

LAPORAN AKHIR PENELITIAN KERJASAMA INTERNASIONAL (LUAR
ASIA TENGGARA) BATCH 2



Judul:

COMPARISON OF JAVANESE MYSTICISM THROUGH THE PETUNG
TRADITION IN THE PRIMBON COLLECTION OF SONOBUDOYO
LIBRARY AND THE NATIONAL LIBRARY OF AUSTRALIA WITH AN
ETHNOMATHEMATICS PERSPECTIVE

Afiliasi Pusat Studi/Kajian:
Budaya dan Keistimewaan Yogyakarta

Tujuan SDGs yang Disasar:
Kemitraan untuk Mencapai Tujuan

Diusulkan Oleh

Prof. Dr. Drs. Suwardi, M.Hum./NIP. 19640403 199001 1 004
Venny Indria Ekowati, S.Pd., M.Litt./NIP. 19791217 200312 2 003
Associate Professor Sharyn Graham Davies/NIP.
Yacinta Kurniasih/NIP.
Prof. Dr. Marsigit, MA./NIP. 19570719 198303 1 004
Annisa Kurrota Ayun Rosi Wijayanti/NIM. 20205244068
Muhammad Allif Saputra/NIM. 22214251017
Wahid Suherman/NIM. 21209244029
Adinda Martiza Adelia Sari/NIM. 21209241040
Adhelia Sekar Sheridan Keilani/NIM. 20205244058

DIREKTORAT RISET DAN PENGABDIAN KEPADA MASYARAKAT
UNIVERSITAS NEGERI YOGYAKARTA
TAHUN 2024

HALAMAN PENGESAHAN

Judul : COMPARISON OF JAVANESE MYSTICISM
THROUGH THE PETUNG TRADITION IN THE
PRIMBON COLLECTION OF SONOBUDOYO
LIBRARY AND THE NATIONAL LIBRARY OF
AUSTRALIA WITH AN ETHNOMATHEMATICS
PERSPECTIVE

Peneliti/Pelaksana

Nama lengkap : Prof. Dr. Drs. Suwardi, M.Hum.
Perguruan Tinggi : Universitas Negeri Yogyakarta
NIDN : 0003046408
Jabatan Fungsional : Guru Besar
Program Studi : Pendidikan Bahasa Jawa - S2
Nomor HP : +6289531071593
Alamat surel (e-mail) : suwardi_fbs@uny.ac.id

Anggota (1)

Nama Lengkap : Venny Indria Ekowati, S.Pd., M.Litt.
NIDN : 0017127901
Perguruan Tinggi : Universitas Negeri Yogyakarta

Anggota (2)

Nama Lengkap : Associate Professor Sharyn Graham Davies
NIDN :
Perguruan Tinggi : Monash University

Anggota (3)

Nama Lengkap : Yacinta Kurniasih
NIDN :
Perguruan Tinggi : Monash University

Anggota (4)

Nama Lengkap : Prof. Dr. Marsigit, M.A.
NIDN : 0019075707
Perguruan Tinggi : Universitas Negeri Yogyakarta

Institusi Mitra (jika ada)

Nama Institusi Mitra : Monash University
Alamat Institusi Mitra : Clayton Australia
Penanggung Jawab : Associate Professor Sharyn Graham Davies
Tahun Pelaksanaan : 2024
Biaya Tahun Berjalan : Rp. 75.000.000,00

Mengetahui,
Direktur DRPM,



Prof. Dr. Yudik Prasetyo, S.Or., M.Kes.
NIP 19820815 200501 1 002

Yogyakarta, 4 Oktober 2024
Ketua Pelaksana



Prof. Dr. Suwardi, M.Hum.
NIP 19640403 199001 1 004

COMPARISON OF JAVANESE MYSTICISM THROUGH THE PETUNG TRADITION IN THE PRIMBON COLLECTION OF SONOBUDOYO LIBRARY AND THE NATIONAL LIBRARY OF AUSTRALIA WITH AN ETHNOMATHEMATICS PERSPECTIVE

ABSTRACT

Monash University is a world-class university. Based on the data of the QS World University Rankings 2023, Monash University is among the top 200 universities in the world, 42nd to be precise. The selection of Monash University as a partner university was also based on the similarities in the areas of work between UNY. The field of study of Indonesian Studies in Monash University includes Javanese studies. Australia also has many collections of Javanese books especially *primbon*. There are 44 *primbon* titles recorded in the collection at The National Library of Australia. Of course, the richness of this *primbon* manuscript is an opportunity for good collaboration between UNY and Monash University. The *primbon* collection need to be further examined and compared with manuscripts from Javanese collections. Why was *primbon* selected? *Primbon* is a typical Javanese intelligence that combines titanic knowledge with traditional ethnomathematical knowledge. This is interesting for research because it reveals Javanese mysticism as well as the cultural perspective and mathematical intelligence of the Javanese people. Specifically in this study, the selected *primbon* that were kept in the National Library of Australia are juxtaposed.

The collection of *primbon* in the National Library of Australia is thoroughly examined and compared with the collection of *primbon* of the Sonobudoyo Yogyakarta Museum. Many *primbon* collected in the National Library of Australia. However, many *primbon* have not yet been studied, so the contents are not yet known. It is therefore necessary to carry out immediate research in connection with the manuscript collection of The National Library of Australia. This research is planned to be completed in two years. In the first year (2024), this research aims to: (1) present the role of ethnomathematics in determining Javanese customary marriages found in the *Primbon Sabda Guru* and (2) reveal the concept of Javanese units related to child health as found in *the Primbon Sabda Guru*. In the second year (2025), research will be conducted with the following objectives: (1) find comprehensive information about the differences and similarities in *primbon* collections of the Sonobudoyo Museum and National Library of Australia from a cultural- ethnomathematical perspective; (2) compare the contents of *primbon* collections of the Sonobudoyo Museum and National Library of Australia from a cultural- ethnomathematical perspective; and (3) understand the practicability of oral traditions in the form of *petung* in everyday life.

The research method used is literary-philosophical research. For the initial research, philological research methods were used as the research data source was Javanese manuscripts that needed to be transliterated and edited to become a representative data source. The initial data collection techniques include: (1) manuscript description, (2) transliteration, (3) editing, and (4) translation. Once we had obtained a representative manuscript, the data were analyzed according to the

“ABC” concept, i.e. (1) observing, i.e. looking closely at the text with regard to the description of literary ethnomathematics in the *Primbon* book, (2) reading, i.e. heuristically to explore the spark of the philosophy of life about balance, liberation, consciousness, and introspection, and (3) noting the meaning, i.e., noting it in a context related to the existentialism of human life. The technique of data analysis uses a study of the philosophy of literary neurology contextualized with the philosophy of harmonious living. The analysis was conducted to explore the meaning of Javanese ethnomathematics behind the phenomenon of cosmos in *Petung*, in line with the thoughts of Parnovsky and Parnowski (2018:1-5) who emphasize that life must strive for a balance between itself and the universe.

The current study contains basic TKT level 3 research in the form of analytical and experimental confirmation of the idea of *primbon* text function and characteristics from an ethnomathematics perspective. Mandatory research outputs include: (1) scientific articles submitted in 2024 and published in 2025 in Scopus-indexed journals; (2) MoA and IA cooperation agreement forms; (3) poster descriptions; and (4) integration of research outcomes into three courses. For more information, see the research description at the top. Additional deliverables include (1) scientific publications presented in ISBN proceedings, and (2) textbooks.

The results of the study show that there are four Javanese marriage *primbon* data that contain ethnomathematics, namely (1) calculation of installing tarub, (2) calculation to see life in marriage, (3) calculation of *salaki rabi*, and (4) requirements and offerings in marriage. Meanwhile, in the disclosure of traditional Javanese units, it shows that the concept of Javanese units used in *the Primbon Sabda Guru* related to child health is very diverse. These units refer to traditional Javanese units, namely *saiji*, *iji*, *sairis*, *iris*, *sacengkang*, *sawuku*, *wuku*, *driji*, *aga*, *sasiyung*, *Lembar*, *dhenceng*, *teaspoon*, *salungsu*, *klungsu*, and *jodho*. The use of these units shows that Javanese society has a holistic understanding of child health.

KEYWORDS

Javanese, mysticism, *petung*, *primbon*, ethnomathematics

BACKGROUND OF THE STUDY

The field of Indonesia Studies in Monash University shares a common thread with the field of Javanese Language Education study programs. Furthermore, National Library of Australia houses a number of Javanese-related resources, including pictures, historical audio recordings, and *primbon*. This wealth is a treasure that has not been fully explored. In fact, these collections can serve as a connecting bridge, filling gaps in the history of Javanese oral and written literature. The *primbon* is an interesting type of Javanese manuscript to research. The following is an example of a *primbon* from National Library of Australia collection of Javanese ethnomathematics.

