

Characteristics Of Toraja Culture-Based Mathematics Learning Model

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Abstract

This research examines a Toraja culture-based mathematics learning model, known as Beradat, through a literature study method. The Beradat model consists of five continuous stages: ma'parapa (motivation and problem identification), ma'kombongan (problem posing and small group discussion), ma'kombongan kalua' (class discussion), feedback, and mantaa and didosa (reward and reinforcement). Each stage is designed to create a conducive learning atmosphere, respect local culture, and develop students' mathematical skills and understanding comprehensively. The research found that the Beradat model has a number of advantages, including high cultural integration, increased active student engagement, a motivating reward system, and the development of social skills and a positive classroom environment. The model also adopts the principles of problem-based learning, encourages group work, and creates a respectful social system. However, there are challenges in its implementation, such as the need for strong training and support for teachers, time challenges in a collaborative approach, and potential implementation failure if not well supported. Overall, the Toraja culture-based mathematics learning model has great potential in improving students' mathematical understanding and social skills. However, its success requires adequate preparation and support to be effectively implemented in various educational contexts.

Keywords: Toraja Culture, Characteristics, Mathematics



INTRODUCTION

The characteristics of the implementation and evaluation of national standards for 21st century education based on the report of the National Education Standards Agency (BNSP) in 2010 include: (1) Greater attention to environmental issues, and their implications, especially for: global warming, energy, food, health, the built environment and mitigation. (2) The world of life will be increasingly connected by information technology, and its implications, especially for: security and defense systems, education, industry, and communication. (3) Science will be increasingly converging, with implications, especially for: research, philosophy of science, educational paradigms, and curriculum. (4) The rise of economic centers in East and Southeast Asia, with implications for: political and economic strategy, industry, and defense, (5) The shift from a natural and human resource-based economy to a knowledge-based economy, with implications for: the quality of human resources, education, and employment, (6) Greater attention to creative industries and cultural industries, with implications for: cultural wealth and diversity, creative education, entrepreneurship, technopreneurship, and production houses. (7) Culture will impact each other with technoscience and its implications, especially on: character, personality, etiquette, ethics, law, criminology, and media. To achieve these characteristics, students should have competencies that will help them better handle the demands of 21st century life. [1]. These competencies go beyond the accumulation of factual knowledge and relate to how one mobilizes cognitive and practical skills, creative abilities, as well as resources such as attitudes, motivation and values, to handle complex tasks.

Achieving these competencies is not easy especially in remote areas, remote and developing areas have their own challenges and require different treatment in learning. One of these challenges is developing a learning model that can support learning without technology. [2,3]. There needs to be a study to formulate learning strategies according to regional conditions and generate creative ideas in learning and adjusting the needs in schools and regions. In addition, there is a need for cultural studies to be able to achieve learning activities that adhere to the four main principles of 21st century learning. The four principles are (1) student-centered learning; (2) students are able to collaborate with friends or others; (3) learning is applied in everyday life; and (4) schools are integrated with the community. [3–5]. Specifically in mathematics learning, mathematics learning carried out by teachers is still far from the criteria for process standards in Permendikbud No. 22 of 2016, namely regarding Process Standards for Primary and Secondary Education. [6,7]. Process standards are criteria regarding the implementation of learning in basic



education units and basic secondary education units to achieve graduate competencies. Math teachers who start learning by checking/reviewing past assignments then give new material and end by giving assignments. This approach continues to be done routinely which in the end can be categorized into three M's, namely Boring, Harmful and Damaging all student interests. In addition, in learning mathematics to students at school, it is still very necessary for students' critical thinking skills from the aspects of identifying, connecting, evaluating, analyzing, and solving problems of various mathematical problems and their applications in everyday life. [8,9]. Initial observations made found several shortcomings, including the difficulty of teachers in developing learning tools appropriately in accordance with content standards and core competencies, difficulties in connecting indicators, objectives and processes in classroom learning activities, learning seems to tend to go through lectures and giving practice problems which then students in groups work on exercise problems and present in front of the class. In addition, in learning mathematics in the classroom and the learning models used, still tend to use learning models from outside. For this reason, it is necessary to develop a local culture-based learning model that can answer challenges that no longer revolve around students' academic abilities, but rather on students' intellectual, emotional, cooperation, moral and moral education. (Baan, Girik Allo, & Patak, 2022; Baan & Suyitno, 2020; Gasong, Pasulu', & Tandiseru, ; Ota & Wali, 2019; Mathematics Education Study Program, Faculty of Teacher Training and Education, Sawerigading University of Makassar & Akbar, 2021; Situru', Tangkeallo, Borean, Palebangan, & Slamet, 2022; Sukmawarti & Hidayat, 2021)

