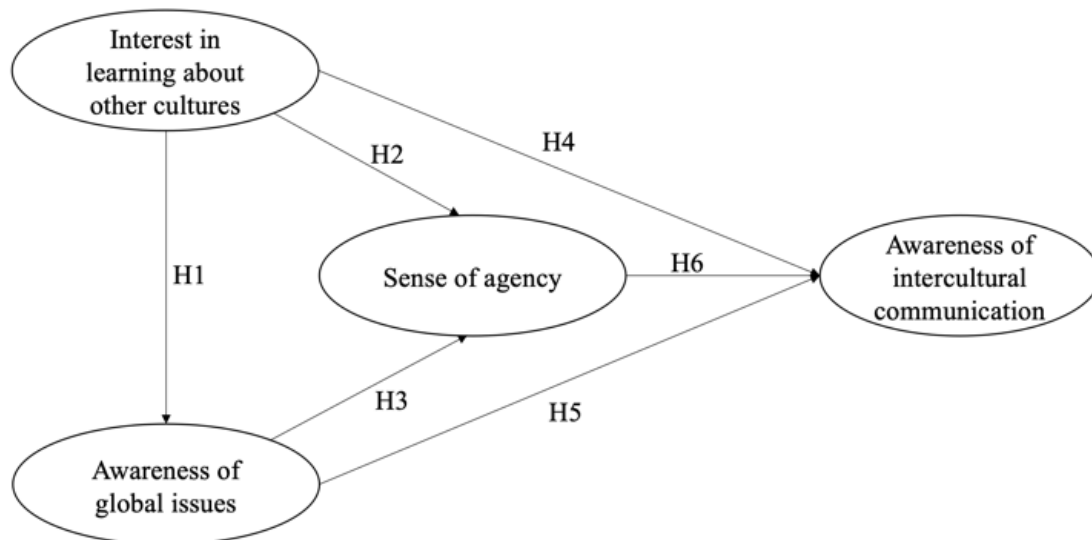


Figure 1. Research model and hypotheses

3. Empirical Research

This section describes the methodology employed to conduct the empirical study. The data used in the research are outlined first followed by a comprehensive analysis of the measurement model. Validity and reliability are assessed by examining various aspects of the model. The findings from testing the hypotheses related to the research model are then presented.

3.1. Data for Empirical Research

The Organisation for Economic Co-operation and Development (OECD) collected empirical data using the PISA 2018 large-scale assessment of 15-year-old students from many countries. The data is publicly available and can be freely downloaded from the OECD's PISA website (<https://www.oecd.org/pisa/data/>). The PISA 2018 data is a rich source of information, including students' global competence-related concepts. The Student Questionnaire applied by PISA 2018 included a range of questions related to global competence. The data allow us to examine the determinants of intercultural communication awareness. This particular study applied the following set of questions: students' awareness of intercultural communication (ST218), their interest in learning about other cultures (ST214), their awareness of global issues (ST197), and their sense of agency regarding global challenges (ST219). By analyzing these data, it was possible to gain valuable insights into the factors that shape students' attitudes and behaviors toward diverse cultural groups and inform educational policies and practices that promote awareness of intercultural communication and global citizenship.

The intention was not to compare responses from students representing different countries. Therefore, the

data representing 26 OECD countries were consolidated into a single dataset to be analyzed. The sample consists of 180,144 respondents from 26 OECD countries who participated in the Global Competence section of PISA 2018. There are also non-OECD countries that participated in PISA 2018. However, these countries were not included in the sample since it was expected that the OECD countries would be more homogeneous with each other.

3.2. Data Analysis

This paper analyzed quantitative data by following a two-step approach suggested by [25]. The measurement model was evaluated to ascertain how accurately the indicators represented the desired constructs. At first, the applicability of the applied empirical constructs was evaluated from the perspectives of discriminant validity, convergent validity, and content validity [26]. The structural model was then evaluated to confirm the proposed connections between the constructs.

4. Results

4.1. Assessing the Measurement Model

Confirmatory Factor Analysis (CFA) was performed to evaluate the measurement model's fit and assess for convergent and discriminant validity. CFA is a commonly used method in quantitative research to evaluate the goodness of fit of a measurement model [27].

Four model fit indices, including CFI, TLI, GFI, and RMSEA, were used to assess the fit of the measurement model. The results of the measurement model's fit indices were Comparative fit index (CFI) = 0.960, Tucker-Lewis

index (TLI) = 0.955, Goodness of fit index (GFI) = 0.959, and Root mean square error of approximation (RMSEA) = 0.043. These values indicated that they were within the recommended cut-off values suggested by [28-30].