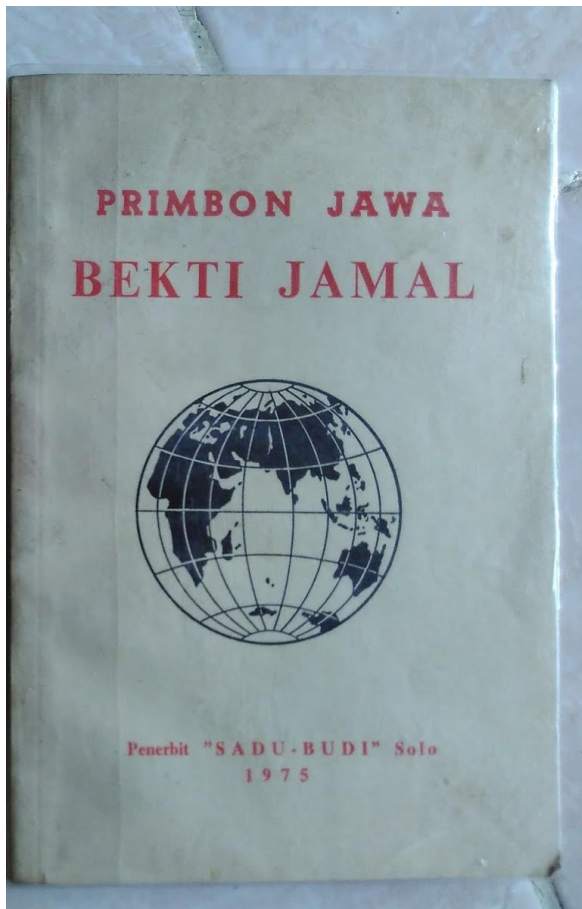


Image *Primbon Bekti Jamal* The Collection of National Library of Australia

Primbon and *Petung* are fascinating to examine because they contain mysticism. There is currently little research on Javanese mysticism in the Book of *primbon*, particularly in National Library of Australia collections. There are around 44 copies of books containing mysticism and *primbon* (National Library of Australia Catalog, 2024). As so with the collection of *primbon* manuscripts in the Indonesian archipelago in which Sonobudoyo Museum itself collects at least 89 copies of original handwritten *primbon* manuscripts (Behrend, 1990). Not to mention other libraries such as the Yogyakarta Palace Library, Pakualaman, Surakarta, Mangkunegaran, Radyapustaka, the National Library of the Republic of Indonesia, and others that hold at least 300 copies of the *primbon* manuscript. This small manuscript has been studied, but the research conducted is not comparable to the number of available manuscripts. Besides, the manuscripts at National Library

of Australia are not accessible for research. National Library of Australia already provides online collections, but in very limited quantities. For the *primbon* books, there are no copies of the books provided online whereas National Library of Australia collections are foremost, old, and original.. The books brought to National Library of Australia are indeed selected ones that had high literary and aesthetic values. The collections of Indonesian *primbon* at National Library of Australia are invaluable research sources. So, if the mysticism found in Javanese manuscripts in Yogyakarta and National Library of Australia are compared to find similarities, it will be fascinating. As stated by Zarrabizadeh (2011:96), mysticism is able to bring humans into “consciousness of the beyond.”

Mysticism is summarized in a view of life called *petung* (numerology). Hartono (2016:296) states that *petung* in Javanese life is based on *primbon*. *Petung* is seen as an expression of cultural mathematics that can educate men. Utami et al (2019:141) once did research on *primbon* determining that it contains ethnomathematics expressions. Ethnomathematics appears in the form of *petung* which is partly abstracted in the form of *primbon*.

Until now, research on *petung* is still rarely done. In fact, research that discusses ethnomathematics will provide a broad understanding of Javanese ideology. In this regard, it is necessary to formulate research problems, namely: (1) What are the differences between the *primbon* manuscripts in the Sonobudoyo and ones in National Library of Australia from a cultural ethnomathematics perspective, (2) How is the comparison of the content of the Javanese *primbon* in Sonobudoyo Yogyakarta museum to ones National Library of Australia from the cultural ethnomathematics perspectives? and (3) Why is it necessary to find an understanding of the usefulness of oral traditions written in the *primbon* manuscripts from the collections of the Sonobudoyo Museum and National Library of Australia in the form of *petung* in everyday life?

The benefits of research include: (1) practically for researchers, gaining actual experience regarding the mathematical use of *petung* occurring in oral traditions written in manuscripts from Indonesian (Javanese) and Dutch collections, (2) academically, for Yogyakarta State University (henceforth: UNY) and Monash University, obtaining more accurate research information to increase KPI through

LoA or IA, (3) theoretically, for the development of cultural sciences, determining new information about cultural ethnomathematics studies that have not been done by scientists hitherto, and (4) methodologically, reaping benefits from the implementation of the oral tradition of *petung* in various unique segments of life.

LITERATURE REVIEW

Javanese Manuscripts

Manuscripts are hand writing documents before the invention of the printing press. They are later spread as the oral tradition and some of them are copied back in written forms (Bak, 2012; Koppel, Michaely, & Tal, 2016). Manuscripts are usually only mentioned as the work of ancestors, works of the past, and writings from past cultures (Djamaris, 1977; Lubis, 1996; Pudjiastuti, 2006; Robson, 1978; Vander Hook, Baroroh-Baried, Sutrisno, Soeratno, & Sawu, 1994). These definitions do not provide clear boundaries regarding the ages and types of documents that can be called manuscripts. Therefore, another definition is needed as support. The dimensions of ancient, old, and past are limited to no less than 75 years (Bhattacharjee, 2017). Meanwhile, for manuscripts in Indonesia, the age limit can be used based on the Cultural Heritage Law no. 11 year 2010 Chapter III Article 5 and Law no. 43 year 2007 concerning Libraries, namely that manuscripts must be at least 50 years old. Accordingly, a manuscript is a document written by hand and at least 50 years old. The content of the manuscript is also determined. Not all 50-year-old documents can be called manuscripts. Only documents that have scientific, historical, literary, moral, cultural, genealogical, legal, language, music, etc. values can be called manuscripts (Bak, 2012; Behrend & Feinstein, 1990; Bhattacharjee, 2017).

Primbon

Primbon is a summary of Islamic Javanese teachings which are then transmitted in writing. *Primbon* contains various teachings developing in the Javanese tradition. These developments include *ngelmu petung* (prediction of good days, fortune, dreams, bad luck, etc.), *rajah*, magic, *neptu* (day of birth),

katurangganing wanita (female characteristics seen from their physical forms), calculations for building a house, and others (Jumanto, 1999). The calculations in *primbon* need to be explored using ethnomathematics studies. This is something interesting because it is able to reveal Javanese traditional calculations which are quite complicated. For example, in marriage calculation using two mathematical calculations, the days are added with *weton* then the result is divided by two (Utami et al, 2019: 341-356). The results of the division can be used as a prediction for the continuity and prosperity of the marriage.

Ethnomathematics

Ascher (1991:1) provides an overview of the development of mathematics towards ethnomathematics. Ethnomathematics cannot be separated from cultural aspects. Moreover, in the multicultural era, ethnomathematics is already widely known to humans in the global era, including in Javanese life. Ethnomathematics develops and becomes a cultural thought in the traditional society. Ascher (1991:2) states that the study of the mathematical ideas of traditional societies is part of a new endeavour called ethnomathematics. Mathematicians are typically sceptical of the newly created field, often wondering about the scope and implications of mathematical ethnology and how it is related to other fields of inquiry.

Rarely realized that mathematics is often present in literary texts. Mathematics is a mean for cultural communication. Even in the life of traditional society, mathematics is also used as a cultural expression. One of the expressions of mathematical culture is literary text. This is recognized by Gilsdorf (2012:xi) stating that regardless of their views on mathematics, whether they like it or not, whether they feel they can explain what "mathematics" is or not, most people will understand that mathematics is a way to convey information.

The information may appear very different if communicated orally from one communicated in writing. As a form of communication, mathematics is subject to influences and variations of interpretation at the societal/cultural level and even at the individual level. In other words, our understanding of what mathematics deals with is influenced by what is considered as mathematics by the culture where we live and by what is considered mathematics by everyone in that culture. Among the

mathematical concepts believed to be a vehicle for cultural communication is *petung*. *Petung* in the cultural context is clearly a means for spiritual and mystical communication.

Gilsdorf (2012:xii) emphasizes that there is indeed an interaction between mathematics and culture, the essence of which is reflected in the expression "cultural mathematics." Cultural mathematics is also called ethnomathematics, a term first defined by Ubiratan D'Ambrosio in the 1980s. D'Ambrosio is credited as the originator of the study of the interaction between mathematics and culture as an established discipline. The term is later established as ethnomathematics. Other terms related to mathematics and cultural studies include multicultural mathematics, traditional mathematics, indigenous mathematics, and oral and written mathematics.

Vandendriessche and Pinxten (2022:1) find that nowadays ethnomathematics studies openly reveal aspects of indigenous knowledge. Mathematicians and literary experts believe that traditional societies have indigenous knowledge. Indigenous knowledge is depicted in various literary texts. The indigenous knowledge study is focused on certain ethnographic studies, with the aim of articulating something clear and visible, as well as one that is hidden or in-depth structural mathematical characteristics and different cultural phenomena.

Céline Petit offers ethnographic texts ranging from cosmological and ecological which refers to the further role and social usage (Petit, 2023). Petit then goes on to reveal structured and recurring patterns and relationships which can be identified as mathematical relationships, especially geometric shapes with their hidden and explicit symmetry relationships. This recognition of the relationship between tradition and mathematics indirectly makes the development of the local education system more rapid because it relies on cultural considerations of indigenous communities.

METHODS

Research Perspectives

The present study is in its initial phase and uses the philological research method. This method is used because the data source of the research is Javanese

manuscripts. Javanese manuscripts need to be analysed using the philological research method because they are in the form of manuscripts and need to be cleared of various errors. Therefore, the philological research method is applied as the first method to create representative texts that can then be studied in more detail from the perspective of philosophy of literature. The literary philosophy perspective is the one used to examine the text of *petung* in *primbon*. Literary philosophy is a type of textual research that reveals aspects of the philosophy of human life, the search for harmony with the universe (cosmos), the search for self-knowledge and all spiritual endeavours. It is believed that this self-knowledge often appears in literary texts about *petung*, as a reflection of Javanese numerology. Literary and existentialist research on life is clearly part of existentialist philosophy.

