International Journal of Religion
2024
Volume: 5| Number 11 | pp. 5839 – 5848
ISSN: 2633-352X (Print) | ISSN: 2633-3538 (Online)
ijor.co.uk
DOI: https://doi.org/10.61707/4syrfp69

Tri Hita Karana-Oriented Ethnomathematics Learning Resources for Grade Vii Students in Buleleng, Bali-Indonesia: An Ethnographic Study

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Abstract

This study aims to describe the source of THK-oriented ethnomathematics learning for grade VII Elementary Education students in Buleleng Regency-Bali Indonesia. The type of research used is qualitative with an ethnographic approach. The subjects of the study were mathematics teachers who teach in grade VII. Data collection techniques used documentation, open questionnaires, and semi-structured interviews. Data analysis used inductive thematic. The results of the study are ,the sources of THK-oriented ethnomathematics learning that can be used in mathematics learning for grade VII students in Buleleng Regency are determining holy days, menyama braya, megoak-goakan games, Dewa Yadnya ceremonies, Bhuta Yadnya ceremonies, subak systems, traditional Balinese buildings, and tumpek ceremonies. The use of THK-oriented ethnomathematics as a learning source has the potential to increase student interest, as well as foster awareness that many activities or objects related to socio-cultural-religious issues contain mathematical ideas.

Keywords: *Ethnomathematics, Tri Hita Karana, Learning Sources, Socio-Cultural-Religious, Ethnographic Approach.*

INTRODUCTION

One of the many efforts made to improve mathematics learning outcomes is to integrate ethnomathematics into classroom learning. Ethnomathematics aims to draw on cultural experiences and uses of mathematics so as not only to make mathematics learning more meaningful, but also to provide students with insight that mathematical knowledge is embedded or inherent in the social and cultural environment, and students appreciate the use of mathematics in everyday life (Balamurugan, 2015; Rosa, M & Orey, 2016). Many cultural objects or socio-cultural activities contain mathematical ideas (Rakhmawati, 2016; Kusuma, D. A, 2019; Suharta, Suparta, Parwati, 2020; Suharta, Puja Astawa, Widhy Adnyana, 2020; Suharta, Puja Astawa, Budarsini, 2020; Amalia, Purwaningsih & Fasha, 2021, Maidiyah, et al, 2021; Puja Astawa, Wira Nata, Suharta, 2022; Turmuzi, Suharta, Puja Astawa, Suparta, 2024).

Research related to ethnomathematics continues to develop (Choirudin, et al, 2021; Turmuzi, M, Suharta, Suparta, 2023). Various studies show that the use of ethnomathematics learning resources can improve student learning outcomes (Mohammed Waziri Yusuf, Ibrahim Saidu, Aisha Halliru; 2010; Rosa, M & Orey, 2011; Unodiaku, Stanislus Sochima, 2013, Hartinah et al, 2019; Mulyani, E., & Natalliasari, 2020; Nirmalasari, Sampoerno, and Makmuri, 2021; Rachmaniah Mirza Hariastuti, Mega Teguh Budiarto, Manuharawati, 2022; Hidayati & Prahmana, 2022; Patrick Kyeremeh, Francis Kwadwo Awuah, Esenam Dorwu, 2023; Deah Uji Wulandari, et al, 2024), and develop their own cognitive abilities, social attitudes, and emotions (Patrick Obere Abiam, et al, 2016).

However, the results of international studies of students in Indonesia have not shown optimal results. The Programme for International Student Assessment (PISA) is an international study conducted by the Organisation for Economic Co-operation and Development (OECD) to assess mathematical, reading, and science literacy for students aged 15 years (junior high school/high school level). In 2022, PISA was attended by 37 OECD countries and 44 partner countries. The results of PISA 2022 in terms of mathematical literacy showed that Indonesia's score was relatively better than the average international score, namely the international score dropped 21 points and Indonesia dropped 13 points (OECD, 2023). To improve PISA results, especially

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mathematical literacy in the future, it is necessary to prepare from junior high school. Ethnomathematics research that has an impact on aspects of character in addition to cognitive is important.

