

## Mathematics Learning Model (Based on Multicultural Education)

Masykur

Matematika MTs Negeri Semarang

Email: [masykurmtsn@gmail.com](mailto:masykurmtsn@gmail.com)

### Abstract

This research begins with the problem of low mathematics achievement caused by students' neglect of multiculturalism, which can be overcome through mathematics learning based on multicultural education. In line with this, efforts to foster awareness, understanding, tolerance, mutual understanding and national spirit can be developed through multicultural education that is integrated in mathematics learning. Therefore, it is important to develop a mathematics learning model based on multicultural education. Stimulation can be provided through cultural integration in mathematics content as a starting point for students to bring up critical thinking. Methods in this study This research is a study using the method of literature study or literature review. namely a comprehensive overview of the research that has been done on a specific topic to show the reader what is already known about the topic and what is not known, to find rationale for research that has been done or for ideas for further research. From the research it is known that the multicultural education-based mathematics learning model was developed through the integration of content explored from regional cultural wealth, using multicultural contexts in illustrating mathematical concepts or principles. For example, cultural arts artifacts sharpen social sensitivity. Teachers develop socio-cultural norms in the classroom through an acculturation process in order to reduce prejudice and build a conducive school culture so that all students can achieve optimally.

**Keywords:** Learning Model, Mathematics, Multicultural

### Abstrak

ini berawal dari persoalan rendahnya prestasi matematika yang disebabkan oleh pengabaikan multikultur siswa dapat diatasi melalui pembelajaran matematika berbasis pendidikan multikultural. Sejalan dengan itu, upaya menumbuhkan kesadaran, kesepahaman, toleransi, saling pengertian dan semangat kebangsaan dapat dikembangkan melalui pendidikan multikultural yang terintegrasi dalam pembelajaran matematika. Oleh karena itu, penting untuk mengembangkan model pembelajaran matematika yang berbasis pendidikan multikultural. Stimulasi dapat diberikan melalui integrasi budaya dalam konten matematika sebagai titik awal bagi siswa untuk memunculkan pemikiran yang kritis. Metode dalam penelitian ini Penelitian ini merupakan penelitian dengan menggunakan metode studi kepustakaan atau literatur review. yaitu ikhtisar komprehensif tentang penelitian yang sudah dilakukan mengenai topik yang spesifik untuk menunjukkan kepada pembaca apa yang sudah diketahui tentang topik tersebut dan apa yang belum diketahui, untuk mencari rasional dari penelitian yang sudah dilakukan atau untuk ide penelitian selanjutnya. Dari penelitian diketahui bahwa model pembelajaran matematika berbasis pendidikan multikultural dikembangkan melalui integrasi konten yang dieksplorasi dari kekayaan budaya daerah, menggunakan konteks multikultur dalam mengilustrasikan konsep atau prinsip matematika. Misalnya artefak seni budaya mengasah kepekaan social, Guru mengembangkan norma sosial budaya dalam kelas melalui proses akulturasi dalam rangka mengurangi prejudice dan membangun kultur sekolah yang kondusif agar semua siswa dapat berprestasi dengan optimal.

**Kata Kunci:** model pembelajaran, Matematika, Multikultural.

### INTRODUCTION

Indonesia is a country with ethnic, cultural and religious diversity. The Indonesian population consists of indigenous people, Chinese, Arab and Indian descendants, as well as Indo or Eurasian groups, namely a mixture of Indonesian and European. Indonesia's native population consists of more than 300 ethnic groups with unique cultural identities and languages. There are five major religions, namely Islam, Christianity, Catholicism, Hinduism and Buddhism as well as various specific ethnic religious beliefs adhered to by Indonesian society. If we look at the

geographical conditions of Indonesia as an archipelagic country, the population is spread across mountains, coastal areas or on land with diverse environmental characteristics. Apart from that, plurality in Indonesia is also created by the existence of social and economic strata due to the country's unequal economic growth.

