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Culturally Responsive Teaching: An Approach to Cultivate Students' Global Diversity Character

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ABSTRACT

This research aims to investigate students' global diveristy character in elementary school with culturally responsive teaching (CRT) appraoch. This research method used in this study is descriptive quallitative with 26 students who in fifith grader of elementary schools. They are coming from different ethnic groups (Sundaness, Javaness, Minangkabau, Sunda-Java, Sunda-Batak). CRT is implemented in mathematical learning with Problem based learning model. Mathematical subject is integrated with cultural and local wisdom. Global diversity character is taken by global diversity character questionnaire with 20 statements. The results shows that the communication and interaction between culture aspect gain the highest results, while the lowest is recognising and appreciating culture. And there is the influence of students' ethnic background to the global diversity character in the learning. It could be concluded that CRT approach could cultivate students' global diversity character skills in mathematics learning.

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Introduction

Education is an important foundation in the development of high-quality human resources, not only to produce individuals who are academically skilled but also to have strong character to face global challenges. In the context of character education, many countries emphasise the importance of moral and ethical values to shape a generation with integrity, including through character education based on local and global values

(Solehuddin, 2019; Solehuddin & Aminudin, 2023; Muizzuddin, 2021). In Indonesia, character education has long been an integral part of the education system, with figures like Ki Hajar Dewantara emphasising the importance of humanism, nationalism, and independence as the foundation for national character development (Hufron & Juanedi, 2021; Sakban & Sundawa, 2023; Warlim et al., 2021). However, various challenges such as intolerance and low understanding of diversity still need to be addressed to form a generation with strong character and ready to compete globally. Efforts to strengthen character education in Indonesia continue, including through educational innovations such as the "batik" system, which emphasises character building, creativity, and student competitiveness to face the era of globalisation (Zahrudin et al., 2024; Kusdiani & Tirtoni, 2025).

Character education at the elementary school level plays a crucial role in shaping the moral and ethical foundation of children from an early age. At this level, students learn to understand values such as tolerance, honesty, discipline, and cooperation, which form the foundation of national character development. In Indonesia, approaches such as Pancasila education with global diversity have been implemented to foster multicultural literacy and understanding of differences, in order to shape students who are more tolerant and globally aware (Kusdiani & Tirtoni, 2025; Santoso, 2020; Natalia et al., 2021). This approach is very important considering modern challenges such as social polarisation and the influence of foreign cultures that can affect children's character development if not addressed properly.

Several previous studies have highlighted the importance of character education in elementary schools as an effort to shape a moral and globally aware generation. For example, Pancasila education with a global diversity approach can shape multicultural literacy character in elementary school students, helping them understand the values of cultural diversity in the Archipelago (Sumardjoko et al., 2018; Ambedale & Latief, 2023). Additionally, research by Solehuddin (2019) revealed that preschool teachers in Indonesia play a crucial role in instilling values of tolerance and global partnership as preparation for students to become tolerant and strong-charactered global citizens. These findings indicate that character education at the primary level plays a strategic role in shaping students' mindsets and attitudes from an early age, which will impact their behaviour in the future.

The novelty of this research lies in the application of the Culturally Responsive Teaching (CRT) approach in teaching exact subjects such as mathematics in elementary schools enhance students' attitudes towards global diversity and this CRT approach. This approach is usually applied in social and humanities subjects, but this research explores how local cultural contexts can be integrated into mathematics learning to strengthen values of tolerance, mutual respect, and cross-cultural understanding among students from an early age. By linking mathematical concepts with diverse everyday life contexts, this approach is expected to enhance students' critical thinking skills and global awareness, which have so far been more commonly discussed in the context of language or social science education. This approach also offers a new perspective in enhancing student engagement, shaping global character, and broadening their worldview.

Method

This research aims to determine the development of global diversity character skills after learning using the Problem-Based Learning (PBL) model with the Culturally Responsive Teaching (CRT) approach. The method used in this study is descriptive quallitative (Creswell & Creswell, 2017). This research is undergone by 26 students who in fifith grader of elementary schools. They are coming from different ethnic groups, although they are in the same school and the majority of the students are Sundanese due to the school's

geographical location in West Java and the Sundanese ethnicity, they are expected to be able to live in harmony, have good communication, and act fairly despite their differences. In this class, the students consist of Sundanese (76.92%), Javanese (11.53%), Minangkabau (3.85%), Sundanese-Javanese (3.85%), and Sundanese-Batak (3.85%). In this classroom, they learnt geometry emphasize to flat shape that integrate with cultural concept. This could develop students' global diversity characters skills as social skills for tolerance each other.

