EDUMATSAINS
JURNAL PENDIDIKAN MATEMATIKA DAN SAINS
E-ISSN:2527-7235
Volume 9 Issue. 2 January, 2025, pp 90-101
http://ejournal.uki.ac.id/index.php/edumatsains

The Relationship Between the Philosophy of Mathematics and Culture-Based Learning Models

Lois Oinike Tambunan[1], Izwita Dewi[2], Elmanani Simamora[3]
[1]Pendidikan Matematika, Universitas HKBP Nommensen Pematangsiantar
[2,3]Pendidikan Matematika, Universitas Negeri Medan
e-mail: **loistamb@gmail.com**

Article Info
Article history:
Received : December 7, 2024
Revised : January 21, 2025
Accepted : January 21, 2025
Available online : January 31, 2025

https://doi.org/10.33541/edumatsains.v9i2.6429

Abstract
Philosophy and mathematics are interconnected in the teaching of mathematics, particularly within learning models grounded in constructivism and culture. This study aims to offer a comprehensive review of the philosophy of mathematics, examine mathematics learning models through the lens of educational philosophy, and explore various sources related to philosophy, the philosophy of education, the philosophy of mathematics, and culture-based learning models in mathematics education. Data for this research is collected from secondary sources such as books, articles, and other relevant literature. The research method employed is a qualitative literature review. Data analysis focuses on references from diverse studies related to philosophy, philosophy of education, philosophy of mathematics, philosophy-based mathematics learning models, and the integration of philosophy in culture-based learning models. The findings of this study suggest that: 1) The philosophy of mathematics significantly impacts mathematics learning; 2) Incorporating culture into the learning model enhances the learning experience by increasing engagement, sparking student interest, improving mathematical skills, boosting motivation, and making learning more practical, effective, and efficient. The practical value of this research is to offer insights into the relationship between the philosophy of mathematics and culture-based mathematics learning models.

Keywords: Philosophy, Mathematics, Learning models, Culture.

1. Introduction

Mathematics can be considered a science. (Ulandari et al., 2015) stated that mathematics is part of science, with its distinctive characteristic of being definite, so that mathematics' position as a science can inspire the development of basic thinking. As a science, the study of mathematics is divided into several branches to be studied and developed. Several mathematical figures have provided definitions of mathematics separately according to their respective fields of study, such as Whitehead, Boole, Von Neumann, Riemann, Kaplansky, Weyl, and Hibert (Parnabhhakti; & Ulfa, 2021). Kant and Von Neumann stated that mathematics is a combination of pure reason assisted by experience. Hibert explained that mathematics is a consistent science. Riemann stated that mathematics is related to theorems that involve proof in mathematics. Boole stated that

mathematics is a collection of ideas about quantity. Whitehead, known as a logic expert, defined mathematics as the formal form of all knowledge with deductive properties. However, the opposite was stated by Kaplansky, who argued that mathematics is not only about proving theorems, but also about discovering new concepts (Sadewo et al., 2022).

Essentially, science serves to make human life easier, and this is equally true for mathematics, which falls under the category of science. Mathematics emerged to simplify tasks and address various life challenges (Manik et al., 2022). To gain a clearer understanding of the role and significance of mathematics, philosophy—regarded as a process of critical thinking—offers valuable insights into the purpose and meaning of mathematics (Zalukhu et al., 2023). Philosophy is something very important to pay attention to in education. This is because philosophy plays a significant role in solving problems in both education and everyday life (Nyoman, 2022). In mathematics, philosophy is closely related. The relationship between the two seeks to fulfill the primary objective of the philosophy of mathematics, which is to clarify the role and position of mathematics within the realm of education. This philosophical approach aims to highlight how mathematics contributes to education (Wahyudin, 2014). Furthermore, the significance of the philosophy of mathematics in mathematics education lies in its ability to shape students' attitudes and characteristics in learning mathematics (Gita, N., & Bella, 2022). The values of mathematics obtained through a philosophical approach can shape students' personalities, which is expected to lead to the development of good character (Handoko et al., 2022). This aligns with the theory of Humanism philosophy, which sees the role of philosophy in education as humanizing human beings.