The dynamics of plurality in Indonesia do not only occur between residents within the country but also between Indonesian residents and the outside world. Indonesia as part of the world community cannot possibly close itself off from the changes and developments that are occurring. This certainly has a big impact on the

existence of the Indonesian nation. One of the positive impacts is that there are wide opportunities to access various information, including the latest discoveries in the field of science. However, the Indonesian people also felt the negative impact as regional cultural values and national spirit began to erode. This is caused by a clash between the cultural values held by Indonesian society and cultural values from outside. In such circumstances, it is as if the Indonesian nation has lost its identity.

Interaction of Cultural Elements Within individuals there are elements of ethnicity or ethnicity, religion, socio-economic level and living environment or geographical location. All of these elements will influence and shape the individual's character which will be displayed in attitudes, actions, behavior, feelings and thoughts. As part of a multicultural society, this performance can have positive implications if it is constructive or negative implications if it is destructive. Individual interactions with other individuals can give rise to mutual influence and cultural mixing or vice versa, mutual rejection, giving rise to conflict.

The influence of globalization which brings with it foreign cultural values makes the attraction between these elements even stronger so that it seems as if there is a contradiction between keeping up with the times and maintaining one's identity. If an individual is uprooted from his cultural and religious roots, he begins to lose his identity. Thus, plurality is not something static but dynamic. This plurality dynamic can become a strength if it is based on unity and unity or a national spirit. Judging from historical experience, Indonesia has the motto "Bhinneka Tunggal Ika" which means different but still one. Indonesian youth from various ethnic groups emphasized unity and unity through the Youth Pledge on October 28, 1928. All of this is a historical experience that shows the existence of multicultural awareness and acceptance in Indonesia as well as awareness of its identity as an Indonesian nation. However, the meaning of *Bhinneka Tunggal Ika* or the Youth Pledge now seems to be fading within the Indonesian people. Conflicts between tribes, between religions and even disputes between citizens triggered by trivial matters are proof of

this. What is even more worrying is the brawls between students, both with each other and with other parties, which are often caused by simple misunderstandings. Even though pupils and students are a picture of an educated society. What's wrong with education in Indonesia? The pluralism of Indonesian society can be seen as potential, but on the other hand it is also vulnerable to causing conflict.

Meanwhile, it is impossible if this diversity is eliminated by imposing sameness or monoculture. According to Koentjaraningrat (2002:46), the concepts of normative multiculturalism regulate the polarization of two seemingly contradictory poles, namely Indonesian unity on the one hand and ethnic differences on the other. This means that there is dynamics in developing the culture, traditions and language of each ethnic group as an integral part of the Indonesian nation. A strategic effort to foster understanding, tolerance and mutual understanding is through education. Education that supports diversity and accommodates differences to achieve the same goal, namely becoming educated, is multicultural education.

Multicultural education is an effort to build self-awareness as an individual who has the potential to make a positive contribution to community development. For this reason, as part of a multicultural society, every individual needs to be aware of his or her identity and respect other cultures that are different from him. The initial stage that needs to be carried out immediately is awareness through socialization which can be started at the school level, to be able to get to know each other and understand cultural diversity, thereby fostering mutual respect for the same or different ethnic identities. Indeed, not all SARA (Ethnicity, Religion, Race and Inter-Group) problems can be resolved through multicultural education at the school level, especially within the confines of the classroom. However, Awareness efforts must be carried out immediately through concrete actions. The classroom is seen as quite an effective place to start. A school or class is a miniature society where students learn to develop social skills and hone critical thinking.