The results of the CFA analysis indicate that the measurement model had good fit values, which supports the reliability and validity of the model. The findings also suggest that the measurement model is valid and reliable for measuring global competence-related concepts.

Content validity is critical to developing a research instrument as it ensures that the tool accurately reflects the intended research topic or domain [26]. In the case of the PISA 2018 assessment, the research instrument, namely, the questionnaire used to gather data on global competence-related concepts, needed to address the domain of interest adequately to achieve content validity. The OECD and other contributors extensively prepared and pre-tested the research instruments and data collection methods for the PISA 2018 assessment. Given the significant resources invested in large-scale assessments like PISA, it is reasonable to assume that the questionnaire design and data collection were carefully considered to enhance the content validity of the research.

Thus, the data collected through the PISA 2018 Student Questionnaire that was used to collect global competence-related data can have strong content validity given the rigorous preparation and pre-testing involved in the assessment. This enhances the credibility and validity of the research findings, supporting the use of the data in subsequent analyses, such as the structural equation modeling performed in this study.

As reported in Table 1, this study evaluated convergent validity using several methods, including factor loadings, Cronbach’s alpha, composite reliability (CR), and average variance extracted (AVE). The factor loadings showed that all items loaded strongly on the related constructs,

which indicated that the questionnaire items were consistent in measuring the same construct. The range of variable loadings ranged between 0.451 and 0.919, suggesting a good level of convergent validity according to Yong and Pearce [31].

Furthermore, internal consistency was assessed using Cronbach’s alpha, which was higher than the recommended cut-off value of 0.7 suggested by Nunnally [32]. This finding indicates that the questionnaire items were consistent in measuring the same construct, providing evidence for the convergent validity of the data.

Table 1. Characteristics of Empirical Constructs

| Constructs | Items | FL | α | CR | AVE |
|------------|-------|-------------|----------|-------|-------|
| SILOC | 4 | 0.733-0.919 | 0.897 | 0.900 | 0.695 |
| SAGI | 7 | 0.650-0.739 | 0.880 | 0.865 | 0.478 |
| AGENCY | 6 | 0.451-0.618 | 0.708 | 0.716 | 0.299 |
| INTCULTCOM | 7 | 0.682-0.726 | 0.892 | 0.874 | 0.498 |

Notes: Items = Number of variables per construct; FL = Factor loading; α = Cronbach’s alpha; CR = Composite reliability; AVE = Average variance extracted.

Discriminant validity is the extent to which a construct differs from other constructs in a study. It was assessed by comparing the square root of each construct’s average variance extracted (AVE) with its highest correlation with other constructs. If the square root of AVE is greater than the highest correlation, then discriminant validity is confirmed. In this study, Table 2 shows that the square root of AVE for all constructs is higher than their highest correlation with other constructs. This result indicates that the constructs are distinct and have discriminant validity. Therefore, the measurement model in this study has demonstrated satisfactory discriminant validity.

Table 2. Discriminant validity for the measurement model

| Construct | SILOC | SAGI | AGENCY | INTCULTCOM |
|------------|---------|---------|---------|------------|
| SILOC | (0.834) | | | |
| SAGI | 0.225 | (0.691) | | |
| AGENCY | 0.403 | 0.257 | (0.547) | |
| INTCULTCOM | 0.190 | 0.299 | 0.321 | (0.706) |

Notes: Diagonal in parentheses: square root of AVEs; Off-diagonal: correlations between constructs.

SILOC = Students’ interest in learning other cultures

SAGI = Students’ awareness of global issues

AGENCY = Students’ sense of agency

INTCULTCOM = Students’ awareness of intercultural communication

4.2. Assessing the Structural Model and Hypothesis Testing

Structural equation modeling was applied to test the hypotheses linked to the research model described in Figure 1. The model fit indices for the research model indicate it is well-fitting (CFI = 0.959, TLI = 0.954, RMSEA = 0.043, and GFI = 0.992). All these values surpass the cut-off levels suggested by [28-30].

The results of the hypothesis testing and the connections between the constructs are summarized in Table 3.