Toraja culture has long been a worldwide icon and a special attraction through traditions such as Rambu Solo, Rambu Tuka, Tongkonan traditional houses, Mangrara, Ma'bua', Ma'parapa, Ma'kombongan Kalua', Manta, and Didosa. The uniqueness of Toraja culture can be a solution to the 21st century learning challenges that require students to have creativity and innovation, the ability to work together, effective communication, and critical thinking and problem-solving skills. These challenges include learning strategies that are appropriate to regional conditions, the development of creative ideas in learning, adjusting needs in schools and regions, learning mathematics that brings students closer to the environment, and utilizing culture in learning mathematics at school. In the context of 21st century learning, Toraja culture makes significant contributions in various aspects. One of them is the Ma'kombongan tradition, where all those present can express their opinions and provide suggestions for conflicts faced without offending others. The moral value contained in Ma'kombongan activities is mutual respect for opinions,



which is guaranteed by the kombongan leader. The problem-solving process is done in a deliberative manner, giving everyone the opportunity to contribute in finding solutions. The integration of Torajan culture in 21st century learning can be adopted to achieve creative and innovative students, such as through (a) learning to express each other's ideas and opinions and find solutions to problems faced, (b) open self-disclosure of abilities without shame, and (c) learning to respect each other's opinions. [17–19]. Ma'kombongan culture also teaches cooperation, by ensuring each participant respects the opinions of others and creates peace and unity. In Torajan culture, the tradition of didosa provides sanctions to offenders that are discussed and agreed upon, teaching students about the importance of discussion and collective decision-making. In addition, Torajan cultural artifacts and activities such as meat sharing and traditional games contain elements of mathematical learning, which can be adopted to develop critical thinking and problem solving skills. Responding to the challenges of learning strategies that are in accordance with regional conditions, generating creative ideas in learning, and bringing mathematics learning closer to the environment, it is necessary to develop a learning model that utilizes Toraja culture. The Beradat mathematics learning model will be integrated with Toraja culture, such as the Ma'parapa tradition at Rambu Solo and Rambu Tuka activities which aims to calm event participants, and Ma'kombongan Kalua which upholds honesty, openness, sportsmanship, commitment to agreement, and social integration. In addition, the didosa tradition teaches customary sanctions for violations, which emphasize moral, social and trust values. These values will be the basis for the development of the Beradat learning model, which is supported by learning theories to optimize its application in schools. [20,21]

METHODS

The type of research used in this discussion is a literature study. Literature study is a research method that utilizes written sources such as journals, scientific articles, and literature reviews to collect relevant data and information. In the context of this research, data collection is done by accessing and reviewing various journals, scientific articles, and other literature that discuss Toraja culture and Toraja culture-based mathematics learning models. The data analysis technique in this literature study involved several steps. First, the research materials were selected based on the level of relevance: highly relevant, relevant and moderately relevant. This selection ensured that the data used truly supported the research objectives and provided a comprehensive insight into the topics covered. Once the research materials were selected, an in-



depth investigation of the Toraja culture-based mathematics learning model was conducted. This investigation included a critical analysis of the concept, implementation, and strengths and weaknesses of the model. The aim is to thoroughly understand how Toraja culture can be integrated in mathematics learning, as well as its impact on the teaching and learning process and students' social skills. Through the literature study approach, the research was able to draw conclusions supported by various academic sources, providing a clear and structured picture of the Toraja culture-based mathematics learning model. This technique also allows the researcher to identify trends, key findings and existing research gaps, which can then be used as a basis for further research or practical application in an educational context.

RESULTS AND DISCUSSION

Toraja culture-based math learning (Beradat) consists of five continuous stages. The first stage, ma'parapa, is motivation and problem identification. The teacher motivates students, attracts their attention to be calm and excited before learning begins, and introduces the form of mathematics in Torajan cultural artifacts, activities or ideas related to the material to be learned. The second stage, ma'kombongan, is problem posing and small group discussion. The teacher divides students into groups, appoints a leader in each group, and presents a problem that explores students' knowledge of mathematics in the context of Torajan culture. This group discussion emphasizes the principles of mutual respect and togetherness. The third stage, ma'kombongan kalua', is a class discussion. The teacher provides an opportunity for groups experiencing problems to present and invite other groups to provide solutions. This discussion is guided by the teacher as a leader and still prioritizes the principle of mutual respect. The fourth stage is feedback. The teacher conducts evaluation through test techniques, both oral and written, to assess students' understanding of the material that has been learned. The last stage, mantaa and didosa, is rewarding and reinforcing. The teacher conveys the results of the feedback, gives rewards to students with the highest evaluation results as a form of mantaa, and gives agreed sanctions to students with the lowest evaluation results as a form of reinforcement or didosa. These sanctions must be accepted sincerely and implemented with a promise not to repeat the mistake, based on the principle of "paipinni batu mapipang" which means forgive and forget. Thus, each stage in Toraja culture-based mathematics learning is designed to create a conducive learning atmosphere, respect local culture, and develop students' mathematical skills and understanding comprehensively.