Multicultural education does not need to be carried out separately or stand alone as one

subject, but rather be integrated into other subjects. Several subjects such as Citizenship Education, Social Sciences, Religion, Arts, Culture and Skills and other similar subjects are seen as having the potential to carry multicultural education content. So what about mathematics subjects? In mathematics learning itself, problems of injustice are also encountered which are caused by cultural differences or due to the dominance of certain cultures. In the Indonesian context, cultural domination does not always occur by the majority group but can also be done by minority groups who have superiority in something. The assumption that students from lower socio-economic classes cannot be intelligent so they will find it difficult to learn mathematics will influence teachers' attitudes towards being unfair towards these students. In this case, there is dominance of upper level socio-economic groups in achieving mathematics achievement. In fact, in Indonesia the number of poor people is actually greater than the rich population. The assumption that students from certain tribes or ethnicities, for example Chinese, have superiority in mastering mathematics also results in injustice in treating Chinese students with non-Chinese. With this assumption, non-Chinese students will feel that they are inferior, making it difficult for them to achieve optimal achievements in mathematics. In fact, The majority of the non-Chinese Indonesian population is compared to the Indonesian population of Chinese ethnicity. It is known that the Javanese are the largest ethnic group in Indonesia, accounting for 41% of the total population.

The finding of the American Association of University Women (Noel, 2000: 192) that male students are considered smarter in mathematics than female students also creates injustice when male students tend to get support to continue their studies in the field of science and technology while female students do not. In fact, this injustice can also arise through the assumption among students themselves that those who are good at mathematics usually behave strangely and are difficult to get along with, so they are shunned. Some math questions in the form of story problems sometimes contain racist content, for example Javanese names are

used more often than Balinese names, or modern Javanese names are described as shop owners, while non-modern Javanese names are described as farmers.

This depiction can have a negative impact on the formation of students' self-concept, especially for students from inferior groups. These various problems can then have an impact on the low mathematics achievement of students in inferior groups, namely students from lower socio-economic levels, students from certain ethnic groups, or female students. Research by Tate et al (1997: 46) shows that neglect of students' cultural diversity contributes to low mathematics achievement among minority groups. When students come to school, they have brought cultural values embedded through socialization in their families. If teachers are not sensitive to the cultural diversity of students in their class and when students are less sensitive to existing differences, So this condition will make it difficult for students from minority groups or inferior groups to learn optimally. Mathematics is one of the skills that is considered important for students to master, so one of the goals of multicultural education is to help them master mathematical skills (Banks, 2002: 4).

Mathematics also contributes to building logical and critical thinking. As a science that studies abstract objects, it seems as if mathematics is a scientific discipline that has little correlation with culture. This gives rise to the opinion that integrating ethnic and cultural content into mathematics subjects is difficult. Even though mathematics is a science whose development is also influenced by the socio-cultural context. Therefore, it is very possible to teach mathematics by integrating the values of multicultural education. Multicultural education aims to develop students' ethnic identity so that they know, understand, appreciate and maintain cultural values according to their ethnicity, so that students feel ownership and are proud of their identity as a particular ethnicity.

Furthermore, through multicultural education it is hoped that students can develop their interpersonal relationships through an attitude of respect, no suspicion or prejudice towards ethnic groups outside themselves so that understanding, tolerance and mutual

understanding are built. Thus, through multicultural education it is hoped that all students with different backgrounds will have the same opportunity to develop their potential optimally. The problem of low mathematics achievement caused by students' neglect of multiculturalism can be overcome through mathematics learning based on multicultural education. In line with this, efforts to foster awareness, understanding, tolerance, mutual understanding and national spirit can be developed through integrated multicultural education in mathematics learning. Therefore, it is important to develop a mathematics learning model based on multicultural education. Through this learning model, it is hoped that students' social and cognitive aspects can develop simultaneously. Stimulation can be provided through cultural integration in mathematics content as a starting point for students to generate critical thinking.