Table 3. Testing the Hypothesized Relationships

| Relationship between constructs | z | p | β | Result |
|---------------------------------|---------|-------|---------|-------------|
| SILOC → SAGI | 110.824 | <.001 | 0.156 | H1 accepted |
| SILOC → AGENCY | 102.193 | <.001 | 0.154 | H2 accepted |
| SAGI → AGENCY | 70.542 | <.001 | 0.209 | H3 accepted |
| SILOC → INTULTCOM | 38.203 | <.001 | 0.058 | H4 accepted |
| SAGI → INTULTCOM | 72.693 | <.001 | 0.227 | H5 accepted |
| AGENCY → INTULTCOM | 83.301 | <.001 | 0.275 | H6 accepted |

SILOC = Students' interest in learning other cultures

SAGI = Students' awareness of global issues

AGENCY = Students' sense of agency

INTULTCOM = Students' awareness of intercultural communication

The results of testing six hypotheses related to the research model are detailed here. Students' interest in learning about other cultures was significantly and positively related to their awareness of global issues ($\beta = 0.156$). Considering that outcome, Hypothesis 1 was accepted. Students' interest in learning about other cultures was significantly and positively related to their sense of agency ($\beta = 0.154$). Based on that result, Hypothesis 2 was accepted. Students' awareness of global issues was significantly and positively related to their sense of agency ($\beta = 0.209$). Based on that result, Hypothesis 3 was accepted. Students' interest in learning about other cultures was significantly and positively related to their awareness of intercultural communication ($\beta = 0.058$). Based on that result, Hypothesis 4 was accepted. Students' awareness of global issues was significantly and positively related to their awareness of intercultural communication ($\beta = 0.227$). According to that outcome, Hypothesis 5 was accepted. Students' sense of agency was significantly and positively related to their awareness of intercultural communication ($\beta = 0.275$). Based on that outcome, Hypothesis 6 was accepted. To conclude, all six hypotheses related to the research model

were accepted.

4.3. Empirical Findings

Peaceful and collaborative societies create value and provide a good place to live. Many societies are becoming more intercultural, and therefore to support peaceful co-existence and collaboration between representatives of various cultures, it is essential that people are aware of intercultural communication. Students living in the global world should be aware of intercultural communication to be able to interact with other people representing other cultures. Awareness of intercultural communication helps individuals understand and appreciate cultural differences, and fosters mutual respect and empathy [5,6]. Moreover, intercultural communication skills can help individuals avoid misunderstandings.

The results of the hypothesis testing conducted in the present study highlight the significance of students' interest in learning about other cultures, awareness of global issues, and sense of agency in predicting their awareness of intercultural communication. The findings suggest that students with a higher degree of interest in learning about other cultures are more likely to possess a greater awareness of global issues and a stronger sense of agency. These results support the hypothesis that individuals interested in learning about other cultures are more likely to have a broader global perspective and a greater sense of agency. All these findings support students' awareness of intercultural communication.

5. Conclusions

This study tested six hypotheses related to the research model depicted in Figure 1. The outcome that all six hypotheses were accepted suggests that the study provides empirical support for the research model. These results could have implications for educators interested in promoting intercultural understanding and communication among students.

Regarding students' interest in learning about other cultures, one solution could be to incorporate cultural studies into the curriculum. The current access to various cultural resources could benefit and encourage students to learn about other cultures. Participation in different cultural events and activities could provide students with concrete learning opportunities. Also, student-led projects and presentations on different cultures could allow them to learn and share their knowledge with their peers. The curriculum could include more content to help students learn more about global issues. Such topics as climate change, poverty, migration, and inequality could be added further. Encouraging students to take ownership of their learning and support their sense of agency is essential. This encouragement could be fostered by supporting them to feel more confident in their ability to learn and succeed.

Students' awareness of intercultural communication could be improved by encouraging open and respectful dialog. It is important to encourage students to see things from other people's perspectives and be open to understanding others' experiences and viewpoints even if they differ from their own. To improve students' intercultural communication, educators can promote intercultural communication activities such as cross-cultural communication simulations, role-playing, and cultural case studies.

As far as further research opportunities are considered, the PISA 2018 data provides opportunities for further analysis of various themes related to students' global competence. For example, potential differences in responses between respondents representing different individual countries could be studied further. Also, it could be studied whether there are differences between representatives of OECD countries and non-OECD countries. When it comes to applying qualitative inquiry, the identified relationships between different concepts covered in this research could be studied further. This kind of research could result in a further understanding of awareness of intercultural communication and how it could be promoted further in educational and societal settings.

The present study has several limitations that should be acknowledged. This study relied on publicly available PISA 2018 data, which means that the researcher could not impact data collection or the research questionnaires used to collect student data. Despite these limitations, the study is an essential contribution to the emerging area of research on global citizenship and global competence.

Overall, the empirical testing findings support the proposed research model and highlight the importance of promoting global competence among students. The study provides a valuable contribution to the literature on global competence by examining the relationships between different dimensions of global competence and highlighting the importance of awareness of intercultural communication.

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