The Toraja culture-based mathematics learning model has a number of characteristics that reflect a unique approach that focuses on Toraja culture. First, the model specifically incorporates elements of Torajan culture into mathematics learning, including the utilization of cultural artifacts, cultural activities and cultural ideas as a means to understand mathematical concepts. This approach allows students to experience the relevance of mathematical materials to their own culture. Second, this model adopts the principles of problem-based learning. Students are given problems that are discussed in small groups (ma'kombongan), similar to the PBL approach that allows students to actively engage in problem solving. In the early stage, the ma'parapa stage, teachers help students identify mathematical problems in the context of Torajan culture, so that learning becomes more relevant and interesting. Third, this model encourages group work through three stages, namely ma'kombongan, ma'kombongan kalua', and mantaa and didosa. Students work in small groups to solve problems and discuss solutions, which promotes cooperation, communication and togetherness in learning. In addition, this model integrates motivation and rewards as part of the evaluation. Students who achieve high evaluation results are rewarded, while students who achieve low results receive reinforcement based on the principle of "paipinni batu mapipang," which means forgive and forget. Fourth, this model creates a social system that encourages mutual respect. Students are expected to be more active in learning, while the teacher acts as a facilitator. The principles of ma'parapa and kombongan kalua' encourage students to respect and share knowledge, creating a deep and relevant learning experience by combining Torajan culture and mathematics. Fifth, the characteristics of this model lie not only in the achievement of students' cognitive outcomes but also in the development of social skills, such as cooperation and helping each other in groups, which are Torajan cultural values. (Lembang, Arsyad, & Bernard, 2024; Lembang & Ba'ru, 2021).. This learning model has a number of advantages and disadvantages. The advantages include the integration of Torajan culture that ensures high relevance in mathematics learning, the collaborative approach that increases students' active involvement, and the reward system that can provide additional motivation and create a positive environment. In addition, this model helps develop students' social skills and encourages a respectful social system, creating a positive classroom environment. However, it also has drawbacks, such as requiring strong training and support for teachers, time challenges in collaborative and problem-based approaches, as well as potential implementation failures if teachers or facilitators are not able to support the model well. [23,25]. Therefore, although the Toraja culture-based mathematics learning model has great potential in improving



students' mathematics learning and social skills, its implementation requires adequate preparation and support.

CONCLUSION

The Toraja culture-based mathematics learning model, or Beradat, is an approach that integrates elements of Toraja culture in the mathematics learning process. The model consists of five continuous stages: ma'parapa (motivation and problem identification), ma'kombongan (problem posing and small group discussion), ma'kombongan kalua' (class discussion), feedback, and mantaa and didosa (reward and reinforcement). Each stage is designed to create a conducive learning atmosphere, respect local culture, and develop students' mathematical skills and understanding comprehensively. The ma'parapa stage provides motivation and helps students identify problems. Ma'kombongan involves problem posing and small group discussion, while ma'kombongan kalua' develops wider class discussion. Feedback is used to evaluate student understanding, and mantaa and didosa provide rewards and reinforcement based on evaluation results. Strengths of this model include high cultural integration, increased active student engagement, a motivating reward system, and the development of social skills and a positive classroom environment. By using Torajan cultural artifacts, activities and ideas, students experience the relevance of mathematical material in their cultural context. The model also adopts problem-based learning principles, encourages group work and creates a respectful social system. However, challenges in implementation include the need for strong training and support for teachers, time challenges in the collaborative approach, as well as potential implementation failure if not well supported. Therefore, although the Beradat model has great potential in improving students' mathematical understanding and social skills, its success requires adequate preparation and support to be effectively implemented in various educational contexts. Overall, the Toraja culture-based mathematics learning model has great potential in improving students' mathematical understanding and social skills. Its implementation requires adequate preparation and support to be successful.

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