Numerology in *petung* for Javanese people can guide life towards salvation. In *petung*, there is a reflection of the world view of the Creator. This is consistent with Fowler's (2018:1) assertion that the experience of mathematicians and scholars may explain the meaning and feelings of a mathematician in literature, allowing someone to see the world through the lens of creative mathematical literature. Literature is viewed as a manifestation of ontology, presenting metaphysical data about life (Endraswara, 2012a: 43). This type of literary philosophy research prioritizes relative interpretation to make sense of literary texts. Likewise, *primbon* can be interpreted according to any needs, desires, and requirements in every aspect of life. According to New (2001:1), this sort of literary philosophy inquiry seeks to interpret literature as a means of understanding life. *Primbon* contains catharsis, which can purge oneself of any dirt. For self-purification, humans need to align with the cosmos. Imaginative literary texts often contain metaphors of life that are capable of purging humans from all dirt. On the basis of this, research on *petung* is expected to be able to reveal and absorb things about the reflection of life for self-purification through the harmony of the cosmos.

Research Data Sources

The data sources for the present study are images and texts from the *primbon* collections of Sonobudoyo Museum and library of National Library of Australia. Based on the results of the data inventory, there are collections of 44 *primbon* books

at National Library of Australia.

The collections of *primbon* are selected and examined using the purposive sampling technique. The selected *primbons* are compared with the *primbons* in the collections of Sonobudoyo Museum in Yogyakarta and National Library of Australia. The data used in this study consists of images and linguistic units. The image is in the form of illustrations. The text in the *serat primbon* represents the linguistic units, which are referred to as data in this study. The following are examples of Javanese manuscripts in the form of *primbon*, from the collections of Sonobudoyo museum and National Library of Australia.

Meanwhile, the example of *primbon* from the collection of Sonobudoyo museum is as follows:



Source: The manuscript from the collection of Sonobudoyo Museum, Yogyakarta (Kumar, McGlynn, & Hardjoprakoso, 1996, p. 187).

Data Collection Techniques

The initial data collection technique is in line with philological research methods of Djamaris (1977: 23), namely:

1. reading and transliterating manuscripts carefully and thoroughly, based on philological methods applied in the transliteration process,

2. recording the data relating to the research objectives of the transliteration results. Symptoms of data interest are then identified and divided into different analysis units. These symptoms are then recorded and grouped as materials, allowing for comparisons and analyses of the content of the text. The collection and classification of this data are also tailored to the study aims. Each unit of classification results is recorded in a data sheet or table, coded, and described in analytical forms.

After obtaining a representative text and initial data from the process of repeated reading of the manuscript, the next data collection uses the “ABC” concept, namely (1) *Amati* (Observe), meaning to pay close attention to the text regarding the description of the philosophy of living in harmony with the cosmos, (2) *Baca* (Read), meaning to read carefully in which heuristics is carried out to explore the spark of a life philosophy of balance, liberation, awareness, and introspection, dan (3) *Catat* (Record), meaning taking notes of the context related to the existentialism of human life. These three things always consider the text of *petung* that describes (1) literature as a painting of thought, (2) literature lives in the domain of a mortal existence, related to the expression of cosmos, and (3) literature is a picture of human existence.

The data collection technique is then followed by data classification based on the findings of existentialist phenomenology. Data classification is always founded on literary philosophical thought, which, according to Schroeder (2010:1-10), includes: (1) literary text as a mirror of knowledge, and (2) literary text as a mirror of consciousness. *Petung* is viewed as a clear mirror, providing a reflection of the author's thoughts through thorough reading. Among the reflections that will be explored are the issue of *Sartrean* existentialism relating to human religious issues having three categories, namely (1) being-in-itself, (2) being-for-itself, and (3) being-for-other (Endraswara, 2012a:44). These last three things will be realized in the verses and song lines in the text of *petung*. The verse and row of the song are the meaning space of ontological life, which illustrates the existentialism considering the harmony of the cosmos. This ontological issue is related to the

literary text of *petung*. Through this literary text, an expression will be obtained that ontologism will answer who men are and who God is.

Data Analysis Techniques

The data analysis technique used in this study is literary neurology philosophy contextualising the philosophy of life. The analysis is carried out to explore the meaning of Javanese ethnomathematics found behind the phenomenon of cosmos in *petung* which is in line with Parnovsky and Parnowski (2018 1-5) confirming that life must strive for equilibrium between themselves and the universe. For this reason, interpretation of a literary text must be done relatively, linked to micro-cosmology and macro-cosmology. When the analysis is able to interpret *petung* up until linking micro-cosmology (microcosm) with macro cosmology (macrocosm), harmony in the cosmos of life will be achieved. At that level, men have reached the peak of equilibrium that is on the verge realm (not there and not here), but feels there (exists).

The technique of numerological analysis of literary philosophy considers the nature of literary texts as a mirror of ethnomathematics. Literature is according to Shlovsky (Endraswara, 2012b:30) a work of art and an imaginary play. Among the unique imaginary games is the use of ethnomathematics in *petung*. *Petung* texts are works of oral literature in which are loaded with imaginary games about traditional mathematics, as a picture of the ideological intelligence of cosmological thought. If the interpreter wishes to convey an expression regarding the meaning of an adequate or valid text, it can be schematically divided into four stages, which in practice often overlap: (1) determine the primary direct meaning; (2) when necessary explain implicit meanings; (3) determine the theme; and (4) where necessary clarify symbolic meanings in the text.

Of the four stages of interpretation in the study of *petung* mysticism, there should be consideration of the implicit meaning of the use of Javanese ethnomathematical symbols. To present the data of interpreting *petung* is by classifying ontological themes, namely the origin of Javanese existence. Finally, interpretation is carried out metaphysically to explore meaning in the perspective

of numerology of literary philosophy.

The following are the research framework developed by Javanese Language Education Study Program of Faculty of Language, Arts, and Culture of UNY with Monash University planned to continue from 2024-2026.

Researcher Track Record

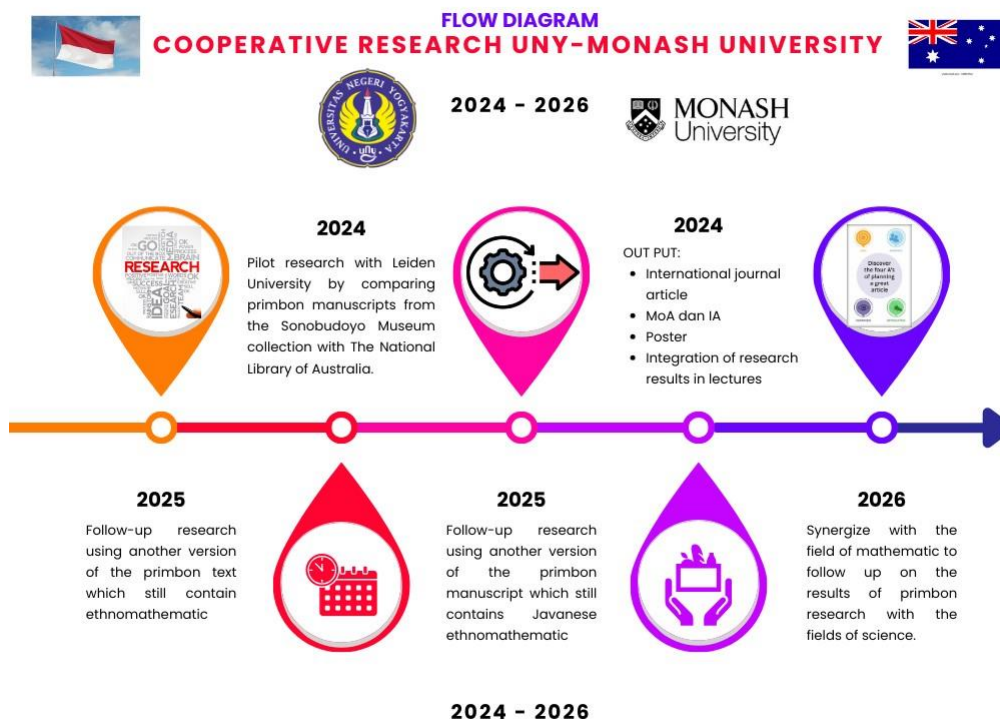
The Chairman Researcher (Prof. Dr. Suwardi, M.Hum.) has conducted research related to primbon and cosmology, including (1) Symbolic Transformation of Names in Javanese Novels which has been published in the journal *Studies Theologica*; (2) Ecocriticism: Javanese Cosmology and Ecoethics in Tetralogy Romance by Ki Padmasusastra. The chairman researcher also wrote papers and books related to ethnomathematics, namely: "Multidisciplinary Literature" which was presented at an international conference at Lambung Mangkurat University. Meanwhile, journal articles related to Javanese ethnomathematics have also been written by the head researcher, namely: Latest Literary Theory: Transdisciplinary Perspectives on Ethnomathematics in the *Enggang Journal* and can be read on the following website: <https://e-journal.upr.ac.id/index.php/hornbill/article/view/4936>. The next journal article is Javanese Number Poetry as Indigenous Knowledge in the Ethnomathematics Perspective of Literature published in the *Literacy Journal (SINTA 2)* Vol 35, No 2 (2023). The head researcher has also written a book entitled "Literary Mathematics: Concepts, Theory and Practice of Multidisciplinary Studies" which was published by Eureka Purbalingga Publisher.