The relationship between the philosophy of mathematics and the field of mathematics is also rarely discussed. How the position of philosophy relates to mathematics learning and the functions of each scope of the philosophy of mathematics are rarely addressed comprehensively. However, if we examine the field of study of the philosophy of mathematics, we can see that there is a connection in the philosophy of mathematics to the process of learning mathematics. Van Den Heuvel (Rahmawati Z, Y. R., & Muchlian, 2019) argued that mathematics learning must be related to reality, intersecting with everyday life, and relevant to the values in society. Reviewing this issue and the position of the philosophy of mathematics, the focus of this research is to find the relationship between the position of the philosophy of mathematics and mathematics learning.

Philosophy and mathematics are closely related. Mathematics is the mother of all fields of science, and philosophy is the foundation for studying science. Therefore, both philosophy and mathematics are the origins of all knowledge. Mathematics and philosophy develop together, continually providing questions and feedback (Sinaga et al., 2021). Both philosophy and mathematics share the fundamental trait of seeking truth. This aligns with (Simangunsong, 2021), who stated that the essence of philosophy is thinking radically (to the roots); seeking clarity (of all reality); seeking truth; and seeking principles (the essence of reality).

As part of science, the philosophy of mathematics also has its own scope of study. According to (Gie, 1999), the study of mathematics encompasses several areas, including the epistemology of mathematics, the ontology of mathematics, mathematical methodologies, the logical structure of mathematics, the ethical implications of mathematics, the aesthetic aspects of mathematics, and its

role in human civilization. Similarly, the scope of the philosophy of mathematics includes the epistemology and ontology of mathematics, methodologies, logical structures, and the ethical considerations related to the application of mathematical science, such as numerical calculations and the use of theorems or formulas.

From an epistemological viewpoint, it is essential for a mathematics teacher to have a deep understanding of the philosophy of mathematics and its practical application in the teaching process (Suryo Bintoro, 2021). This is crucial because a profound knowledge of the philosophy of mathematics is fundamental to teaching, as the three key components of learning—input, process, and output—are interconnected and closely tied to philosophy.

From the perspective of the ontology of mathematics, the teacher must relate abstract mathematical concepts to real-world contexts that are easy for students to understand. This not only makes it easier for students to grasp the mathematical concepts being taught but also motivates them about the importance of learning mathematics, making mathematics learning meaningful. From the perspective of mathematical methodology, teachers are expected to devise strategies for improving mathematical abilities, student motivation, and how to deliver the material (Minarti, 2022). From the logical perspective of mathematics, teachers must have strong mathematical thinking skills. Additionally, teachers should be able to develop students' mathematical thinking patterns. These mathematical thinking skills play a crucial role in helping students solve contextual problems in their daily lives.

Applying educational philosophy in learning will help educators understand the concepts of teaching mathematics and practice mathematics teaching itself. Philosophy provides benefits for everyone. By applying the philosophy of mathematics education, it will help students develop their potential in mathematics and understand mathematical values. Therefore, the philosophy of mathematics education is the purpose and intention of teaching mathematics and the theory of learning mathematics, where mathematics learning requires a learning model to ensure the teaching and learning process is effective.

According to the results of PISA 2022, Indonesian students' numeracy skills have significantly declined with a score of 366, a decrease of 13 points from 2018. However, Indonesia's PISA ranking improved by 5-6 positions. Therefore, it is crucial to strengthen students' numeracy skills to address emerging challenges and facilitate understanding of numbers, facts, concepts, and patterns in various daily activities (Septia et al., 2023). For example, in the context of developing questions for the national assessment, the lack of variety in questions that align with context and cognitive levels remains a major issue. Efforts to improve numeracy skills involve developing contextual and engaging mathematics learning materials, increasing the frequency of numeracy questions in teaching mathematics, familiarizing teachers and students with various types of numeracy questions to enhance students' numeracy skills, and applying learning theories that focus more on the process of information processing rather than the results, such as cybernetic learning theory, which can increase the use of numeracy questions. Teachers need to adopt contextual mathematics teaching methods.

One solution teachers can use to present abstract mathematics material is by applying ethnomathematics in mathematics teaching. (Wahyudi & Putra, 2022) have studied

ethnomathematics in community activities. The results of this study show that the essence of ethnomathematics and mathematical concepts indeed exist in community activities. Based on several studies mentioned above, it is evident that many mathematical concepts are applied in everyday life. However, many Indonesian students are unable to solve contextual problems. Based on these phenomena, the researcher is interested in conducting a literature review to emphasize the importance of the philosophy of mathematics in teaching and exploring the connection between philosophy and culture-based learning models.