Global diversity character skills of students are observed during the learning in the classroom and after the learning end by global diversity character questionnaire. This questionnaire consists of several aspect, i.e. 1) recognising and appreciating culture, 2) communication and interaction between cultures, 3) reflection and responsibility towards the experience of diversity, and 4) social justice. There are 20 statements that students should answered and each aspect consist of 5 statements. The likert scale that is used is only agree and dissagree. It is analyzed by the percentages for each aspect that is collected from students' responses. After that, to know the development of students' global diversity character skills towards students' ethnicity, it used RASCH model analysis approach, DIF (Differential Item Funtioning) analysis shows participant answers by subgroup for every test item (Bond & Fox, 2015; Boone et al., 2014; Khine, 2020). Differential Item Functioning (DIF) arises when an item performs variably across distinct groups of test-takers, such as those differentiated by gender or ethnicity, despite these groups possessing equivalent levels of the underlying ability being assessed.

The flow of this research is initally done by need analysis of the mathematics learning problem in elementary school. The condition of mathematics learning in global, regional Indonesia, especially in Bogor, West Java. After need analysis by the field obeservation, identification the literature review for the approach that could enhance global diveristy character in mathematics learning is done. Based on the need analysis and identification, then constructs the learning material for culturally responsive teaching (CRT) approach in mathematics learning and global diversity character instrument as a solution to the problen that has been determined. Then, those learning material and instruments are validated by the expert. Afterward, do mathematics learning with CRT appraoch in fifth grader (one classroom). Then, analyze the data by simple precentages and DIF with RASCH model approach. Those the research flow description, could be shown in Figure 1.

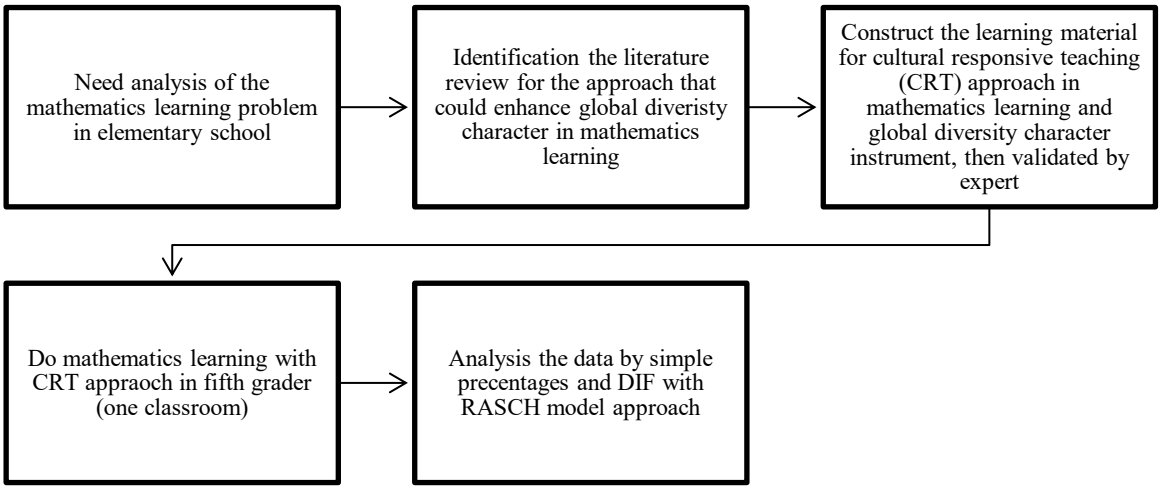

Figure 1. Research Flow Diagram of Cultural Responsive Teaching toward Global Diversity Characters

Results and Discussion

Based on the results of the data analysis of the global diversity character questionnaire, overall, the students received a percentage 93.46%. This describes that by implementing culturally responsive teaching (CRT) approach in mathematical learning also could develop students' global diversity character skills. Global diversity character skills in each aspect could be described at the Figure 2. The highest results in communication and interaction between culture aspect, while the lowest is recognising and appreciating culture.