Research Member 1 (Prof. Dr. Marsigit, M.A.) also has experience in researching ethnomathematics. Prof. Marsigit has a background in Mathematics Education and specifically researches the relationship between ethnography and mathematics. In fact, research member 1 also received a research grant from the Ministry of Education and Culture for 2 years (2018 and 2019) to research "Development of Ethnomathematics-Based Subject Specific Pedagogy (SSP) to Improve Elementary School Students' Mathematical Literacy Abilities". Other research based on ethnomathematics has also been successfully completed by

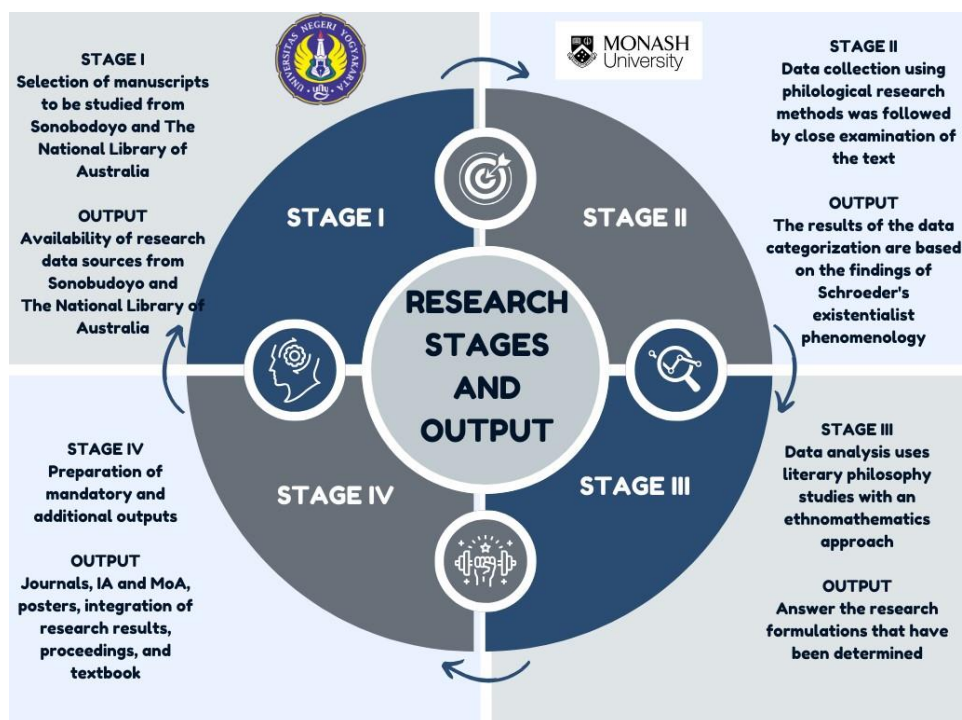
research member 1 funded by the Ministry of Education and Culture. This research was carried out in 2018 with the title: "Designing Culture-based Learning Instruction to Develop Mathematical Literacy (Culture-Based Mathematics Learning Design to Develop Mathematical Literacy)".

Research Member 2 (Venny Indria Ekowati) also has experience in researching old texts because the field of knowledge he is involved in is Javanese literary philology. Research member 2 has also conducted research related to Javanese Primbon with the research title: Traditional Javanese Medicine in the Jampi Jawi Primbon Manuscript which was published in Litera Journal 2017, 16(1) 2460-8319.

Meanwhile the flow diagram for cooperative research UNY and Monash university is as follows:



Broadly speaking, the research steps that will be carried out in the collaborative research of the Javanese Language Education Study Program of Faculty of Language, Arts, and Culture of UNY with Monash University are as follows:



RESEARCH SCHEDULE

First Year

No	Name of Activity	Month							
		3	4	5	6	7	8	9	10
1.	Proposal seminar and proposal revision based on reviewer input								
2.	Preparation for research by procuring research sources in the form of Primbon								
3.	Providing research data with heuristic and hermeneutic reading								
4.	Categorization of research								

	data							
5.	Analysis of research data							
6.	Preparation of mandatory research output							
7.	Compilation of additional output							
8.	Research results seminar							

CHAPTER IV

RESEARCH RESULTS AND DISCUSSION

In this study, the researcher has carried out several research processes as follows: (1) conducting a catalog study of library collections in Australia that store Javanese primbon collections; (2) conducting field studies in accessible libraries in Australia, based on the results of the catalog study; (3) conducting focused discussions with Javanese and Asian studies experts in Australia.

A. Catalog Study Results

Catalog studies were conducted in the following libraries: (1) The National University of Australia; (2) Monash University Library; (3) State Library Victoria. ; (4) The Australian National University; (5) Melbourne University Library, and (5) Victoria University Library, (6) Australian Museum Sydney, and (7) State Library of New South Wales. The following is the list of manuscripts collected by several museums in Australia. Based on the catalog study, four places were found to have representative collections that can be used for comprehensive primbon studies. The places that have primbon collections are: (1) National Library of Australia; (2) Monash University Library; (3) The Australian National University; and (4) State Library of New South Wales.

Table 1: Inventory of Collections of Javanese *Primbon* in the National Library of Australia.

No.	Title	Year of Writing
1.	Baboning kitab primbon : bundelan 10 kitab ilmu kejawen asli dening pujonggo ² Jawi	
2.	Takwim [microform] : almanak	
3.	Primbon Puja Mantra	-
4.	Kitab Primbon Betaldjemur	1960

No.	Title	Year of Writing
5.	Primbon Dampoo Awang	-
6.	Almanak Primbon Djawa	-
7.	Kitab Primbon Betaljemur Adammakna	1965
8.	Primbon Jawa Sabda Guru	1971
9.	Primbon Watak dan Asmara/ Panji Kasmaran	2000
10.	Primbon dan Katuranggan Burung Perkutut	1960
11.	Kitab Primbon Bektijammal Adammakna” Ayah Betaljemur	1980
12.	Kitab Primbon Betaljemur Adammakna/ Kanjeng Pangeran Harya Cakraningrat	1994
13.	Primbon Kelahiran dan Jodoh Pernikahan/ Mbah Joyo	2000
14.	Primbon Djawa Sabda Guru	1965
15.	Kitab Primbon Ramalan Jawa	1971
16.	Primbon Dharmasantosha 1	1967
17.	Kumpulan Primbon Jawa Lengkap	1984
18.	Primbon Embah Njata; kumpulan primbon sedjati jang langsung mengenai penghidupan sehari-hari, ilmu gaib warisan leluhur kita sedjak djaman purbakala	1965
19.	Almanak 130 tahun, 1870-2000 : dilengkapi dengan primbon dan pawukon	1982
20.	Primbon pusaka jawa jangka jayabaya pranitiwakya / kabangun anyar dening R. Tanojo	1900s
21.	Primbon "tjakra manggilingan", nerangaken dosanipun manungsa saking wiwitan ngantos dumugi pungkasan	1959
22.	Primbon Jawa : memuat ramalan jodoh, nasib, dan tabiat manusia / Darmo Sugondo	2004
23.	Baboning kitab primbon : bundelan 10 kitab ilmu kejawen asli dening pujonggo ² Jawi	1966
24.	Baboning kitab primbon : bundelan 10 kitab ilmu-kejawen, asli dening pujanggo ² Jawi	-
25.	Primbon Jawa sabda Guru / kahimpun dening S. P. H. Handanamangkara ; Kabantu eyang Brotoatmodjo	1975
26.	Primbon Jawa sabda Guru / kahimpun dening S. P. H. Handanamangkara ; Kabantu eyang Brotoatmodjo	1977
27.	Primbon Jawa : tentang neptu, wuku, jodoh, watak, dan nasib manusia / oleh Ki Suryadijoyo	2006
28.	Een Javaansche primbon uit de zestiende eeuw / inleiding, vertaling en aanteekeningen door Hendrik Kraemer	1921
29.	Primbon Atmasupana : ngemot sakehing kawruh daya-yekti kang aneh-aneh ... / kahimpun dening R. Ng. Atmasupana	1980
30.	Primbon Djawa bektidjamal : isi faalakiah, remalan, petung, alamat, tumbal, rakam, sa'at lan kawruh warna-warna	1967
31.	Een Javaanse primbon uit de zestiende eeuw, opnieuw uitgegeven en vertaald / door G. W. J. Drewes	1954
32.	Kitab primbon betaljemur adammakna / babon asli kagungan dalem Kangjeng Pangeran Harya Tjakraningrat ; kaimpun dening R. Soemodidjojo	1994
33.	Primbon Pawukon bayi lahir / tim penyusun/penulis, Sutikno ... [et al.] ; penyempurna/editor, Ahmad Junus, Suradi, Sri Mintosih	1988
34.	Primbon kelahiran dan nasib : praktis - populer : berdasarkan perhitungan - perhitungan sapta - pancawara leluhur kita zaman dulu/ disusun oleh A. Broto	1999
35.	Primbon doa; pengetahuan berdasarkan kepertajaan adjaran leluhur	1964

No.	Title	Year of Writing
	dan agama jang termuat untuk memupuk kebahagiaan hidup manusia, dihimpun oleh T. Djono	
36.	Ilmu hikmat sejati : berisi primbon aji mantera guna, ilmu petung Jawa, dan alamat gaib dari alam / dihimpun oleh Machfudz Syah	1979
37.	Primbon (vademecum) politik : tanja djawab politik antara rakjat dan Bung Karno dimasa pendjadjahan Belanda [dari majalah] Fikiran Ra'jat / oleh H. A. Notosoetardjo	1963
38.	Primbon Djawa pandita sabda nata : ngemot sa'at-sa'at pandita sabda nata lan hawaning bawana, bab dedunung lan tetanen / [kaimpun déning: R. Tanojo]	1972
39.	Primbon Jawa bekti jamal : isi petungan wektu kanggo samubarang kawigatening pribadi lan bebrayan : ugo ngemot wewaton impen kang ganep sarta kawruh kawicaksana luhur	1970s
40.	Een Javaansch geschrift uit de 16de eeuw : handelende over den Mohammedanschen godsdienst naar een Leidsch handschrift uitgegeven en met aanteekeningen voorzien / door Johannes Gerardus Hermanus Gunning	1881
41.	Takwim [microform] : almanak	-
42.	Ilmu tulisan tangan (graphologi) [oleh] M. D. Ananda Djaja	1964
43.	De petangan's of tellingen der Javanen / door H. A. van Hien	1894
44.	De Javaansche geestenwereld en de betrekking, die tusschen de geesten en de zinnelijke wereld bestaat : verduidelijkt door petangan's bij de Javanen en Soendaneezen in gebruik / door H. A. van Hien	1934

Table 2: Inventory of Collections of Javanese *Primbon* in Monash University Library.