2. Methods

This research is classified as library research, which involves a method focused on gathering library data, reading, note-taking, and analyzing research materials (Zed, 2008). The data for this study consists of secondary sources, including accredited articles or journals from 2015 to 2023, books, dissertations by both local and international philosophers, and textbooks on teaching, including those focused on teaching models. The literature supporting this study comes from various investigations into philosophy and the philosophy of mathematics, particularly in relation to culture-based learning models. The steps involved in conducting library research are: 1) Gathering research materials; 2) Reviewing the library materials; 3) Taking research notes; 4) Analyzing the research notes.

The data analysis approach used in this study is thematic analysis. This analysis is conducted by identifying and grouping the main themes that emerge from the selected literature. Through thematic analysis, we can understand the relationship between the philosophy of mathematics and culture-based learning, as well as see how this can be applied to more inclusive and culturally relevant mathematics teaching.

3. Result and Discussion

A learning model is a conceptual framework for systematically organizing learning experiences to achieve learning objectives, both for learners and instructors (Suprijono, 2009; Sani, 2013). Joyce & Weil (Rusman, 2018) explain that a learning model is a plan for designing the curriculum, creating materials, and guiding other learning environments. This aligns with the opinion of (Sari & Armanto, 2021) who state that a learning model is fundamental in developing a curriculumA learning model is, therefore, a conceptual framework that outlines a systematic sequence of steps for organizing learning experiences to achieve defined educational objectives.

The functions of a learning model are: a) A guide for lesson planners and instructors in planning learning activities. b) A guide for lecturers/teachers in implementing lessons so they can determine the steps and everything needed in the learning process. c) It facilitates lecturers/teachers in teaching students to achieve the goals they set. d) It helps students acquire information, ideas, skills, values, ways of thinking, and learning how to learn to achieve learning objectives (Asyafah, 2019).

Thus, a learning model plays an important role as a guide for learning activities. The selection of a model is crucial and influenced by the type of material, the basic competencies to be achieved, and the students' mathematical abilities.

The issue of education in Indonesia in 2010 was the implementation of character-based education. Mathematics education plays a significant role in shaping a nation's character to be intelligent, resilient, honest, critical, and creative. Since 1986, a mathematics learning innovation was proposed by (D'Ambrosio, 1985) a Brazilian mathematics education expert, who attempted to connect mathematics learning with the culture understood by students when learning mathematics. Ethnomathematics is a very appropriate approach to educating students with a character based on the nation's culture.

Epistemologically, ethnomathematics is the application of ideas, skills, procedures, and practices mathematically, which were applied in the past by some members of cultural centers in diverse contexts and are frequently applied to current life contexts (Supiyati et al., 2019). Ontologically, ethnomathematics is seen as a program aimed at teaching students to understand, process, and then apply mathematical ideas to solve problems related to their daily life (Astuti et al., 2023). From an axiological aspect, ethnomathematics is the study of a culture used in the process of identifying elements of mathematical values in culture and is useful and applied in mathematics education (Agasi & Wahyuono, 2015), facilitating individuals to construct their thoughts into mathematical concepts (Fajriyah, 2018).

Ethnomathematics teaching is highly influenced by constructivist theory, where knowledge is socially constructed, and learning is a shared responsibility in the classroom. The constructivist learning perspective includes: 1) individual knowledge construction, 2) social influence on individual construction, 3) situational and contextual requirements for knowledge construction, and 4) social construction of reality. According to (Ernest, 1991), the philosophical foundation of mathematics is categorized as social constructivism, which can be explained by the following three interconnected points: (1) The basis of mathematical knowledge is language, agreements, and rules, which are a form of social constructivism, (2) Social processes are required within individuals to transform subjective mathematical knowledge into objective mathematical knowledge accepted publicly, (3) Objectivity itself will be understood as social.