## METHOD

The method used in this study uses a library research method or approach. Library or library research can be interpreted as a series of activities relating to methods of collecting library data, reading and taking notes and processing research materials (Zed, 2003:3). In library research there are at least four main characteristics that writers need to pay attention to, including: First, that the writer or researcher is dealing directly with text (text) or numerical data, not with direct knowledge from the field. Second, library data is "ready to use" meaning that researchers do not go directly into the field because researchers deal directly with data sources in the library. Third, that library data is generally a secondary source, in the sense that researchers obtain material or data from second hand and not original data from first hand data in the field. Fourth, that the condition of library data is not limited by context and time (Zed, 2003:4-5). Based on the above, data collection in research was carried out by reviewing and/or exploring several journals, books and documents (both printed and electronic) as well as other sources of data and/or information deemed relevant to the research or study

## RESULTS AND DISCUSSION

### 1. Multicultural Education Concept

According to Banks (2002: 1-4), multicultural education is an educational reform that aims to: 1) help each individual

achieve a better self-understanding through the perspective of other cultures, 2) serve students with cultural and ethnic diversity, 3) serve all students with the skills, talents and knowledge necessary to be able to contribute to themselves and to a multicultural society, and 4) help students to master important skills such as reading, writing and mathematics. Multicultural education includes at least the following three things: an idea or concept, an educational reform movement, and a process. The important thing in multicultural education is to provide opportunities for students with certain characteristics to receive a better education.

According to James A. Banks (Zamroni, 2010a: 77), multicultural education includes five dimensions, namely content integration, knowledge construction, pedagogical equality, prejudice reduction, and school culture empowerment. In content integration, teachers use examples and content from various cultures when teaching so that they reflect diversity. Teachers help students understand through inquiry that the cultural assumptions implicit in a scientific discipline can influence the way that knowledge is constructed. Equal education can be pursued through modifying teaching methods to facilitate students from different races, ethnicities, cultures, genders and social classes to achieve academic achievement. Suspicion between groups of students can be reduced by focusing on the characteristics of racist student behavior, then look for ways to improve it through teaching methods and materials. Schools as miniature communities play a role in building a school culture that can empower students from different ethnic, racial and gender groups. These five dimensions are conceptualized in teacher behavior, in the selection of multicultural curricular content, in the implementation of multiculturally mediated teaching, and when creating classroom empowerment contexts. When Banks' model is translated into practice, teachers help students develop the skills, knowledge, and values needed to make decisions, actualize goals for social influence and political change. There are at least three

dimensions of student orientation towards multicultural education, namely the development of ethnic identity, interpersonal relationships, and self-empowerment. According to Sheets, these three dimensions must be operationalized as support for Banks' five dimensions of multicultural education to develop students' social and cognitive development (Zamroni, 2001a: 77).

Multicultural education appears in the diversity of learning activities, school programs, and training/practice where educational institutions must be responsive to the needs and aspirations of various groups. These various groups include: girls, weak socio-economic groups, ethnic minorities, religious minorities and people with disabilities. The challenge faced in multicultural education is how to help students from various groups mediate between the culture at home and their community of origin and the culture at school. The goal is for students to achieve the expected competencies, be able to interact, communicate and participate effectively with different cultures in their country or with different cultures in the world community. The cultural program is a series of programs so that students can adapt to the environment in which they find themselves. The program includes sharing knowledge, concepts and values between students through communication, as well as mutual understanding of beliefs, symbols and interpretations between groups.

The essence of this cultural program is how each group member can interpret and respect each other's different cultures. Recognizing and understanding the role of students in the learning process helps teachers develop the pedagogical skills needed to evaluate the cultural relevance of curriculum content and the effectiveness of their teaching strategies, and identify how students construct their roles, status and identity in a multicultural classroom. As a result, students succeed academically, maintain their cultural heritage, develop ethnic identity, and maintain healthy friendships.

Concept of Mathematics Education  
The concept of mathematics education in the 21st century is oriented towards mathematics literacy, namely the individual's ability to identify and understand the role of mathematics in life, in order to be able to make appropriate decisions and utilize mathematics in life as constructive, caring and reflective citizens (OECD, 2003: 19). Therefore, mathematics learning in the classroom should be problem-solving and contextual oriented.