No.	Title	Year of Writing
1.	Primbon Djawa Pawukon: Bebudene Kapribadening Manungsa	1897
2.	Primbon Dharmasantosha 1	1912-1967
3.	Primbon Tata Tjara Kasripahan	1931-1958
4.	Een Javaanse Primbon uit de Zestiende eeuw	1954
5.	Primbon Embah Njata	1961
6.	Primbon pawukon bayi lahir	1988
7.	Primbon nudjum djawa sedjati	1958
8.	Een Javaansch geschrift uti de 16de eeuw: handelende over den Mohmmedanschen godsdienst naar een Leidsch handschrift utigegeven en met aanteekeningen voorzien	1881
9.	Primbon (vademecum) politik	1901-1970
10.	Kitab Primbon Lukmanaking adamakna	1983

Table 3: Inventory of Collections of Javanese *Primbon* in Australia

No.	Title	Year of Writing
1.	Primbon tata tjara rasripahan	1931
2.	Primbon Jawa bekti jamal	-
3.	Primbon Djawa bektidjamal: isi faal-akiah ramalan, petung, alamat	-
4.	Primbon langen swara	1961
5.	Kitab primbon Atassadhur adamakna	1979

No.	Title	Year of Writing
6.	Kitab primbon Lukmanakim adamakna	1980
7.	Een javaansche primbon uit de zestiende eeuw	1921
8.	Een Javaanse primbon uit de zestiende eeuw	1899
9.	De petangan's of tellingen der Javanen	1897
10.	Primbon doa, pengetahuan berdasarkan kepetjajaan adjaran leluhur dan agama jang terkuat untuk memupuk kebahagiaan manusia	1967
11.	Primbon Ajimantrawa, Yogabrata, Rajah-Yogamantra	1980

Table 4: Inventory of Collections of Javanese *Primbon* in State Library of New South Wales

No.	Title	Year of Writing
1.	Een Javaanse primbon uit de zestiende eeuw, opnieuw uit gegeven en vertaald	1954
2.	Een Javaansche primbon uit de zestiende eeuw: inleiding vertaling en aantekeningen	1921
3.	Een Javaansch geschrift uit de 16de eeuw: handelende over den Mohammedanschen goldsdienst naar een Leidsch handschrift uitgegeven en met aantekeningen voorzien	1881
4.	De petangan's of tellingen der Javanen	1894

B. Field Study Results

In addition to conducting catalog studies, researchers also conducted direct field studies by collecting primbon collections in Australia. Field studies of primbon collections in several libraries in Australia were conducted from 9-15 September 2024. This field study coincided with the implementation of FGD with partner researchers at Monash University, Clayton campus, Melbourne. This research was also validated by George Quinn, a Javanese researcher who is also a lecturer at the Australian National University. Validation was conducted on 28-29 September 2024. The results of the FGD, discussions with research partners, and research validation have been used to compile and revise the report. Field studies were conducted directly by visiting several libraries in Australia, namely: (1) Monash University Library; (2) State Library Victoria, (3) Australian Museum Sydney, and (4) State Library of New South Wales. The following is some documentation of the collection collection process in Australian libraries and FGD at Monash University.



Photo in the Grass area, in front of Victoria University Melbourne Australia, September 10, 2024



Photo at Monash University campus bus stop, 10 September 2024



Photo, at Matheson Liberal Monash University, September 11, 2024



Photo in front of Prof Hary Aveling's room, Monash University, 11 September 2024



Photo at Monash University Statue, September 11, 2024



Photo at Matheson Library Monash, discovering the Javanese primbon collection, September 11, 2024



Group photo of Ms Yasinta and Prof Alien at the Faculty of Art Monash University, 11 September 2024



Photo of a visit to the Heroes Cemetery in Melbourne Australia, September 12, 2024



Photo at Fitzroy Garden Park, Melbourne Australia



Photo in front of Melbourne church, Sept 11, 2024



Photo September 12, 2024, Indonesian food only



Photo at the Pagasus Hotel, Melbourne, room 2001, as an Expert Witness at the Jakarta PTUN, 11 September 2024, accompanied by Haryo Baskara, LPDP Student, University of Melbourne, Australia



Photo at Sydney airport, September 13, 2024



Photo at Victoria State Library, 12 September 2024



Photo at the Australian Research Museum, September 13, 2024



Photo at the Opera House, Sydney, September 14, 2024



Photo at the Royal Botanic Garden Sydney, September 14, 2024



Photo at the State Library of New South Wales, Sydney, 14 September 2024



Photo at State Library of New South Wales, Sydney, 14 September 2024

C. RESEARCH RESULTS AND DISCUSSION

The results of the research and discussion in this study are realized in two journal articles that have been FGD-ed with partners and validated by Javanese primbon experts from the Australian National University. The following are two articles that have been created by the researchers.

ETHNOMATHEMATICAL STUDY OF JAVANESE MARRIAGE IN *PRIMBON SABDA GURU*

ABSTRACT

Ethnomathematics is the study of how various cultural groups develop, use, and understand mathematics in the context of everyday life. The Javanese *Primbon* is one of the sources for exploring ethnomathematics concepts, especially the *primbon* about Javanese traditional marriage. It usually contains various traditional knowledge related to calculations, measurements, and certain patterns that have mathematical implications. This calculation utilizes Javanese *weton* in the form of *neptu*. Each day of the week and *market* have a certain numerical value. The addition of the day's value and *market* produces a person's *weton*. This *weton* is then used to calculate the compatibility of a partner, determine a good day to get married, and predict the future. This research aims to present the role of ethnomathematics in determining Javanese traditional marriage contained in the *Primbon Sabda Guru*. The research method used was a qualitative descriptive research method. The object of this research was the *Primbon Sabda Guru* stored in Australia. The research data were collected through literature studies and collected using data card instruments. The research data were analyzed using qualitative analysis methods, namely (1) data reduction, (2) data classification, (3) data display, and (5) data interpretation. The results of this research indicate that there are four Javanese wedding *primbon* data that contain ethnomathematics, namely (1) calculations for setting *tarub*, (2) calculations for seeing life in marriage, (3) calculations for *salaki rabi*, and (4) requirements and offerings in marriage.

Keywords : ethnomathematics, *primbon*, Javanese wedding, *weton*, calculation

INTRODUCTION

Mathematics as the oldest basic science has been the foundation of human knowledge since ancient times. Long before Christ, mathematics has become an inseparable part of everyday life. The process of learning mathematics begins early even before children enter kindergarten, through their interactions with parents in recognizing numbers. Mathematics has become so embedded in the human mind

that it is unconsciously used in various life activities (Zahira, Indra, Nia, 2022:300)

Ethnomathematics is an approach that connects mathematical concepts with the cultural context of society. The interaction between mathematics and culture is reciprocal so that mathematics becomes a reflection of the values and social practices of society. Through ethnomathematics, we can see that mathematics is present in various aspects of people's lives, shaping ways of thinking and acting (Safitri, Archi, & Suherman, 2021:386). Ethnomathematics is an exploration of how mathematics is manifested in various forms of cultural expression, such as art, architecture, and oral traditions. Ethnomathematics reveals how mathematics becomes an integral part of the identity and values of a cultural group (Christanti, Fransisca, Elizabeth, 2020:435).

D'Ambrosio, a Brazilian mathematician, was the first to introduce the concept of 'ethnomathematics'. This word is formed from a combination of ' *ethno* ' which means a cultural group (such as a tribe or profession), ' *mathema* ' which refers to the process of mathematical thinking (eg counting, measuring, classifying), and ' *tics* ' which shows the application of mathematical concepts in practice. Simply put, ethnomathematics is the study of how mathematics is realized and used in various cultures (Pathuddin & Sitti, 2019:309).

The potential of ethnomathematics to advance the nation is enormous. The study of ethnomathematics has developed rapidly in Indonesia. This can be seen in two main areas, namely ethnomathematics as a learning approach and as a research focus. When viewed as an object of research, ethnomathematics is related to the understanding of culture using mathematical concepts. Even without realizing it, the use of mathematics in culture has existed since ancient times, such as in art, architecture, or in certain rituals.