Tri Hita Karana (THK) is local wisdom (Bali) but has universal values. According to Bawa Atmadja (2020), THK has the meaning that there are three (*Tri*) causes (*Karana*) of happiness/peace (*Hita*), namely the harmonious relationship between humans and God (*Parhyangan*), fellow humans (*Pawongan*), and humans and the environment or nature (*Palemahan*). Research using THK-oriented ethnomathematics has not been widely conducted.

A search for research articles in the research database https://eric.ed.gov/?q=Tri+Hita+Karana+oriented+Ethnomathematics (accessed, June 21, 2024) with the keyword "Tri Hita Karana oriented Ethnomathematics" found only 2 articles in the last 20 years. One article is related to Mathematics Education (Ardana, Wisna Ariawan, Dessy Sugiharni, 2021) and the other is related to Science learning (Anenggar Dewi Puspita, Ika Maryani, Hanum Hanifa Sukma, 2023). The research of Ardana, Wisna Ariawan, Dessy Sugiharni entitled "The expansion of sociocultural theory-oriented mathematical learning model" was conducted at SD No. 1 Bhaktiseraga Singaraja -Bali aims to develop a valid, practical, and effective Tri Hita Karana Sociocultural Theory-Oriented Mathematics Learning model in developing students' character in mathematics learning. The results of the study are that mathematics learning oriented to Sociocultural Theory with THK insight is effective for developing students' character. Research related to THK, Darma Atmaja, Suharta, Sariyasa, Suweken (2023) found that ethnomathematics in THK-oriented logic concepts consists of: statements, negations, conjunctions, negations of conjunctions, implications, and negations of implications. The results of Suharta and Parwati's (2022) research are the use of THK-oriented cultural aspects such as the *mecaru* ceremony, *tumpek wariga*, *odalan, ngayah*. as a source of fraction learning can improve procedural and conceptual knowledge. The results of Puspitasari's research, M. (2024) that social and cultural influences the washback effect of national exams, including social pressure, collectivism, curriculum alignment, and justice. Based on this description, the problem of this research is how to describe the source of ethnomathematics learning oriented to THK for grade VII students of junior high schools in Buleleng-Bali-Indonesia.

METHODS

Type of Research

Because this research is essentially to obtain in-depth and comprehensive information about THK-oriented ethnomathematics as a source of mathematics learning, the type of research used is ethnographic research (Ugwu, Chinyere. N. and Eze Val, 2023).

Subjects of Research

Education levels in Indonesia consist of Elementary School (SD: grades I - VI, and SMP: grades VII - IX), Secondary Education (SMA: grades X - XII). Grade VII students are a strategic class for innovation, because they have graduated from elementary school and have a 3-year opportunity to prepare for international-scale tests. Buleleng is one of 9 regencies in Bali, Indonesia. In Buleleng Regency, there are 84 junior high schools/equivalent. In general, Buleleng can be classified into 3 regions, namely West Buleleng, Central Buleleng, and East Buleleng. Each region has different habits or cultures so that these differences can color the differences in the use of learning resources. In each of these regions, 3 schools were selected. Furthermore, all teachers who teach mathematics in grade VII at the designated schools were selected as research subjects. The determination of schools and the selection of teachers were carried out in coordination with the chairman of the Mathematics Subject Teachers' Conference (MGMP) of Buleleng Regency. In qualitative research, the research subjects are intended to be the same as the respondents. The number of research subjects is 11 people.

Data Collection Instruments and Techniques

Research instruments are tools used to measure the data to be collected. The instruments used to collect data for this study are documentation guidelines, questionnaires, and interview guidelines. The data collection techniques used are documentation conducted on June 7-8, 2024, an open questionnaire conducted on June 27, 2024 using Google Form, and semi-structured interviews conducted on July 25-29 online using the Zoom meeting platform. The documents used are in the form of curriculum, teacher learning implementation plans. In an open questionnaire, participants have the freedom and flexibility to provide answers. The advantage of an open questionnaire is that it allows researchers to collect answers to questions asked by the questionnaire that represent the actual words of the research participants. In addition, it allows researchers to collect data in an organized manner on time (Sandra Kostere and Kim Kostere, 2022).

Semi-structured interviews are one of the interview techniques to dig up information in depth (Rubin & Rubin, 2012). Semi-structured interview techniques use interview guidelines as a reference, but do not bind the interviewer to ask questions rigidly. The interviewer can adjust the order, formulation, or addition of questions according to the situation and the response of the informant. The questions in semi-structured interviews are open-ended, giving the informant the freedom to answer according to their understanding and experience.