Social processes are inseparable from the socio-cultural conditions of society, as agreements and rules set in society are closely related to its socio-cultural context, just as Pancasila serves as the basic philosophy of the Indonesian nation. Similarly, mathematics, logically, cannot be separated from the social processes in society. In further studies, integrating cultural backgrounds into mathematics education becomes fundamental. This gives rise to Ethnomathematics, which has gained popularity in educational terms, such as Contextual Teaching and Learning (CTL) and Realistic Mathematics Education, which incorporate students' social and cultural lives as the object of learning. Specifically regarding Ethnomathematics, (Schultes & Shannon, 1997) state that Ethnomathematics is no longer an add-on, embellishment, or enrichment, but rather the core methodology of teaching.

From the previous discussion, the philosophy of mathematics is closely related to culture-based learning models. The application of students' mathematical values cannot be maximized if

educational practices do not consider the philosophical aspects of education. Therefore, it is possible to use culture-based learning models to improve students' mathematical abilities. There are many models that can be used in mathematics education, including models that make students active based on constructivist paradigms involving their surrounding culture.

Model Problem Based Learning

The Problem-Based Learning (PBL) model is a student-centered learning model that presents students with various problems they encounter in life (Rerung; et al., 2010);Ramadhani et al., 2019)). The PBL model encourages students to think critically and solve the problems they face. According to (Nurhasanah et al., 2022) the steps of the Problem-Based Learning model are: first, orienting students to the problem, with the teacher motivating students to engage in the problem-solving activity; second, organizing students, where the teacher helps students define the learning tasks related to the given problem; third, encouraging students to gather information to solve the problem; fourth, developing and presenting the results of the problem-solving in the form of reports, videos, or models; and fifth, analyzing and evaluating the problem-solving process.

According to (Hamdalia Herzon et al., 2017), mathematical objects have socio-cultural-historical properties. Mathematics is born from a long historical journey in human life. The relationship between mathematics and daily life is known as ethnomathematics. The PBL model based on ethnomathematics is a teaching and learning model designed to motivate students' activities and help them retain the material or ideas discussed through collaborative thinking that connects local cultural elements with the subject matter, aiming to understand a concept. This approach connects mathematical concepts with those familiar to the surrounding community, building an understanding for students to relate what they will learn to the knowledge they already have, ultimately leading to solutions for the problems related to the material. Learning becomes more productive and strengthens the students' understanding of concepts, as PBL follows the constructivist approach. Through the philosophical foundation of constructivism, students are expected to learn through "experiencing" rather than memorizing, leading to a more meaningful learning process.

Model Contextual Teaching and Learning

The CTL (Contextual Teaching and Learning) model is a learning process that helps teachers connect the material being taught with students' real-life situations, encouraging students to relate their existing knowledge to its application in everyday life. There are seven key components and principles to consider when using the CTL approach, including constructivism, discovery, questioning, learning communities, modeling, reflection, and authentic assessment (Pipit Muliyah, et. al 2020). Contextual-based learning that incorporates local culture is more meaningful for students (Saparudin & Pabolo, 2017).

Mathematics learning that is linked with culture is referred to as ethnomathematics. Ethnomathematics facilitates students in constructing mathematical concepts using the knowledge they already have, based on their real-world environment. CTL learning also guides students to seek and discover their own learning experiences. This aligns with the constructivist view, which suggests that students build their own knowledge through active involvement in the learning process (Hutagaol, 2013). By integrating ethnomathematics into CTL, students become more

interested in participating in the mathematics learning process and are motivated to learn while also developing an appreciation for culture.

Model Project Based Learning

The Project-Based Learning (PJBL) model is a learning approach that uses projects or activities as a medium to engage students in transferring knowledge and skills through a discovery process with a series of questions structured in tasks or projects (Miftahotul Khoyriyah, Rosita Ambarwati, 2023). This model is generally associated with discussing real-world problems. Project-based learning is a way of learning that uses problems as an initial step to gather and integrate new knowledge based on students' experiences in real activities (Suciani et al., 2018). The PJBL model becomes even more meaningful when combined with ethnomathematics because ethnomathematics is very close to students' everyday lives. Through project assignments, students experience hands-on learning independently, making the learning more meaningful. During the project work, students encounter various events and challenges that create lasting memories, making it easier for them to remember the material learned.

When PJBL is infused with ethnomathematics, the learning experience becomes even more effective because the projects worked on are real and closely related to the students' lives. The PJBL model includes three stages in the learning process: the introductory or preparation stage, the activity stage, and the closing activity. The activity stage in the PJBL model is divided into four steps: (1) starting with important questions, (2) designing a plan for the project, (3) creating a schedule, and (4) monitoring student progress and the project. During the stages of posing important questions and planning the project, students are given assignments and questions directed towards ethnomathematics.