According to Yaya (2011, 47), mathematics literacy is less formal and more intuitive, less abstract and more contextual, less symbolic and more likely to be concrete, so it focuses more on reasoning, building thoughts and interpretation. In implementing this concept of mathematics education, mathematics must be linked to things that are real for students, and mathematics must be viewed as a human activity (Gravemeijer, 1994: 82). Students learn mathematical concepts through real things first before entering abstract mathematical areas. The real things in question are everyday situations known to students or things that are real in students' minds. Real things here act as the starting point for learning, through these real things, students carry out mathematical activities.

Mathematization activities are an important learning process for students. In this process, students can construct mathematical concepts into their cognitive structures through guided discovery. The mathematization process takes two stages, namely the horizontal mathematization process and the vertical mathematization process. In horizontal mathematics, students discover mathematical tools that can help them organize and solve problems that exist in real life situations. In vertical mathematization there is a process of reorganizing using the mathematical system itself. In simple terms, horizontal mathematization is mathematical modeling from the real world to the world of mathematical symbols. Examples of horizontal mathematization are: identifying,

formulating and visualizing problems in different ways, transformation of real world problems into mathematical problems. Meanwhile, vertical mathematization can be understood as movement in the world of mathematical symbols. Examples of vertical mathematization are: representing relationships in formulas, adapting to mathematical models, using different models, formulating mathematical models and generalizing. Thus, mathematization means making a non-mathematical situation mathematical or making the situation more mathematical. Initially, students carry out horizontal mathematization, then with the guidance of the teacher students carry out vertical mathematization activities. representing relationships in formulas, adapting to mathematical models, using different models, formulating mathematical models and generalizing. Thus, mathematization means making a non-mathematical situation mathematical or making the situation more mathematical. Initially, students carry out horizontal mathematization, then with the guidance of the teacher students carry out vertical mathematization activities. representing relationships in formulas, adapting to mathematical models, using different models, formulating mathematical models and generalizing. Thus, mathematization means making a non-mathematical situation mathematical or making the situation more mathematical. Initially, students carry out horizontal mathematization, then with the guidance of the teacher students carry out vertical mathematization activities.

The teacher's role in mathematics learning is as a facilitator, as an organizer, as a guide, and as an evaluator (Gravemeijer, 1994: 90). The teacher provides contextual problems related to the intended mathematics topic as the beginning of learning. During learning activities either individually or in groups, the teacher interacts as a guide and provides assistance if needed. In class discussion activities, teachers need to stimulate students to compare the various solutions they get. Students discuss to

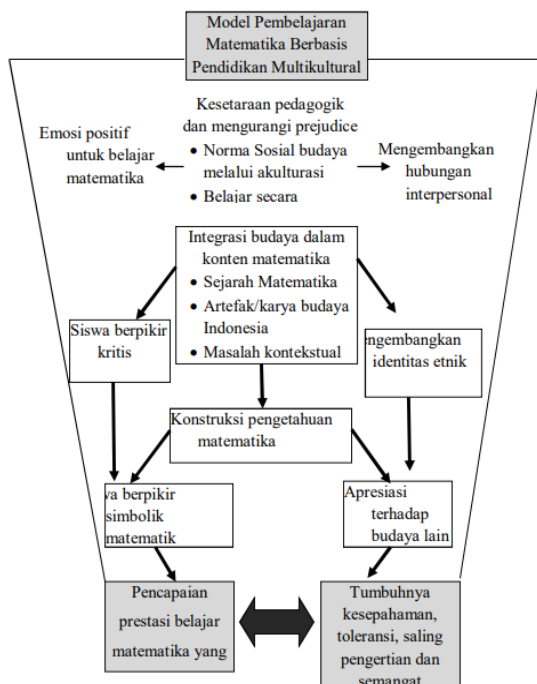
interpret problem situations and see the feasibility and efficiency of the various problem solving procedures they obtain. In this case, students think reflectively about what they have done and the results obtained. Teachers need to give students the freedom to find their own solutions, make discoveries according to their level of thinking, and build knowledge based on experience. The teacher helps students to relate mathematical concepts that are related to the topic being faced at that time. The teacher then guides students to develop, expand, or improve the results of their work in order to discover more complicated mathematical concepts or principles.