Interview questions must be in line with the research questions. There is a functional difference between research questions and interview questions. Research questions are the formulation of what you want to understand; while interview questions are what is asked of others to gain that understanding.

Interview questions in this case are intended as a method triangulation of data collected through questionnaires. In other words, the interview aims to verify the responses given through the questionnaire and to dig deeper and wider regarding how and why THK-oriented ethnomathematics as a learning resource is used by teachers.

In this interview, there are 4 question phases, namely introductory questions, transition questions, core questions, and closing questions, as presented in Table 01.

Table 1. Question phase, Explanation and Example of Questions

No.	Question phase	Explanation	Example Questions
1	Introductory Questions	Relatively neutral questions elicit general information and are non-intrusive and non-threatening.	Based on the information you provided in the questionnaire, you have been a teacher for .....years. Did you become a teacher immediately after graduating or have you worked as something other than a teacher?
2	Transition Questions	Questions that connect the introductory question to the core question you want to ask	In the questionnaire, you stated that ___ you have ... years of teaching grade VII and have attended training..... Is that true? If yes....of course you have experience in choosing the right learning resources. Have you ever used ethnomathematics in learning? If yes....what type of ethnomathematics do you use?
3	Core questions	The question that is most relevant to the research problem or research objective	In the questionnaire, you stated that to teach real number material, you can use .....as a learning resource. Why? and how is it used....
4	Closing questions	Easy to answer questions and provide an opportunity for closing	Before we end this interview, is there any experience that influences the way you choose learning resources? Thank you for all your responses, your responses are very useful for the advancement of mathematics education. May you always be successful.

Data Analysis

Data analysis is a process of studying the results of field notes obtained through documentation, questionnaires, interviews, or others, to gain an understanding of the things being studied and present them as research results. The main question of this research is how can THK-oriented ethnomathematics be used as a source of mathematics learning? The data analyzed are related to the responses to the answers to the main questions of this research. The data analysis used is inductive thematic analysis (Sandra Kostere and Kim Kostere, 2022). Data collected from each respondent (open questionnaire, interview) is analyzed individually. During this process, the researcher immerses himself in the data of each participant individually.

The steps for data analysis with inductive thematic are: highlight data that matches the main research question, set aside irrelevant data, determine relevant data, group data that has the same meanings, determine patterns that occur, create themes supported by patterns, explain each theme in detail.

RESEARCH RESULTS AND DISCUSSION

Research Results

The main problem in this study is how to describe THK-oriented ethnomathematics as a source of mathematics learning for grade VII students in Buleleng Regency. The characteristics of the research subjects are teaching at schools located in West Buleleng, Central Buleleng, and East Buleleng. Based on a study of teacher teaching preparation documents, the materials taught to grade VII students consist of real numbers, comparisons, social arithmetic, algebraic forms, linear equations of one variable, spatial figures, lines and angles, geometric transformations, and statistics.

Based on data collected by questionnaires, and verification through interviews, THK-oriented ethnomathematics that can be used as a source of mathematics learning can be presented in the following table.