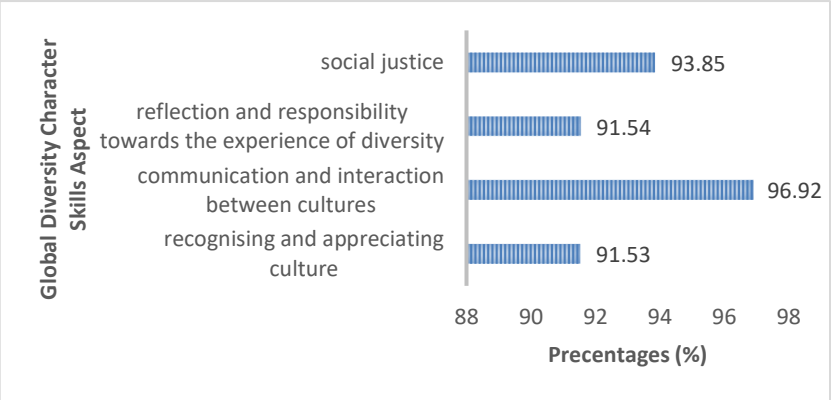

Figure 2. Students' Global Diversity Character Skills Results in Each Aspect

In the element of communication and intercultural interaction, there are five statements. The maximum percentage (100%) on three statements, including, "I like playing with friends from different cultures." Two other statements regarding "I like playing with traditional toys from various cultures" and rejecting the statement "I only choose friends I like." On the other hand, the lowest percentage is on the statement that was denied, which is "I feel happy when I see various types of food from my own region" (88.46%). In general, the average percentage for this aspect is the highest among the other aspects.

Based on the results above, it illustrates that learning with the culturally responsive teaching (CRT) approach can develop global diversity character Skills in students. Especially in communication and intercultural interaction. Although through the topic of mathematics, which is known as an exact subject, local wisdom values can be instilled both implicitly and explicitly. Thus, the intercultural communication of students, especially elementary students, can develop well. Elementary school students learn to use both visual and concrete audio media that can be long-lasting through their cognitive system. Local wisdom values can be instilled through tailored approaches and media. Combining media and learning materials with local knowledge can greatly improve communication between cultures by helping students understand and appreciate other cultures. This method not only makes educational content more interesting, but it also connects students to their cultural heritage, which helps them understand different points of view better. The next sections will go over the most important parts of this integration. Local wisdom includes cultural values and customs that can be used in schoolwork to help pupils feel more connected to their culture (Aulia et al., 2024). Through exact sciences such as science and mathematics, the integration of local wisdom or culture can also impact students' thinking skills. Adding local wisdom to science classes might help students think critically and give them a better understanding of scientific ideas by connecting them to their own experiences (Ramadan, 2025). The CRT approach also uses group discussions that can enhance students' communication skills. The groups are divided heterogeneously and are culturally or ethnically diverse. As a result, students enjoy playing, learning, and discussing with their peers even though they are from different ethnic backgrounds. They eventually wanted and

enjoyed learning about their classmates' different cultures. This is supported by evidence that in mathematics learning with the CRT approach, the modules used are also integrated with culture as described in Figure 3.