Model Realistic Mathematics Education (RME)

The Realistic Mathematics Education (RME) model is a teaching model developed by Hans Freudenthal in the Netherlands since the 1970s, focusing on the construction of meaningful mathematical concepts. RME is a theory of mathematics education based on Freudenthal's idea that mathematics should be connected to real-life contexts because mathematics is a human activity (Ediyanto et al., 2020). The stages of the RME model are: 1) Using contextual problems, 2) Using various mathematical models, 3) Using students' contributions, 4) Teacher-student interactions, 5) Linking mathematical structures and concepts. Realistic Mathematics Education (RME) based on Ethnomathematics is a learning approach that emphasizes the use of realistic problems (problems that are real in the students' lives or can be imagined by the students) in learning. The steps in ethnomathematics-based RME learning are as follows (Ardianingsih et al., 2020):

a. Initial Stage**:** The teacher starts the lesson, provides motivation to the students, and presents the learning objectives for the material on triangles and quadrilaterals according to the Core Competencies (KI) and Basic Competencies (KD).
b. Stage I (Understanding Contextual Problems): The teacher presents contextual problems using several contextual questions in the form of story problems, incorporating the use of natural stones distributed to each group for analysis.
c. Stage II (Solving Problems): Each group identifies and analyzes the problem by observing the natural stones and solving the problems given by the teacher.

d. Stage III (Comparing and Discussing Answers): The teacher guides students to prepare their group answers for class discussion.
e. Stage IV (Conclusion): The teacher guides and directs the students in drawing accurate conclusions about the material they have studied.

Based on the ethnomathematics-based RME learning syntax, it can be concluded that this learning approach emphasizes students' direct experience with mathematics, allowing them to easily relate mathematics to real-life situations, making mathematical concepts easier for students to understand and remember.

Several studies have attempted to link philosophy with culture-based learning models. (Pratiwi & Pujiastuti, 2020) examined the application of ethnomathematics using the philosophy of perennialism in mathematics education. The study found that the application of ethnomathematics using perennialism philosophy in mathematics teaching could be carried out regardless of the learning model applied. This is based on the philosophy of perennialism, which embraces the principle of freedom in learning. This means that students are given the freedom to study the material with their preferred learning style and teaching method. In another study, (Priyani et al., 2019) developed an ethnomathematics module using the Joyful Learning approach to the Dayak culture. The findings showed that students faced difficulties in solving long word problems without images compared to problems with images. The images referred to illustrations of Dayak culture in the questions. This indicates that mathematical concepts are easier for students to understand when accompanied by local cultural illustrations. Additionally, research by (Hidayati & Abdullah, 2021) found that the average mathematical problem-solving ability of students who received mathematics learning with the Contextual Teaching and Learning (CTL) model based on ethnomathematics from DIY was higher than that of students who used conventional learning. This supports the view that ethnomathematics-based learning facilitates students in constructing mathematical concepts based on their real-life knowledge and environment.

4. Conclusion

Philosophy is an essential aspect to be considered in the field of education. Essentially, the role of science is to make human life easier, and mathematics, as a branch of science, serves the same purpose. The existence of mathematics is intended to provide solutions and ease various life problems. The philosophy of mathematics is a reflection of mathematics itself and reinforces the meaning of truth within the field. The role of the philosophy of mathematics is to explore the essence of mathematics as a science.Ethnomathematics is one of the strategies that teachers can use to enhance students' mathematical concepts through illustrations of local cultural images related to mathematical concepts in teaching. Ethnomathematics is closely linked to philosophy because both help teachers convey abstract mathematical concepts in ways that are easier for students to understand. The connection between the two lies in how the philosophy of mathematics not only discusses mathematical theory but also views mathematics as part of social and cultural construction.by understanding mathematics in the context of culture, mathematical learning becomes not only less abstract but also more relevant to students' lives. Culture-based learning

models enable students to connect mathematical concepts with their local knowledge and experiences, making the learning process more meaningful and easier to understand.
In summary, the philosophy of mathematics plays an essential role in enhancing culture-based learning by deepening the understanding of how mathematical ideas connect with various cultural contexts and worldviews. It encourages students to delve into both the technical aspects and the conceptual foundations of mathematics, which are shaped by diverse cultural and historical influences. By incorporating the philosophy of mathematics into teaching, educators can foster critical thinking, encourage a range of perspectives, and help students recognize the universality and variety of mathematical concepts. This approach has practical implications for teaching, such as designing inclusive curricula that honor cultural differences while fostering a global perspective on mathematics. Ultimately, the philosophy of mathematics enhances the educational experience by linking abstract mathematical ideas with students' lived experiences, helping them view mathematics as a meaningful, evolving discipline tied to both culture and society.