Table 2. Materials, Learning Objectives, and THK-oriented Ethnomathematics

No.	Material	Learning Objectives	THK-oriented ethnomathematics as a learning resource
1	Real Numbers	Building an understanding of various numbers so that students can explain, write, and compare integers, rational numbers, decimal numbers and can apply arithmetic operations to real numbers.	1. Calculation of holy days (*pawukon*) 2. *Menyama braya* 3. Traditional game *megoak-goakan* 4. *Dewa Yadnya* ceremony facilities 5. *Bhuta Yadnya* ceremony facilities
2	Comparison (Ratio)	Building students' understanding related to the concept of comparison of value and inverse value, understanding ratios and changing them into simple forms, so that they can use them to determine scale, proportion, and rate of change in solving contextual problems.	1. *Subak* system (water distribution based on land area) 2. Construction of sacred buildings 3. *Ngayah* in temples or villages 4. Construction of *bale bengong* 5. Construction of ceper (a means of *Dewa Yadnya* ceremony)
3	Social Arithmetic	Building students' understanding to be able to solve problems related to social arithmetic (including those related to financial literacy), so that they can provide estimates/forecasts of the results of buying and selling problems (and interest, net, gross, tare at the next level)	1. Purchase of means of *Dewa Yadnya* ceremony, 2. *Bhuta Yadnya* 3. *Main momongan* 4. *Tumpek* 5. Calculation of harvest results and their division
4	Algebraic Form	Building students' understanding related to the concept of algebra, expressing a real situation in algebraic form, using the properties of operations (commutative, associative, and distributive) to produce equivalent algebraic forms, and solving everyday problems related to algebra.	1. Distribution of mass cremation costs 2. Art objects and designs that use patterns 3. Determining holy days with *wewaran* 4. Calculating the number of offerings in the *tumpek* ceremony
5	Linear Equations of One Variable	Building students' understanding related to the concept of linear equations of one variable and being able to solve everyday problems related to linear equations of one variable.	1. Division of harvest between the *pengakap* and the owner (terms *nelon, ngempatin*) 2. Determining holy days with *pewaran* 3. Water distribution according to the *subak* system
6	Spatial Figures	Building students' understanding related to the concept of spatial figures so that they can determine the surface area and volume of spatial figures (prisms, cylinders, spheres, pyramids and cones) and solve everyday problems related to spatial figures.	1. Use of sacred buildings 2. *Bale sekenem* or *sekepat* 3. *Kisa, tamas, ketupat, daksina, jejahitan* 4. Use of temples, pottery, cultural objects 5. *Tumpeng* 6. Traditional Balinese buildings 7. Temple or *pelinggih* buildings

7	Lines and Angles	Building an understanding of the position of two lines so that students can find the properties of angles and the relationship between angles formed by two intersecting lines and two parallel lines cut by a transversal line to solve problems (including determining the sum of the angles in a triangle, determining the unknown angles in a triangle)	1. Using *klakat, kelabang, sanggah, tamas* 2. Making *gantung-gantungan*
8	Geometric Shape Transformations	Building an understanding of the concept of geometric transformations, so that students can perform single transformations (reflection, translation, rotation, and dilation) of points, lines, and plane shapes on the Cartesian coordinate plane and use them to solve	1. Position of holy places 2. art objects and designs that have patterns 3. making *lamak* 4. architecture in temples 5. making *banten* facilities
9	Statistics	Building an understanding of the basic concepts of statistics, so that students can formulate questions, collect, present, and analyze data to answer questions, and use bar charts and pie charts to present and interpret data.	1. Grouping *banten* according to the type of *Dewa Yadnya* ceremony 2. Data in *ngayah* activities 3. *Goyong royong* data in the village 4. Distribution of *tempekan* in the division of tasks in customs 5. Attending events *suka* and *duka*

For example, the transcript of the interview with S2 is as follows.

R: Previously, you said that to teach the material of comparison or ratio, the irrigation water distribution system can be used as a source of learning. Please elaborate further?

S2: In the irrigation or subak system, the distribution of water depends on the area of the rice field. For example, the water flow is 2 nyari or 1 cepak for a rice field area of 50 are. If the rice field area is 100 are, how many cepak can water get? This water distribution system attracts students in learning ratios.

According to the subject S3, it is as follows.

R: To teach the material of comparison or ratio, what can be used?
S3: There are comparisons that are equal and dissimilar, for example using the purchase of pencils.
R: If using ethnomathematics oriented to THK, what?
S3: he..hehe..he
R: If using the irrigation system, the distribution of water is according to the area of the rice field, how is it?
S3: never used that
R: is it suitable to use
S3: can be used... especially since my school is in a village. Usually cloves are used. For example, 10 kg when wet shrinks to 8 kg.
R: good...good

R : researcher, S2 : subject number 2, S3 : subject number 3

The results of the interview above show that the distribution of water in the *subak* system can be used as a source of learning about ratio material.

Based on the meaning and patterns that emerge, the results can be made into initial themes as follows.