Nowadays, people tend to ignore the values of ancestral culture. Even some people feel inferior to their own cultural identity. This is caused by the failure to adapt culture to the context of modern times (Amalia & Neni, 2023:1568). This situation needs to be addressed as a form of moral responsibility to preserve traditions and cultures that are almost forgotten. One of them is through ethnomathematics research in Javanese culture.

Javanese culture is rich in traditions. One of them is the Javanese calendar system. This calendar is a unique blend of Islamic, Hindu-Buddhist, and a little Western influence. The Javanese calendar is an interesting Javanese cultural heritage. This calendar is the result of the acculturation of various cultures, so it has unique characteristics. With three types of years and two day cycles, the Javanese calendar shows the complexity of time calculations in Javanese society. In the past, the Javanese calendar was used by kingdoms in Java, such as Mataram. This calendar system has three types of years and two different day cycles. The Javanese calendar consists of 12 months, most of which have similar names to the Islamic calendar (Kurniawan, Mega, & Rooselyna, 2022:23).

The Javanese calendar is the main reference for Javanese people for various aspects of life. Starting from wedding planning, starting a business, to knowing someone's character, all are often associated with calculations based on the Javanese primbon. The complicated and hereditary calculation method means that not everyone is able to do it. As a result, people often ask for help from village elders or primbon experts to do the calculations. This shows the relationship between Javanese culture in the form of calendars and mathematics. However, there has been no research on ethnomathematics studies in determining Javanese traditional marriages in a Javanese primbon. Therefore, this study aims to find the role of ethnomathematics in determining Javanese traditional marriages contained in the Primbon Sabda Guru.

RESEARCH METHODS

This study uses a qualitative descriptive research method to describe the application of mathematics used in determining Javanese traditional marriage. The purpose of descriptive qualitative research is to dig up complete and in-depth information from existing data (Muslim & Mega, 2020:62). The source of the research is the *Primbon Sabda Guru* book stored in Australia. The data source for this study is the entire text section in the *Primbon Sabda Guru* book which contains mathematical calculations in Javanese traditional marriage. The data collection for this study used a library study method. The data was collected using an instrument

in the form of a data card.

The research data were analyzed using qualitative data analysis methods. There are four steps in the qualitative data analysis method, namely (1) data reduction, (2) data classification, (3) data display, and (4) data interpretation (Fadli, 2021:42-43). At this stage, the researcher reduces the data by focusing on aspects that are relevant to the research problem. The data selected is data that is considered interesting, significant, and innovative. The results of the data reduction are then grouped to form the focus of the research. Furthermore, through the data presentation stage, the focus of the research is described in detail and analyzed in depth. This analysis process aims to identify new themes or topics by reconstructing the data into a theoretical framework or hypothesis.

At each stage, the data selection process must be carried out repeatedly and comprehensively by involving various techniques and various data sources. The conclusions drawn need to be critically evaluated so that the level of trust is high. For this purpose, researchers can re-collect field data using different methods but still relevant to the research objectives. Through this approach, the credibility of the conclusions can be strengthened and the data collection process can be considered complete.

MARKET NEPTU

No.	<i>Market</i>	<i>Neptune</i>
1.	<i>Kliwon</i>	8
2.	<i>legion</i>	5
3.	<i>Paing</i>	9
4.	<i>Pound</i>	7
5.	<i>Wages</i>	4

NEPTU PADINTENAN

No.	<i>Dinten</i>	<i>Neptune</i>
1.	<i>Akad</i>	5
2.	<i>Senen</i>	4
3.	<i>Selasa</i>	3
4.	<i>Rebo</i>	7
5.	<i>Kemis</i>	8
6.	<i>Jemuwah</i>	6
7.	<i>Setu</i>	9

CALCULATION OF INSTALLING *THE TARUB*

The term *tarub* in a social context is commonly used to refer to efforts to arrange an object or space to make it look elegant and bright. This is because *tarub* comes from the acronym *Aturatan Ben Ketok Murub* . *Tarub* is a traditional decoration made from natural materials in the form of young coconut leaves. This decoration is generally installed on the top of doors and gates as an aesthetic element that adds beauty to various events, especially receptions (Wahyuti, Syafrial, & Hadi, 2019:166).

Tarub is a door ornament made of woven coconut leaves which is an important element in Javanese traditional wedding ceremonies. The installation of *tarub* is usually carried out by the father as the head of the family as a sign of the start of the series of ceremonies. *Tarub* is equipped with offerings which have a symbolic meaning as a request for safety and smoothness in organizing the ceremony (Wulandari, Nugraha, & Anggar, 2023:267).

The time for installing *tarub* in each region can sometimes vary because it is adjusted to local culture. Some say that the installation of *tarub* and *bleketepe* is

carried out three days or a week before the wedding is held (Pratama & Novita, 2018:31). In addition, in Yogyakarta, the day before the wedding ceremony, a series of sacred activities are held starting with a prayer of request to God Almighty. This procession is then continued with the installation of bleketepe and tarub as a symbol of a request for blessings and protection in the new household life (Jatinurcahyo & Yulianto, 2022:49). The following is the calculation for installing *tarub* in a wedding as written in the Primbon Sabda Guru.

No.	Primbon Categorization	Quote	Translation	Page
1.	Calculation of installing tarub	Pasang tarub iku ana petungane, wewaton tanggal Jawa, dene petungane kaya ngisor iki: - Tanggal 1 kagunganing ratu adat kena rencanane lelembut kang semara bumi sandungane ora dadi. - Tanggal 2 nyelum lanang adat kinebat begjane nanggung nandang kemalaratan sarta sok kemlaratan - Tanggal 3 nyeluman wadon, adat kinebat begjane, nanggung	Pasang <i>Tarub</i> has a calculation, which is based on Javanese date rules. While the way to calculate it is as below: - Date 1: God's help to avoid the evil plans of spirits on earth. - Date 2 for the groom, luck is usually little because he has to endure misfortune. - The 3rd for the bride, luck is usually little because she has to	48

No.	Primbon Categorization	Quote	Translation	Page
		kamlaratan, bedane mung rada rada suwe. - Tanggal 4 becik sempulur rejekine - Tanggal 5 pati lanang wadon Petung iki amure teka 5, dadi tanggal 6 pada karo tanggal 1, mangkono sapiturute.	endure misfortune, only longer than the groom. - The 4th means good and smooth fortune. - The 5th means that the bride and groom can live together until the end of their lives. This calculation only goes up to 5. So the 6th is the same as the 1st, and so on.	

Based on the table above, the calculation of the installation of *the tarub* is calculated according to *the wewaton* of the Javanese date. *The wewaton* of the Javanese date is calculated in multiples of five. If there is a remainder in the calculation, the number returns to the initial calculation. For example, if *the tarub* is installed on *Jemuwah Paing*, *the neptu* of the day and *market* is sought.

The Neptu of Jemuwah is 6

The highest Neptu is 9

When added up, $6 + 9 = 15$. The multiple of 5 from 15 is the number 5 as the remainder. The number 5 means the 5th. Based on the *calculation* of pasang *tarub*, the 5th means that the bride and groom can live together until the end of their lives. Another example of the calculation of pasang tarub is that it is installed

on *Monday Legi* .

Monday's Neptu is 4

Neptu Legi is 5

When added up, $4 + 5 = 9$. The multiple of 5 from 9 is the number 4 as the remainder. The number 4 means the date 4. Based on *the* calculation of pasang *tarub* , the date 4 means that the bride and groom will get fortune easily and smoothly.

The example above uses mathematical concepts, namely the concept of addition and the concept of multiples. Addition is a mathematical process that combines two or more numerical values to obtain a new numerical value (Sumarni, Windi, & Duano, 2024:66). The word "addition" is rooted in the word "sum" which refers to the whole or number of a collection (Hasanah et al., 2022:94). The concept of addition is mathematically defined as the process of combining two or more sets into one larger set. Addition is one of the basic operations in mathematics that combines two or more numbers to produce a total number (Nagell, 2021:21). The addition arithmetic operation is usually symbolized by the + sign.

Multiples of a number are the result of multiplying that number by a positive integer (Liana, et al., 2024:259). In other words, multiples are all numbers that are divisible by that number. Determining the time to install *the tarub* also uses the concept of multiples of numbers. The multiples of the numbers used are multiples of five. This can be seen from the sentence *petung iki amure teka 5* which means this calculation is only up to 5. The numbers 5, 10, 15, 20, 25, and so on are the results of multiplying the number 5 by other numbers (1, 2, 3, 4, 5, and so on). The remainder of the calculation of multiples of five is used as the basis for the time to install *the tarub* . This is in accordance with the concept of multiples of a number which is related to the operation of division with remainder (Nagell, 2021:17).

Based on the description above, the calculation of installing *tarub* in Primbon Sabda Guru is one part of the Javanese tradition related to belief in the power of the universe and its influence on human life. The calculation of installing *tarub* pays close attention to the time that is considered the most appropriate or brings good luck. This time is usually determined based on the calculation of weton,

neptu, and the Javanese calendar. In the process of determining the right time to install tarub, the Javanese people have applied the concept of ethnomathematics which involves basic arithmetic operations, namely addition and multiples of numbers. Through the installation of tarub, humans express their hopes and prayers that all their desires will be achieved.