5. Aknowledgments

The researcher would like to express their gratitude to Dr. Izwita Dewi, M.Pd., the first supervisor, and Dr. Elmanani Simamora, M.Si., the second supervisor, for their valuable input and suggestions on this article.

6. References

Agasi, G. R., & Wahyuono, Y. D. (2015). *Bidang Kajian : Pendidikan Matematika Jenis Artikel : Hasil Penelitian KAJIAN ETNOMATEMATIKA : STUDI KASUS PENGGUNAAN BAHASA LOKAL UNTUK PENYAJIAN DAN PENYELESAIAN MASALAH LOKAL MATEMATIKA*. 527–540.

Ardianingsih, A., Lusiyana, D., & Rahmatudin, J. (2020). Penerapan Pembelajaran Realistic Mathematic Education Berbasis Etnomatematika Untuk Meningkatkan Hots Matematik Siswa. *M A T H L I N E Jurnal Matematika Dan Pendidikan Matematika*, *4*(2), 148–161. https://doi.org/10.31943/mathline.v4i2.117

Astuti, Jimmi Copriady, & Firdaus, L. N. (2023). Etnomatematika Dalam Pandangan Aliran Filsafat Esensialisme. *Jurnal Filsafat Indonesia*, *6*(1), 1–9. https://doi.org/10.23887/jfi.v6i1.50865

Asyafah, A. (2019). MENIMBANG MODEL PEMBELAJARAN (Kajian Teoretis-Kritis atas Model Pembelajaran dalam Pendidikan Islam). *TARBAWY : Indonesian Journal of Islamic Education*, *6*(1), 19–32. https://doi.org/10.17509/t.v6i1.20569

D'Ambrosio, U. (1985). Ethnomathematics and its place in the history and pedagogy of mathematics. *For the Learning of Mathematics*.

Ediyanto, E., Gistituati, N., Fitria, Y., & Zikri, A. (2020). Pengaruh Pendekatan Realistic Mathematics Education Terhadap Motivasi Dan Hasil Belajar Materi Matematika Di Sekolah Dasar. *Jurnal Basicedu*, *4*(1), 203–209. https://doi.org/10.31004/basicedu.v4i1.325

Ernest. (1991). *The philosophy of mathematics education*.

Fajriyah, E. (2018). Peran etnomatematika terkait konsep matematika dalam mendukung literasi. *PRISMA, Prosiding Seminar Nasional Matematika*, *1*, 114–119. https://journal.unnes.ac.id/sju/index.php/prisma/article/view/19589

Gie. (1999). *Filsafat Matematika*. Pusat Belajar Ilmu Berguna.

Gita, N., & Bella, C. (2022). Filsafat matematika sebagai pembentukan karakteristik pada media pembelajaran. *Duniailmu.Org, 2*(3), 1–8.

Hamdalia Herzon, H., Budijanto, & Hari Utomo, D. (2017). Pengaruh Problem-Based Learning (PBL) terhadap Keterampilan Berpikir Kritis. *Jurnal Pendidikan : Teori, Penelitian Dan Pengembangan*, *3*(1), 42–46. http://journal.um.ac.id/index.php/jptpp/

Handoko, H., Rochmad, & Isnarto. (2022). Nilai-nilai matematika dalam perspektif filsafat humanisme sebagai pembentuk kepribadian. *PRISMA, Prosiding Seminar …*, *5*, 140–144. https://journal.unnes.ac.id/sju/index.php/prisma/article/view/54351%0Ahttps://journal.unnes.ac.id/sju/index.php/prisma/article/download/54351/21150