Table 3. Initial Themes of THK-oriented Ethnomathematics

THK-Oriented Ethnomathematics	Initial theme
➢ Calculation of holy days (*pawukon*); ➢ Determination of holy days with *wewaran*	Determination of holy days
➢ *Menyama braya* ➢ Distribution of mass *ngaben* costs ➢ *Tumpeng* ➢ Attending events suka and duka	*Menyama braya*

➢ *Ngayah* at the temple or in the village	*Ngayah*
➢ Data on *ngayah* activities	
➢ Data on mutual cooperation in the village	
➢ Distribution of *tempekan* in the division of tasks in *adat*	
➢ Traditional games *megoak-goakan*	Traditional game *megoak-goakan*
➢ *Dewa Yadnya* ceremony equipment	Means of *Dewa Yadnya* ceremony
➢ Purchasing *Dewa Yadnya* ceremony equipment,	
➢ T*umpeng*	
➢ Grouping *banten* according to the type of *Dewa Yadnya* ceremony	
➢ Making *gantung-gantungan*	Making of ceremony facilities
➢ Making *Lamak*	
➢ Making *banten* equipment	
➢ Making ceper (instrument for *Dewa Yadnya* ceremony)	
➢ Facilities for the *Bhuta Yadnya* ceremony	Means of *Bhuta yadnya* ceremony
➢ *Bhuta Yadnya*	
➢ *Tumpeng*	
➢ *Kisa, tamas, ketupat, daksina, jejahitan*	Making of *Bhuta Yadnya* facilities
➢ *Using klakat*, *kelabang*, *sanggah, tamas*	
➢ *Subak* system (water distribution based on land area)	Water distribution system
➢ Water distribution according to the subak system	
➢ Distribution of the harvest between the tenant and the owner (terms *nelon, ngeempatin*)	Harvest distribution system
➢ Calculation of the harvest and its distribution	
➢ Making a *bale bengong*	Traditional Balinese buildings
➢ Bale *sekenem or sekepat*	
➢ Traditional Balinese buildings	
➢ Art objects and designs that use patterns	Ornaments on traditional Balinese objects
➢ Art objects and designs that have patterns	
➢ Use of temples, pottery, cultural objects	
➢ Temple or shrine building	Sacred buildings
➢ Position of the sacred place	
➢ Use of sacred buildings	
➢ Construction of sacred buildings	
➢ Architecture of the temple	
➢ *Tumpek* Ceremony	*Tumpek* Ceremony
➢ Counting the number of offerings in the tumpek ceremony	

Next, we review the themes based on the similarity of meaning and give new theme names. These new themes will be easier to understand. The themes are presented in detail in the following table.

Table 4. THK-oriented ethnomathematics themes.

Before themes	New themes
Determination of holy days • *Menyama braya* • *Ngayah*	Determination of holy days *Menyama braya*
Traditional game *megoak-goakan*	Game *megoak-goakan*
• Means of *Dewa Yadnya* ceremony • Making of ceremony facilities	*Dewa Yadnya* ceremony
• Means of *Bhuta yadnya* ceremony • Making of *Bhuta Yadnya* facilities	*Bhuta Yadnya* ceremony
• Water distribution system • Harvest distribution system	*Subak* system
• Traditional Balinese buildings • Ornaments on traditional Balinese objects • Sacred buildings	Traditional Balinese buildings
Tumpek Ceremony	*Tumpek* Ceremony

DISCUSSION

The determination of Hindu holy days according to pawukon uses a combination of, *panca wara*, *sapta wara*, and *wuku*. In this calculation, mathematical ideas related to the smallest common multiple are used. Holy days or good days are believed to provide the best results or blessings for the people. In relation to THK, the determination of holy days can be related to the implementation of *parhyangan, pawongan, or palemahan* depending on the context of the holy day. For example, if the determination of the piodalan day of a temple which falls

every 210 or 420 days is *parhyangan*, the determination of someone's *otonan* day which falls every 210 days is *pawongan*, and the determination of the tumpek kandang day which falls every 210 days is *palemahan.*

Menyama braya is the local wisdom of the Balinese people who uphold social relations between one another, such as activities of joy (marriage) and sorrow (death), mutual cooperation, giving to each other, visits during religious celebrations, and management of organizations (*seka*), selflessly and based on mutual love, sharpening, and nurturing. In the context of THK, *menyama beraya* is an implementation of *pawongan*.

The *megoak-goakan* game is a traditional game of the Buleleng community that is played in groups with the aim of providing and building enthusiasm and positive character. Now this traditional game is held by the Panji Village community the day after *Nyepi*, namely *Ngembak Geni*. This *megoak-goakan* game begins with a prayer. In the context of THK, the traditional *megoak-goakan* game is an implementation of *parhyangan or pawongan*.