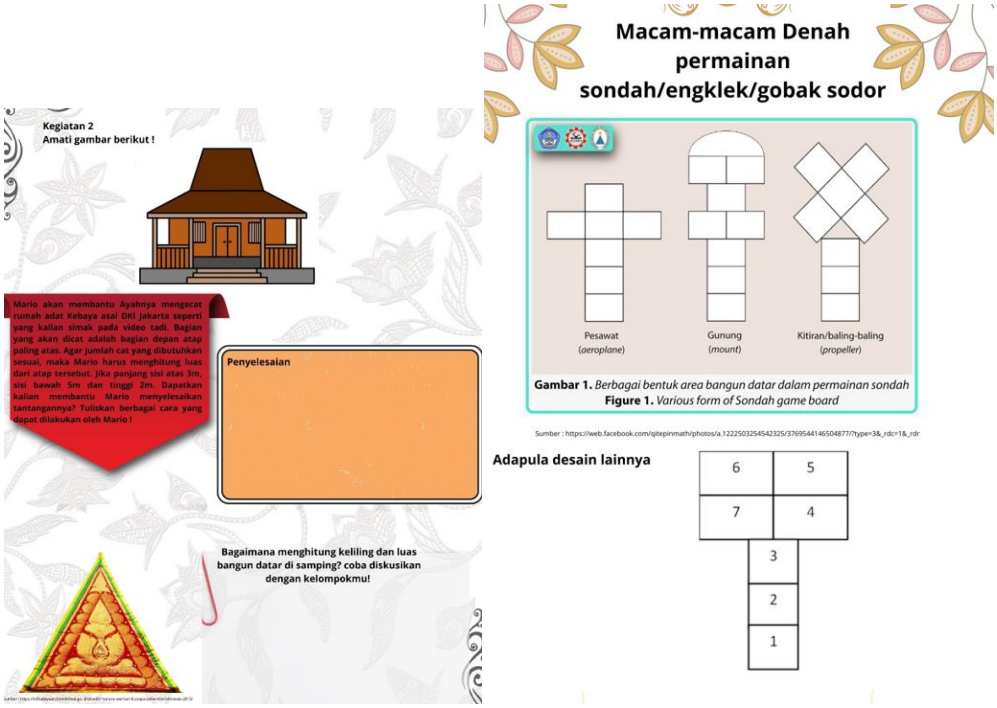

Figure 3. The example of Cultural and Mathematics Integration in Learning

However, Besides the highest aspects, there are also the lowest aspects of global diversity character skills. The lowest aspect is recognising and appreciating culture. In this aspect, there are five statements that were tested. In the statements "I enjoy learning about the cultures of other regions," "I want to know more about the traditions of people from various regions," and "I want to know about the food from other regions," 100% agreed. The lowest percentage is found in the statement "I enjoy learning about other cultural celebrations," agreed by 76.9%, and "I am more interested in hearing stories about my own culture," which 80.7% disagreed with. Based on the results, although students have learned about other cultures integrated with mathematics subjects, their original culture remains very much ingrained in themselves. Actually, they want and are curious about other cultures, especially their stories. However, when it comes to celebrating other cultural festivities, they feel hesitant and need to adapt to these new things. They appreciate the culture, but to recognize it, they need time because they are already accustomed to the culture they have held onto all this time. Because between one culture and another, there may be differences. In that class, there are students from Java. Different psychological, cultural, and social aspects affect how well pupils from different ethnic backgrounds adapt to learning situations. For teachers to create a helpful learning environment, they need to understand these things. Cultural background, social support, and the use of adaptive learning mechanisms are all important parts of this adaptation process (Wang & Yang, 2019; Ramdani et al., 2022).

Because of the ethnic differences among the students in that class, it became a motivation for the students to learn mathematics with the implemented cultural approach, which is culturally responsive teaching (CRT). In this study, the influence of ethnic patterns on students' global diversity character skills was also examined using DIF within the RASCH model approach. The results of the prerequisite analysis have met the requirements (Table 1) for the DIF (Differential Item Funtioning) analysis test and produced a Wright map to illustrate the pattern of students' global diversity character skills.

Table 1. Prerequisite of RASCH Model Results

Aspect	Score
N	26
Infit MNSQ	0,98
Infit ZSTD	0,05
Outfit MNSQ	1,06
Outfit ZSTD	0,16
Cronbach Alpha	0,62