Hidayati, N., & Abdullah, A. A. (2021). Penerapan Model Pembelajaran Contextual Teaching and Learning (CTL) Berbasis Etnomatematika terhadap Kemampuan Pemecahan Masalah Matematika Siswa Kelas VIII SMPN 1 Bambanglipuro. *Jurnal Tadris Matematika*, *4*(2), 215–224. https://doi.org/10.21274/jtm.2021.4.2.215-224

Hutagaol, K. (2013). Pembelajaran Kontekstual Untuk Meningkatkan Kemampuan Representasi Matematis Siswa Sekolah Menengah Pertama. *Infinity Journal*, *2*(1), 85. https://doi.org/10.22460/infinity.v2i1.27

Manik, H., C B Sihite, A., Sianturi, F., Panjaitan, S., & Hutauruk, A. J. B. (2022). Tantangan Menjadi Guru Matematika dengan Kurikulum Merdeka Belajar di Masa Pandemi Omicron Covid-19. *Edumaspul: Jurnal Pendidikan*, *6*(1), 328–332. https://doi.org/10.33487/edumaspul.v6i1.3048

Miftahotul Khoyriyah, Rosita Ambarwati, V. R. (2023). Pengaruh Model Project Based Learning Terhadap Kemampuan Berpikir Kreatif Siswa V Sekolah Dasar. *SENTRI: Jurnal Riset Ilmiah*, *2*(2), 426–430. https://doi.org/10.55681/sentri.v2i2.522

Minarti, L. E. H. (2022). *PENERAPAN MATEMATIKA DALAM ALIRAN KONSTRUKTIVISME YANG TERKANDUNG DALAM FILSAFAT MATEMATIKA*. *16*(1), 1–23.

Nurhasanah, F., Sumarni, S., & Riyadi, M. (2022). Pengembangan E-Modul Materi Barisan Dan Deret Untuk Memfasilitasi Kemampuan Pemecahan Masalah Matematis. *Sigma: Jurnal Pendidikan Matematika*, *14*(2), 104–117. https://doi.org/10.26618/sigma.v14i2.9320

Nyoman, N. G. (2022). Pentingnya Filsafat Dalam Matematika Bagi Mahasiswa Pendidikan Matematika. *Journal of Arts and Education*, *2*(1), 20–25. https://doi.org/10.33365/jae.v2i1.64

Parnabhhakti;, L., & Ulfa, M. (2021). Perkembangan Matematika Dalam Filsafat Dan Aliran Formalisme Yang Terkandung Dalam Filsafat Matematika. *Sepren*, *2*(2), 17–22. https://doi.org/10.36655/sepren.v2i2.508

Pipit Muliyah, Dyah Aminatun, Sukma Septian Nasution, Tommy Hastomo, Setiana Sri Wahyuni Sitepu, T. (2020). 済無No Title No Title No Title. *Journal GEEJ*, *7*(2), 2003–2006.

Pratiwi, J. W., & Pujiastuti, H. (2020). Eksplorasi Etnomatematika pada Permainan Tradisional Kelereng. *Jurnal Pendidikan Matematika Raflesia*, *5*(2), 1–12. https://doi.org/10.33369/jpmr.v5i2.11405

Priyani, Y., Nofiana, M., & Julianto, T. (2019). The Effect of Contextual Teaching and Learning (CTL) Model towards the Student's Science Literacy on Bio Diversity in MAN 2 Banyumas. *Jurnal Kiprah*, *7*(1), 1–12. https://doi.org/10.31629/kiprah.v7i1.996

Rahmawati Z, Y. R., & Muchlian, M. (2019). Eksplorasi etnomatematika rumah gadang Minangkabau Sumatera Barat. *Jurnal Analisa*.

Ramadhani, R., Umam, R., Abdurrahman, A., & Syazali, M. (2019). The effect of flipped-problem based learning model integrated with LMS-google classroom for senior high school students. *Journal for the Education of Gifted Young Scientists*, *7*(2), 137–158. https://doi.org/10.17478/jegys.548350

Rerung;, N., Sinon, I. L. S., Widyaningsih;, & Wahyu, S. (2010). PENERAPAN MODEL PEMBELAJARAN PROBLEM BASED LEARNING (PBL) UNTUK MENINGKATKAN HASIL BELAJAR PESERTA DIDIK SMA PADA MATERI USAHA DAN ENERGI. *InterCeram: International Ceramic Review*, *59*(5), 274–280. https://doi.org/10.24042/jipf

Rusman. (2018). *Model-model Pembelajaran Mengembangkan Profesionalisme Guru*. Rajawali Press.