## 2. Multicultural Based Mathematics Learning Strategy

One of the strengths that students bring to the classroom is cultural capital. Theoretically, teachers can use students' cultural capital to stimulate mathematics learning or even ignore it, actively motivate students to want to learn or even increase the burden to achieve. This shows that teachers have a strategic role as socialization agents. Teachers can use students' cultural backgrounds to teach mathematics. The relationship between mathematics and culture has been studied through ethnomathematics studies. Starting from the history of the emergence of a mathematical theorem, mathematical symbols are known to be related to certain cultural backgrounds, for example Roman numerals, Arabic numerals, the Pythagorean theorem (Greece) and the solution to Al Khwarizmi's quadratic equation (Iraq).

Mathematical ideas have been used across all cultures in historical and contemporary contexts. Some examples include integrating ethnomathematical contexts in the daily life of Brazilian society to help students understand mathematics while understanding their community (Averill, et al: 2009). Another example that shows the relationship between mathematics and culture is Gerdes (1988) who shows how to develop Euclidean geometric ideas using geometric constructions developed from

traditional Mozambican culture. Indonesia itself has a rich and colorful culture, therefore it is very possible to explore the ethnomathematics contained therein. Mathematics learning based on multicultural education was developed based on James Banks' five dimensions of multicultural education.



A mathematics topic is taught in the context of various regional cultures in Indonesia through ethnomathematics. Exploring the content of mathematical concepts in a cultural view can grow students' knowledge and awareness that they too can contribute to mathematical discoveries, because mathematics is not dominated by a particular culture. It is hoped that the use of students' regional culture as an illustration of mathematical concepts or principles will make it easier for students to understand them. Apart from their own regional culture, students also study the same mathematics topics through the context of other regional cultures. This aims to increase students' appreciation of other regional cultures in Indonesia.

Apart from cultural displays as illustrations of mathematical concepts or principles, contextual mathematical problems can be used as a tool to generate social values. Mathematical problems that

contain issues of inequality or injustice can become discussion material to provoke students to think critically and increase their awareness. The next stage, the teacher opens up opportunities for students to appreciate various cultural displays or contextual problems to achieve an understanding that a knowledge construction contains assumptions that imply a certain culture which may be biased.

This reconstruction process is carried out in two stages, in the first stage students construct mathematical understanding from cultural views or contextual problems using symbols they form themselves or non-formal mathematical symbols. In the second stage, the teacher guides students to summarize this understanding in formal mathematical symbols. Every student with a different cultural background must feel able to contribute and gain benefits from learning mathematics. For this reason, students must participate in mathematics learning in class. This can be achieved only if they find a bridge between their own culture and the culture contained in the mathematics subjects they receive in class.

According to Johnson, A (2010: 126), mathematics is not a culturally neutral subject. This means that mathematics which is constructed through the social, cultural and historical context of the Indonesian nation will contain national values. This value content will be reflected in the teaching and learning process through the culture built by mathematics teachers in the classroom. If these values are in line with students' individual values, affective acceptance and understanding will occur, then this acceptance and understanding allows students to understand mathematical concepts cognitively. During the learning process, it is important for teachers to accommodate the various backgrounds of their students by providing equal attention and not showing racism either in their attitudes or in writing in mathematics questions.

Consideration of pedagogical strategies produces classes that are student-

centered physically, academically, culturally and socially so that students have the opportunity to empower themselves. For this reason, teachers need to build socio-cultural norms in the classroom through acculturation. The form of cooperative learning is seen as sufficient to help students adapt to different cultural environments, while teachers also find it easier to manage learning until students master mathematics topics without having to make many changes to the form and structure of teaching (Sleeter, Christine E, 2004: 171).