The *Dewa Yadnya* ceremony is an offering to God such as *piodalan*, holiday prayers, full moon *tilem* prayers, and daily prayers. *Piodalan* or in other terms *odalan, pujawali, petoyan*, or *petirtaan* is a ceremony to God Almighty at a temple or holy place. *Piodalan* is generally held every 210 days or 420 days. Balinese people are very familiar with and understand the *piodalan* ceremony. In the *piodalan* ceremony, various ceremonial facilities are needed, either in the form of *banten jejahitan* or fruit facilities, and others. The shape and pattern of the stitches used contain ethnomathematic elements or in the process of making them use informal mathematics. In the context of THK, the *dewa yadnya* ceremony is an implementation of *parhyangan.*

The *Bhuta Yadnya* ceremony is an offering to the Bhutas, to maintain environmental/natural harmony. Various ceremonial facilities needed such as *klakat, kisa, sanggah* etc. contain mathematical ideas. In the context of THK, the Bhuta Yadnya ceremony is an implementation of *palemahan*.

The *subak* system is a Balinese irrigation system that concerns customary law and has distinctive characteristics, namely socio-agricultural-religious with determination and a spirit of mutual cooperation in an effort to obtain water to meet water needs in producing productive plants. In this case, the distribution of water is based on the area of the rice fields, for example, a rice field area of 50 Are gets 2 cepak or 2 nyari of water. The distribution of the harvest between the cultivator and the owner is based on an agreement. For example, the cultivator gets one third and the owner gets two-thirds of the harvest with operational costs borne together. In the context of THK, the *subak* system is an implementation of *parhyangan, pawongan, or palemahan.*

Traditional Balinese buildings can be in the form of traditional Balinese buildings or *Pura* buildings. The architecture of this building can be seen from two things, namely from the aspect of size and location, and land. In terms of size and location, the reference is used to refer to the *lontar asta kosala kosali* (using human body measurements, while land determination refers to the *lontar asta bumi*. From an aesthetic perspective, a Balinese building uses various ornaments. In general, the form of the ornaments is related to mathematical ideas. From the THK aspect, Balinese buildings are an implementation of *pawongan or palemahan*. These results support the research results of Suharta, Sudiarta, Puja Astawa (2017) which show that ethnomathematics has grown and developed in Traditional Balinese House Architecture. The use of measurements based on body size, namely *lengkat, nyari, rai*, is very dominant in Balinese architecture. The concept of similarity and shift is widely used in construction and in its ornaments in the form of Balinese carvings.

The *tumpek* ceremony is a Hindu holy day celebrated every 210 days or the meeting day between *kliwon* and *saturday* (*Saturday-Kliwon*). Several types of *tumpek*, such as: *tumpek wariga* (ceremony for plants), *tumpek kandang* (ceremony for animals/animals), *tumpek krulut* (ceremony for musical instruments, gongs, art), *tumpek kuningan* (ceremony for ancestors/gods), *tumpek landep* (ceremony for weapons, sharp tools), and *tumpek wayang* (ceremony for masks, puppets, gender). In the context of THK, the tumpek ceremony is an implementation of *pawongan or parhyangan*.

These findings support the research results of Suharta and Parwati (2022) that the use of THK-oriented cultural aspects such as the mecaru ceremony, *tumpek wariga, odalan, ngayah*. as a source of learning fractions can improve procedural and conceptual knowledge.

The types of THK-oriented ethnomathematics activities or objects are presented in the following table.