Sadewo, Y. D., Purnasari, P. D., & Muslim, S. (2022). Filsafat Matematika: Kedudukan, Peran, Dan Persepektif Permasalahan Dalam Pembelajaran Matematika. *Inovasi Pembangunan : Jurnal Kelitbangan*, *10*(01), 15–28. https://doi.org/10.35450/jip.v10i01.269

Saparudin, A., & Pabolo, M. (2017). Pengaruh Penerapan Pendekatan Kontekstual Berbasis Budaya Lokal Terhadap Kemampuan Pemecahan Masalah Matematika. *Jurnal Pendidikan Progresif*, *7*(1), 1–12. https://doi.org/10.23960/jpp.v7.i1.201701

Sari, D. N., & Armanto, D. (2021). Matematika Dalam Filsafat. *Jurnal Pendidikan & Matematika*, *10*(2), 202–209. file:///C:/Users/LENOVO/Documents/KULIAHHH/Artikel Filsafat /1. artikel.pdf

Schultes & Shannon. (. (1997). *Mathematics and culture: a unique liberal arts experience.*

Simangunsong, V. H. (2021). Hubungan Filsafat Pendidikan Dan Filsafat Matematika Dengan Pendidikan. *Sepren*, *2*(2), 14–25. https://doi.org/10.36655/sepren.v2i2.513

Sinaga, W., Parhusip, B. H., Tarigan, R., & Sitepu, S. (2021). Perkembangan Matematika Dalam Filsafat dan Aliran Formalisme Yang Terkandung Dalam Filsafat Matematika [The Development of Mathematics in Philosophy and the School of Formalism Contained in Mathematical Philosophy]. *SEPREN: Journal of Mathematics Education and Applied*, *02*(02), 17–22.

Suciani, T., Lasmanawati, E., & Rahmawati, Y. (2018). Pemahaman Model Pembelajaran Sebagai Kesiapan Praktik Pengalaman Lapangan (Ppl) Mahasiswa Program Studi Pendidikan Tata Boga. *Media Pendidikan, Gizi, Dan Kuliner*, *7*(1), 76–81.

Supiyati, S., Hanum, F., & Jailani. (2019). Ethnomathematics in sasaknese architecture. *Journal on Mathematics Education*, *10*(1), 47–57. https://doi.org/10.22342/jme.10.1.5383.47-58

Suryo Bintoro, H. (2021). Model Problem Based Learning dalam Perspektif Ontologi dan Epistemologi Filsafat Pendidikan Matematika. PRISMA, Prosiding Seminar Nasional Matematika. *Prisma*, *4*, 223–227. https://journal.unnes.ac.id/sju/index.php/prisma/

Ulandari, S. D., Haryono, H., & Setyowati, W. A. E. (2015). Penerapan Pembelajaran Model Problem Posing Sebagai Upaya Peningkatan Kemampuan Analisis Dan Prestasi Belajar Pada Materi Kelarutan Dan Hasil Kali Kelarutan Siswa Kelas XI IPA 3 SMA Negeri Gondangrejo Tahun Ajaran 2013/2014. *Jurnal Pendidikan Kimia, Program Studi Pendidikan Kimia*, *4*(2), 108–114. https://jurnal.fkip.uns.ac.id/index.php/kimia/article/view/5760

Wahyudi, W., & Putra, A. (2022). Systematics Literature Review: Eksplorasi Etnomatematika Pada Aktivitas Masyarakat. *Jurnal Lebesgue : Jurnal Ilmiah Pendidikan Matematika, Matematika Dan Statistika*, *3*(1), 173–185. https://doi.org/10.46306/lb.v3i1.110

Wahyudin. (2014). *Sejarah dan filsafat matematika*. Universitas Terbuka.

Zalukhu, A., Herman, H., Hulu, D. B. T., Zebua, N. S. A., Naibaho, T., & Simanjuntak, R. (2023). Kedudukan dan Peran Filsafat dalam Pembelajaran Matematika. *Journal on Education*, *5*(3), 6054–6062. https://doi.org/10.31004/joe.v5i3.1371