Efforts to reduce prejudice among students can start from forming heterogeneous discussion groups. Heterogeneization in terms of gender diversity, socio-economic level, ethnicity, religion. Discussions in groups aim to solve mathematics problems, but on the other hand students learn to express themselves, have opinions, accept criticism individually or in groups until they reach an understanding of social values. In this way, they learn to reduce stereotypes and then become active participants in social situations that require and respect each other. Positive attitudes towards different cultures can be encouraged through studying social and cultural issues from a mathematical perspective. Statistical data can reveal and eliminate stereotypes about a cultural group. For example, given data on outstanding students in one sub-district or district, then the religious, tribal or ethnic background, parents' occupation and so on are traced from these students. The teacher then invites students to criticize what percentage of outstanding students come from families with a certain tribe or ethnicity and so on. It is important for the teacher to control the direction of the discussion, that the aim of examining the data, apart from students understanding the meaning of average, mode or presentation of data, is to eliminate stereotypes towards certain groups. The teacher then invites students to criticize what percentage of outstanding students come from families with a certain tribe or ethnicity and so on. It is important for the teacher to control the direction of the

discussion, that the aim of examining the data, apart from students understanding the meaning of average, mode or presentation of data, is to eliminate stereotypes towards certain groups. The teacher then invites students to criticize what percentage of outstanding students come from families with a certain tribe or ethnicity and so on. It is important for the teacher to control the direction of the discussion, that the aim of examining the data, apart from students understanding the meaning of average, mode or presentation of data, is to eliminate stereotypes towards certain groups.

Statistical data about the socio-economic conditions of society in one area can be a stimulant for critical thinking. A critical understanding of numerical data encourages individuals to question how Indonesian society is grouped in socio-economic structures. Then, the most important thing is to enable them to think about the actions they will take as those at a higher socio-economic level. Indonesia is a country rich in culture. Teachers can utilize regional culture such as artifacts or regional works of art that contain mathematical elements as a means of teaching mathematical concepts or principles. For example, the shape patterns in batik motifs can be an alternative mathematics learning resource for students. The geometric shapes that can be found in batik are points, lines and flat areas. These flat areas include circles, ellipses, quadrilaterals and so on. Artistic formations in batik are produced through the transformation of points, lines or flat areas through translation (shift), rotation (rotation), reflection (mirroring) or dilation (multiplication). The teacher uses the example of batik as an illustration of the principles of transformation geometry, then students are asked to look closely and investigate shapes or images in batik that show the principles of transformation geometry. reflection (mirroring) or dilation (multiplication). The teacher uses the example of batik as an illustration of the principles of transformation geometry, then students are asked to look closely and



investigate shapes or images in batik that show the principles of transformation geometry. reflection (mirroring) or dilation (multiplication). The teacher uses the example of batik as an illustration of the principles of transformation geometry, then students are asked to look closely and investigate shapes or images in batik that show the principles of transformation geometry.

Apart from students gaining knowledge related to the concept of transformation geometry, they also understand the application of transformation geometry which can produce works of art. In line with this, through investigating the patterns of batik motifs, it is hoped that students will increasingly appreciate the artistic works of their own people so that they can develop a sense of love for their homeland, and be able to interpret and respect each other's different cultures. Another mathematical idea that can be found in batik ornaments is fractal shapes. Fractals are infinite sets that are formed through an algorithmic iterative process. The teacher then asks students to look at fractal motifs, discuss several ethnomathematical procedures and explore these methods. Students are given the freedom to construct their own algorithms, then the teacher validates the student's finding algorithm. This is important to grow self-esteem and confidence that they are able to do math problems.

On the other hand, algorithm findings that are based on real experiences that contain social values and the construction of mathematical knowledge by students themselves will make mathematics more meaningful for them. Algebra learning can be done through studying the history of mathematics in several places. For example, several proofs of the Pythagorean theorem were found in several countries as separate as Babylonia, China and India. Teachers can have students study each form of proof and then discuss how mathematicians from different cultures might think about the same

idea, namely the Pythagorean theorem, but in several different ways.