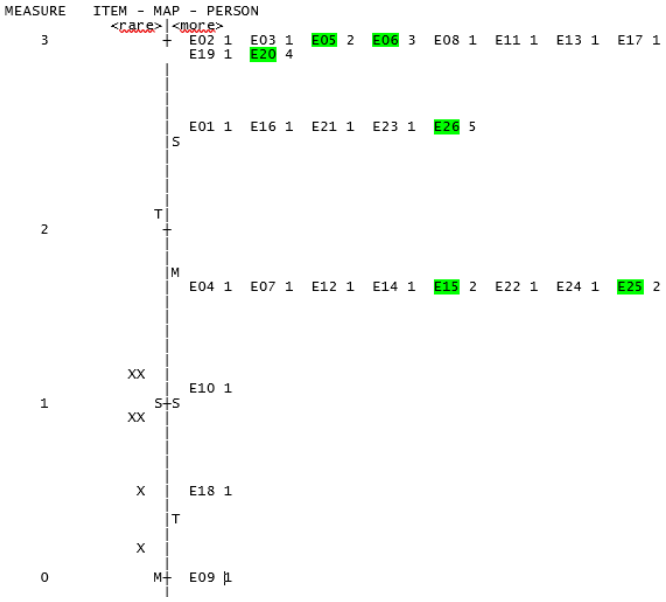

Figure 4. The Wright Map of Students' Global Diversity Character Skills

Based on Figure 4, it describes students' global diversity character skills after the implementation of CRT approach in mathematical subject. Those marked in green are students of different ethnicities or other than the Sundanese tribe. They include the Javanese, Minangkabau, Sundanese-Javanese, and Sundanese-Batak ethnic groups. It appears that students from ethnic groups other than Sundanese have above-average global diversity character skills. They highly appreciate, accept existing differences, and are willing to learn about other cultures. This is because they have to do so since they do not live in their own area, but rather in someone else's area. Therefore, they uphold the proverb "wherever the earth is stepped on, there the sky is honored." The above results do not solely indicate that native Sundanese students are not good, but rather that they also possess global diversity character skills that are above average in general. This shows their very high cultural sensitivity and appreciation for colleagues from different cultures. They uphold the philosophy of "Unity in Diversity." Attitudes of mutual respect like this are very much needed to cultivate moral values as a foundation for their social interactions and understanding of life. It has also been proven that integrating mathematics and cultural values using the CRT approach can foster students' global diversity character skills. integrating maths with cultural studies can greatly improve pupils' moral and social values. This method not only makes learning more interesting, but it also helps people grasp their cultural heritage and civic duty better. By including cultural components in maths lessons, children can build a sense of identity and community, boost their cultural confidence, and develop humanistic traits that are important for their moral and social growth (Zhang, 2023; Herzog et al., 2018; Massarwe, K., & Gadban, 2024).

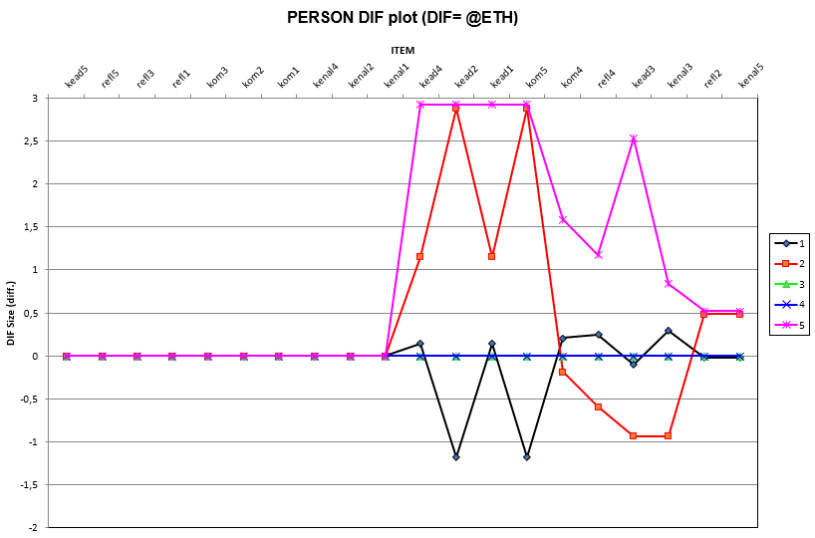

Figure 5. The DIF Graph of Students' Global Diversity Character Skills toward Ethnical

In figure 4, the DIF of students based on ethnicity is depicted. 1. Sundanese ethnic group, 2. Javanese ethnic group, 3. Minangkabau ethnic group, 4. Sundanese-Javanese, 5. Sundanese-Batak. Based on the DIF graph, it is evident that students' global diversity character skills are greatly influenced by ethnicity. From the graph, the value of 0 represents the midpoint and average. In certain statements, all students are at the average value, but in some statements, students have different levels of engagement. like students from the Sundanese-Batak ethnic group (5) have above-average global diversity character skills. It appears that tribes other than the Sundanese tribe have different fluctuations in their global diversity character skills. This is because they are newcomers and their curiosity about Sundanese culture is very high. Meanwhile, Sundanese students are very accepting of their peers from different ethnic backgrounds. Students from different cultural origins are generally more interested in various cultures because of their own motives and the way they are taught to explore (Ya et al., 2016; Asmin et al., 2024). This interest is important for being able to work with people from other cultures and makes learning more fun. Curiosity is a key factor in learning and growing, especially in settings with people from many different cultures. It pushes students to learn new things and have fresh experiences, which is very important for doing well in school (Berho, D., & Defferding, 2005; Mikhaylov, 2015).

Conclusion

It can be concluded from this research that the implementation of the culturally responsive teaching (CRT) approach integrated into mathematics subjects can develop global diversity character skills in heterogeneous students of different ethnic cultures. The highest results in communication and interaction between culture aspect, while the lowest is recognising and appreciating culture. There is also the influence of students' ethnic background to the global diversity character in the learning. However, all students respect and appreciate each other's cultures. They also appear very enthusiastic about learning and nurturing their curiosity towards their friends' cultures.

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