Table 5. THK-Oriented Ethnomathematics Themes and Activities

THK-oriented Ethnomathematics Theme	THK-oriented ethnomathematics activities or objects
Determination of holy days	Calculation of holy days (*pawukon*) *piodalan, tumpek, Galungan, Nyepi, Saraswati, Pagerwesi*, etc.
Menyama braya	Ngayah, distribution of tempekan in the division of tasks in customs, *tumpengan, ngayah* at the temple or in the village, attending suka and duka ceremonies
Megoak-goakan Game	Traditional game of *goak-goakan*
Dewa Yadnya ceremony	Grouping of offerings for the *Dewa Yadnya* ceremony, purchasing *Dewa Yadnya* ceremony equipment, *Dewa Yadnya* ceremony equipment, making lamak, daksina, using *klakat, kelabang, sanggah, kisa, tamas*, making *gantung-gantungan*
Bhuta Yadnya ceremony	Making offerings, making lamak, using *klakat, kelabang, sanggah, tamas*, making *gantung-gantungan, kisa, ketupat, daksina, jejahitan*, counting the number of offerings in the Bhuta Yadnya ceremony, *Bhuta Yadnya* ceremony facilities
Subak system	Distribution of water according to the *subak* system, distribution of harvest results between the land owner and the owner (terms *nelon, ngempatin*), *subak* system (water distribution based on land area)
Traditional Balinese buildings	Traditional Balinese buildings, temple buildings, art objects and designs with patterns, the position of holy places, the use of temples, pottery, cultural objects, the making of *bale bengong*
Tumpek Ceremony	Making offerings, making *gantung-gantungan, kisa, ketupat, daksina, jejahitan*, counting the number of offerings in the *tumpek* ceremony, *tunpek* ceremony equipment

Based on this, it can be said that ethnomathematics themes oriented towards THK as a source of mathematics learning for grade VII students can be used according to the subject matter, which can be presented in detail in the following table.

Table 6. Themes of THK-oriented Ethnomathematics Learning Resources

No.	Material	THK-oriented Ethnomathematics learning resource theme
1	Real Numbers	1. *Dewa Yadnya* Ceremony 2. *Bhuta Yadnya* Ceremony 3. Determination of holy days 4. *Menyama braya* 5. *Megoak-goakan Game*
2	Comparison (Ratio)	1. *Dewa yadnya* Ceremony 2. *Menyama braya* 3. Bali tradisional building 4. *Subak system*
3	Social Arithmetic	1. *Dewa yadnya* Ceremony 2. *Bhuta Yadnya* Ceremony 3. *Tumpek* Ceremony 4. *Subak* system
4	Algebraic Form	1. *Tumpek* Ceremony 2. *Menyama braya* 3. Bali tradisional building 4. *Subak* system
5	Linear Equations of One Variable	1. Determination of holy days 2. *Subak* system
6	Spatial Figures	1. *Dewa yadnya* Ceremony 2. *Bhuta Yadnya* Ceremony 3. *Tumpek* Ceremony 4. Bali building
7	Lines and Angles	1. *Dewa yadnya* Ceremony 2. *Bhuta Yadnya* Ceremony 3. *Tumpek* Ceremony
8	Geometric Shape Transformations	1. *Dewa yadnya* Ceremony 2. *Bhuta Yadnya* Ceremony 3. *Tumpek* Ceremony 4. Bali tradisional building
9	Statistics	1. *Dewa yadnya* Ceremony 2. *Bhuta Yadnya* Ceremony 3. *Tumpek* Ceremony 4. *Menyama braya* 5. *Subak* system

CONCLUSION AND SUGGESTIONS

Tri Hita Karana (THK) is a local wisdom (Balinese) but has universal values, which have the meaning that there are three (*Tri*) causes (*Karana*) of happiness/peace (*Hita*), namely the harmonious relationship between humans and God (*Parhyangan*), fellow humans (*Pawongan*), and humans with the environment or nature (*Palemahan*). THK-oriented ethnomathematics are activities or objects that are socio-cultural-religious that contain mathematical ideas. THK-oriented ethnomathematics that can be used as a source of mathematics learning for grade VII students in Buleleng Regency are determining holy days, *menyama braya*, *megoak-goakan* game, *Dewa Yadnya* ceremonies, *Bhuta Yadnya* ceremonies, *subak* systems, traditional Balinese buildings, and *tumpek* ceremonies.

The use of THK-oriented ethnomathematics as a source of learning has the potential to increase student interest, as well as foster awareness that many activities or objects related to socio-cultural-religious that contain mathematical ideas. Based on these conclusions, it is suggested that other researchers conduct a more in-depth study on the use of THK-oriented ethnomathematics learning resources for junior high school students.

ACKNOWLEDGEMENTS

Through this opportunity, we would like to express our deepest gratitude to the Director General of Higher Education, Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia for the funding provided so that this research can be carried out.

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