Considering the socio-cultural context, including the values contained therein, becomes added value cognitively and affectively in order to deepen students' understanding of mathematics learning. However, in line with this, students gain enlightenment and awareness regarding their existence as an ethnicity, a socio-economic class, a religion in the midst of a society of different ethnicities, socio-economic classes and religions. Every individual has unique characteristics and at the same time similarities as humans created by God.

## CONCLUSION

1. The cultural diversity of the Indonesian nation should be seen as a strength for development, while points of weakness that are prone to conflict should be bridged through efforts to build awareness, understanding, tolerance and mutual understanding through multicultural education.
2. The practice of multicultural education at the school level is carried out through the integration of multicultural education values in subjects, including mathematics.
3. Low student mathematics achievement caused by neglect of culture can be overcome by integrating the values of multicultural education in mathematics learning.
4. Mathematics learning based on multicultural education aims to optimize mathematics learning achievement while fostering awareness, understanding, tolerance, mutual understanding and the national spirit of individual students as part of a multicultural society.
5. A mathematics learning model based on multicultural education is developed through the integration of content explored from regional cultural riches, using multicultural contexts to illustrate mathematical concepts or principles. For example, cultural arts artifacts (batik, fractals) or history of mathematics to teach geometry or algebra, contextual problems about multicultural realities in the form of anti-racist story

questions, factual statistical data for example about the socio-economic conditions of the community around students.

6. The construction of mathematical knowledge through a multicultural context aims to: a) make it easier for students with different cultural backgrounds to understand mathematical concepts or principles, b) encourage creative mathematical thinking, c) create an appreciation for different cultures, d) encourage critical thinking about reality. multicultural e) sharpening social sensitivity.
7. Teachers use teaching strategies that allow dialogue between students or discussion to establish understanding and understanding when constructing mathematical knowledge and helping each other (cooperative method).
8. Teachers develop socio-cultural norms in the classroom through an acculturation process in order to reduce prejudice and build a conducive school culture so that all students can achieve optimally.

## BIBLIOGRAPHY

- Averill, et al. (2009). *Culturally Responsive Teaching of Mathematics: Three Models from Linked Studies*. *Journal for Research in Mathematics Education*. Vol 40 No 2, hal 157-186
- Banks, James A. (2002). *An introduction to multicultural education*. Boston: Allyn and Bacon.
- Gerdes, P. (1988). *On culture, geometrical thinking and mathematics education*. *Educational Studies in Mathematics*. 19 hal 137-162.
- Johnson, A. (2010). *Teaching mathematics to culturally and linguistically diverse learners*. New York: Pearson Education Inc.
- Koentjaraningrat. (2002). *Antropologi Indonesia*. Jakarta: Penerbit Djambatan, cetakan kesepuluh.
- Noel, Jana. (2000). *Notabel selection in multicultural education*. San Fransisco, CA: Mc-Graw Hill.
- OECD. (2003). *The PISA 2003 Assessment framework-Mathematics, Reading, Science and Problem Solving Knowledge and Skills*. Paris: OECD.
- Sleeter, Christine E. (2004). *How white teacher construct race*. Dalam Ladson-Billings, Gloria & Gilborn, David (Eds). *The routledgeFalmer reader in multicultural education (hal 163-177)*. London: RoutledgeFalmer Taylor & Francis Group.
- Tate, W.F. (1997). *Race-ethnicity, SES, gender, and language proficiency trends in mathematics achievement: An update*. *Journal for Research in Mathematics Education*, 28. hal 652-680.
- Yaya S. Kusumah. (2011). *Mathematical literacy*. *Proceedings 1st International Symposium on Mathematics Education innovation*. 18 -19 November 2011 Yogyakarta, p 45-52.
- Zamroni. (2010a). *The implementation of multicultural education: A reader*. Yogyakarta: The Graduate Program The State University of Yogyakarta.
- Zed, Mestika 2003. *Metode Penelitian* Kepustakaan. Jakarta : Yayasan Obor Indonesi