CALCULATIONS FOR SEEING LIFE IN MARRIAGE

weton calculation based on the day of birth and the Javanese *market* has a significant influence on the wedding traditions of the Javanese people. This calculation is used to predict luck and harmony in a relationship. Many Javanese people still believe in and apply the *weton calculation* in determining the right time to get married. This is in line with Javanese philosophy which emphasizes the importance of harmony and compatibility in all aspects of life, including marriage. This belief is based on the assumption that a marriage that is not based on *weton compatibility* can potentially cause disharmony and even divorce. It is the same with food and drinks that will taste better if they are in accordance with the condition of the body. Likewise, marriage is considered to be happier if it has gone through the *weton calculation* (Nafi'ah & Bagus, 2022:47-48).

Belief in the influence of *weton* on household harmony is still strongly held by some people, especially Javanese people. They believe that the level of *sakinah* in a marriage cannot be separated from the compatibility between *the weton* of the two partners. In the context of marriage, considerations do not stop at the ritual aspect alone but also include various factors that can guarantee household harmony. One of these factors is the calculation of *weton* which is still believed to provide an overview of the potential for the continuation of a marriage (Setiawan, 2022:87).

The majority of Javanese people's beliefs still adhere to traditional values, making it part of their lives. Especially in the context of marriage, calculations based on Javanese *primbon* are carried out with the hope that the bride and groom can live a harmonious and happy household life. In addition, the entire series of wedding events are also expected to run smoothly and full of blessings (Anam & Ismail, 2023:238). The following are calculations to see life at the wedding written

in the Primbon Sabda Guru.

No.	Primbon Categorization	Quote	Translation	Page
1.	Calculations to see life in marriage	Petungane njupuk saka neptuning dina ing wektu ningkah banjur dipetungi 4, 4 urute: 1 = IMAN, 2 = TOKIT, 3 = MAK RIPAT, 4 = AMBIYAH Jen petunge tiba: 1 Iman watake tumuli rukun Jen petunge tiba: 2 Tokit watake tresna salawase Jen petunge tiba: 3 Makripat watake jaga-jinaga selawase Jen petunge tiba: 4 Ambiyah watake ora dadi yen dadi sarang anak	The calculation is taken from <i>the neptu</i> of the wedding day then divided by 4, the 4 sequences are: 1 = FAITH, 2 = TOKIT, 3 = MAK RIFAT, 4 = AMBIYAH If the calculation is left over: 1 Faith is a nature of living in harmony If the remaining calculation is: 2 Tokit means love forever If the calculation is the remainder: 3 Knowledge is the nature of protecting each other forever If the remaining calculation is: 4 Ambiyah is not good if	50

No.	Primbon Categorization	Quote	Translation	Page
			it becomes a nest for children.	

Based on the table above, the calculation to see the married life is calculated according to *the neptu* of the day when married. *The neptu* of the day when married is calculated in multiples of four. If there is a remainder in the calculation, the number returns to the initial calculation. For example, if married on *the Kliwon Akad* , then the neptu is sought day and market.

Neptu Akad is 5

Neptu Kliwon is 8

When added up, $5 + 8 = 13$. The result of the multiple of 4 from the number 13 is the number 1 as the remainder. Based on the calculation of *the wewaton* to see the life of marriage, the number 1 means faith that has a harmonious life character. Thus, the life of the bride and groom is predicted to be happy and harmonious forever.

Another example of calculating life in marriage is getting married on *Setu Legi* .

Neptu Setu is 9

Neptu Legi is 5

When added, $9 + 5 = 14$. The multiple of 4 from 14 is the number 2 as the remainder. Based on the calculation of *the wewaton* to see the life of marriage, the number 2 means a tokit who has a character of love forever. Thus, the life of the two brides is predicted to be harmonious and loving each other during marriage.

The example above uses mathematical concepts, namely the concept of addition and the concept of multiples. Addition is a basic operation in arithmetic that combines two or more numbers to get a larger single number (Wahyuni, Wawan, & Nishfiya, 2022:367). This concept can be visualized as combining two or more sets of objects into one larger set. The order of the numbers added does not

affect the final result so that the numbers added do not need to be sorted from smallest to largest (Landau, 2021:234). Addition is a mathematical operation that aims to obtain the total of two or more numbers. The "+" symbol in the addition operation indicates that the numbers connected by the symbol will be combined to produce a total (Sari, Mustafa, & Zulfitriah, 2023:84).

Multiples of a number are the result of multiplying the number by a positive integer (Syahrir, Andi, & Muhammad, 2023:56). Multiples of a number are all numbers that can be divided evenly by the number. The set of multiples of a number includes an infinite set obtained by repeatedly multiplying the number by all integers (Landau, 2021:28).

Therefore, in the Javanese socio-cultural context, weton calculation is one of the factors taken into account in preparing for marriage. The community believes that weton calculation *can* provide an overview of the harmony of the couple and the luck of the household that will be formed. Javanese society has integrated the concept of ethnomathematics, especially basic arithmetic operations such as addition and multiplication, into calculation practices related to the dynamics of household life. However, it should be emphasized that this belief is part of a traditional belief system whose existence coexists with the religious values embraced by Javanese society.

RABI'S SALAKI CALCULATION

The concept of *petung salaki rabi* is a traditional Javanese calculation method that involves matching names, dates of birth, and *neptu* to predict the compatibility of a couple (Novitasari, 2023:180). The method of calculating a match based on Primbon Sabda Guru involves adding the values of the initial and final characters in the names of each prospective bride and groom. This cannot be denied because Javanese society has a rich treasure trove and is full of deep philosophical values. The proof is the use of the poem or script *hanacaraka datasawala padhajayanya magabathanga* as a means of calculating *salaki rabi* (Hakim: 2020:2). The poem is used as a means of calculation because it has a meaning about life. Life which is indeed controlled by God (*ingsun*) reminds

humans to always *be aware* (Hakim & Kiki, 2022:77). In addition, life should prioritize good character as a provision for life in the afterlife. Therefore, the existence of *salaki rabi calculations* is believed by Javanese people to predict compatibility in marriage.

In this tradition, calculation is the main determining factor in the matchmaking process. Various aspects, from the suitability of the match to the fortune of the prospective bride and groom, will be carefully calculated. If the calculation results show good harmony, the proposal and marriage will be carried out. If the calculation results are not favorable, parents will often advise their children not to continue the relationship (Bahran, et al., 2022:40). Even though both of them have loved each other. The following is the calculation of *the salaki rabi* in marriage as written in the Primbon Sabda Guru.

No.	Primbon Categorization	Quote	Translation	Page
1.	Calculation of <i>the Salaki Rabi</i>	Jupuk saka aksara Jawa wiwitan lan pungkasan jenenge temanten lanang wadon, dene aksarane mau ana neptune mangkene: - ha = 6 - na = 3 - ca = 3 - ra = 3 - ka = 3 - da = 5 - ta = 3	Taking from the prefix and suffix of the Javanese script of the bride and groom's names. Then the script has the following neptu. - ha = 6 - na = 3 - ca = 3 - ra = 3 - ka = 3 - da = 5 - ta = 3	50-51

No.	Primbon Categorization	Quote	Translation	Page
		- sa = 3 - wa = 6 - la = 5 - pa = 1 - dha = 4 - ja = 3 - ya = 8 - nya = 3 - ma = 5 - ga = 1 - ba = 2 - tha = 4 - nga = 2 Gunggunge neptuning aksara jenenge temanten mau banjur dipetungi, petungane mangkene: - Yen tiba 1. Tunggak tanpa semi, ala: sangsara salawase kumpul - Yen tiba 2. Pisang pinunggel, ala:	- sa = 3 - what = 6 - la = 5 - pa = 1 - dha = 4 - yes = 3 - yes = 8 - his = 3 - ma = 5 - ga = 1 - ba = 2 - tha = 4 - nga = 2 The result of the addition of <i>the neptu</i> letters of the names of the prospective bride and groom is then calculated. How to calculate it is as follows: - If the remaining 1. <i>Arrears</i> without semi, bad: miserable forever - If there are 2	

No.	Primbon Categorization	Quote	Translation	Page
		pedot salah sawiji - Yen tiba 3. Lumbung gumuling, ala: tansah kekurangan salawase - Yen tiba 4. Sanggar waringin, becik: bakal dadi pangayoman - Yen tiba 5. Padaringan kebak, becik: bakal dadi pangayoman bisa kacukupan - Yen tiba 6. Satriya lelaku, becik: kudu among dagang - Yen tiba 7. Pandawa, becik: ayem tentrem salawase	<i>pinunggel bananas</i> <i>remaining</i> , bad: break off one - If the remaining 3. <i>Lumbung gumuling</i> , bad: there will always be a shortage forever - If the remaining 4. <i>Sanggar waringin</i> , good: will be a protection - If the remaining 5. <i>Padaringan kebak</i> , good: will be protection and sufficient - If the remaining 6. <i>Satriya lelaku</i> , good: must be among trade . - If the remaining 7 <i>Pandavas</i> are good: peaceful forever	

Based on the table above, matchmaking is calculated using the names of the prospective groom and bride. The Javanese date *wewaton* is calculated in multiples of seven. If there is a remainder in the calculation, the number returns to the initial calculation. For example, if someone named Jaka Prasaja is going to marry Titi Prastiwi then look for the first and last letters of each name. Then the first and last letters of each bride and groom are added up. Then, the results of the groom's and bride's candidates are added up again. The results of these calculations are calculated in multiples of 7.

Jaka Prasad		Titi Prastiwi	
ja = 3	ja = 3	ta = 3	wa = 6
Total = 6		Total = 9	
The sum of the two is $6 + 9 = 15$			

The result of multiplying the number 7 from the number 15 is the number 1 as the remainder. Based on *the* calculation of the match, the number 1 means that the bride and groom will live in misery during their marriage. Thus, the two prospective brides and grooms are not matched because they are predicted to have bad luck in marriage. Another example related to the calculation of the *salaki rabi* is as follows.

English		Grace	
ha = 6	sa = 3	ra = 3	ma = 5
Total = 9		Total = 8	
The sum of the two is $9 + 8 = 17$			

The multiple of 7 from 17 is the number 3 as the remainder. Based on *the calculation* of matchmaking, the number 3 means that the bride and groom will live in poverty during their marriage. Thus, the two prospective brides and grooms have bad luck if they continue their matchmaking until marriage.

The example above uses mathematical concepts, namely the concept of addition and the concept of multiples. Addition is the process of combining a number of numbers into one new number (Hendrycks, et al., 2021:18). The concept of addition, rooted in the word 'number' which refers to the whole or number of a collection, can be a relevant metaphor for understanding the process of unification in the bonds of marriage. Similar to the addition of numbers, marriage is the process of combining two unique individuals into a new unity (Mahmud & Astuti, 2021:153).

Multiples of a number are the result of multiplying that number by a positive integer (Utami, Suminto, & Jailani, 2020:1302). In other words, multiples are all numbers that are divisible by that number. Determining the time of *salakki rabi* also uses the concept of multiples of numbers. The multiples of numbers used are multiples of seven. The numbers 7, 14, 21, 28, 35, and so on are the results of multiplying the number 7 by other numbers (1, 2, 3, 4, 5, and so on). The remainder of the calculation of multiples of seven is used as the basis for calculating *salakki rabi*. This is in accordance with the concept of multiples of a number which is related to the operation of division with remainder.

Based on the calculation of *salaki rabi*, Javanese tradition has long viewed marriage as a sacred bond that demands great responsibility. Marriage from a psychological perspective is a union of two unique individuals who must understand and love each other (Aziz, 2017:30). In the practice of calculating *salakki rabi*, Javanese society has implemented the principle of ethnomathematics involving simple arithmetic operations such as addition and multiplication. This shows that mathematics is not only limited to the academic realm, but is also integrated into the daily lives of the community. Therefore, this calculation aims to find a partner who has a compatible character in order to build a harmonious and

lasting household.

TERMS AND OFFERINGS IN MARRIAGE

Javanese people are familiar with the culture of offerings in marriage. Offerings and offerings are two different things. Offerings are used as offerings for ancestors, while offerings are included in customs that are used to ward off disaster for people who have a wish (Lestari, Kamaluddin, & Endang, 2023:1439). The contents of the offerings are varied, ranging from offering snacks such as cucur cakes, onde-onde, snacks made by people who have a wish to kembang boreh. The contents of the kembang boreh used as offerings can vary, namely roses, telon flowers, pandan flowers, kenanga flowers, ivory flowers, and suro flowers (Nuha & Farah, 2020:5).

Primbon Sabda Guru as one of the popular Javanese primbon libraries provides quite detailed guidance on various aspects of life, including marriage. In the context of marriage, Primbon Sabda Guru often links the success and longevity of a marriage with various conditions and rituals, including the use of offerings. The conditions and offerings in Javanese marriage are a manifestation of local wisdom that is rich in mathematical values. By understanding the mathematical concepts hidden behind this tradition, we can appreciate the beauty and depth of Javanese culture. Therefore, the conditions and offerings In marriage, it is inseparable from mathematical matters, so it is included in ethnomathematics. This can be seen from the units of each offering which are used as a requirement in Javanese marriage. The following are the requirements and offerings in the marriage written in the Primbon Sabda Guru.

No.	Primbon Categorization	Quote	Translation	Page
1.	Conditions and offerings in marriage	1. Sajen patanen (kobongan), sajene: empluk isi godong	1. <i>Offerings patanen</i> (fire), offerings: pots containing	86-87

No.	Primbon Categorization	Quote	Translation	Page
		kluwih, dadapserep, apa- apa, alang-alang, kara, kemiri, kluwak, benda kisi pengilon, jungkat suri, lenga telon (mlati, kenanga, kantil), klasa anyar, kendi, damar, clupak, jajan pasar, lenga sundul langit, gula klapa satangkep, beras sakati, gedang ayu, suruh ayu, gambir lan jambe segagange, kembang boreh, menyan, tebu, jenang abang putih, jenang baro-baro, jadah bakaran, pitik urip, pindang antep, endas kebo (uga kena diganti iwak endas), kalak (iwak	kluwih leaves, dadap spare, alang-alang, kara, candlenuts, kluwak, mirrors, suri combs, telon oil (jasmine, ylang-ylang, kantil), new mats, jugs, sap/resin, lamps, market snacks, oil, two combs of brown sugar, sacks of rice, ambon bananas, betel leaves, gambier and jambe with stems, boreh flowers, frankincense, sugar cane, red and white jenang, baro-baro jenang, grilled jadah, live chicken, pindang fish, buffalo head	

No.	Primbon Categorization	Quote	Translation	Page
		sujeenan dibakar dibakar tanpa bumbu), sarta duwit rong wang sabenggol (19 sen) 2. Sajen padaringan.... 3. Pendeman, empluk isi gereh petek, kedele, kacang ijo, kemiri, endog pitik mentah, gantal lenga ½ gendul, lan banyu ½ gendul diworake, supaya kalis tuju, tenung teluh taragnyana, kabeh dipendem sangareping patanen, ngarep lawang gedhe, ngarep pawon lan ing dalan prapatan. 4. Buwangan empluk isi gereh petek, kedele, kacang ijo, kemiri, endog pitik,	(can be replaced with fish head), kalak (freshwater fish grilled without seasoning), and two <i>sabenggol</i> money (19 cents) 2. <i>Snack offerings....</i> 3. <i>Pendeman</i> , a pot containing salted fish, soybeans, green beans, candlenuts, raw chicken eggs, ½ bottle of oil, and ½ bottle of water mixed so that they do not mix, taragnyana magic spells, all buried in front of the agricultural land, in front of the large door, in front of the kitchen, and at the crossroads.	

No.	Primbon Categorization	Quote	Translation	Page
		gantall lenga ½ gendul lan banyu ½ gendul dicampur, kembang boreh, jenang abang putih, jenang baro-baro, gecok mentah pada diwadahi takir- takir, saben satakir nganggo duwit sigar (½ sen), banjur dibuwang ing: patanen, lawang-lawang, pojok-pojokan omah, sumur, jamban (pakiwan), kakus, pawuhan, regol. 5. Isarat....	4. Discarded pots containing salted fish, soybeans, green beans, candlenuts, chicken eggs, ½ bottle of oil and ½ bottle of water mixed together, boreh flowers, red and white jenang, baro-baro jenang, raw gecok (food from the head and legs of goats) were placed in <i>takirs</i> , each <i>takir</i> contained <i>sigar</i> <i>money</i> (½ cent), then thrown on agricultural land, doors, every corner of the house, wells, bathrooms, trash cans, entrances. 5. Signal....	

Based on the table above, the terms and *offerings* in marriage are not free from mathematical matters related to units. This can be seen from the use of the words *sabenggol*, *gendul*, *sen*, *duwit sigar*, *satakir*, *satangkep*, and *sakati*. When viewed from a mathematical perspective, *sabenggol*, *sen*, *duwit sigar* are currency units that have been used by the people of Indonesia. While *gendul*, *satakir*, *satangkep*, and *sakati* are non-standard units that are usually used in measurements by the community.

The term *benggol* refers to a copper coin worth two and a half cents during the Dutch colonial period dated 1945 (Nirmaladewi, 2019:247). On one side of the coin is the inscription "NEDERLANDSCH INDIE, 2 ½ CENT" which indicates that this coin was a currency used in the Dutch East Indies with a value of two and a half cents. In the middle of the side is the official symbol of the Kingdom of the Netherlands flanked by the numbers 19 and 45, indicating the year the coin was made. The other side displays writing in Javanese script and Arabic writing in the middle (Sugita & Pastika, 2021:88-89). This makes it part of Indonesia's material cultural heritage that reflects socio-economic aspects in the past.

The table data states that there are requirements in Javanese traditional marriage, namely *duwit rong wang sabenggol (19 cents)* which means two *benggol* coins. The two *benggol* coins symbolize the unity between two people who are building a household. Both must complement each other and be united in joy and sorrow. This shows that *benggol* is included in the currency used as a requirement and offering in Javanese marriages based on the Primbon Sabda Guru. Even in the marriage tradition of the Pamona Tribe of Central Sulawesi, *benggol* is also used as a substitute for areca nut or betel leaves. In addition, *benggol* in the Pamona Tribe's marriage also means the scent of a baby which is the hope for offspring from the two brides and grooms (Golontalo, et al., 2023:264).

The terms and offerings in marriage according to Primbon Sabda Guru mention the cent currency several times. In financial terminology, the cent unit refers to a fractional value equivalent to 1/100 of the main currency unit. However, the use of cents in the Indonesian Rupiah currency system has been discontinued. As an illustration, the 1961 50 cent coin is the last example of a cent currency

circulating in Indonesia. The concept of the cent was actually adopted from the Dutch colonial period. At that time, the currency unit used was the Cent. Some Cent values that have been in circulation include 1 Cent, 2 ½ Cent, 5 Cent, and 10 Cent. The currency during the Dutch East Indies era was generally known as Gulden with various emissions issued between 1913 and 1943 (Ridhollah, et al., 2024:37).

The data found in the Primbon Sabda Guru contains the sentence *saben satakir nganggo duwit sigar (½ cent)* . This shows the existence of *duwit sigar* worth ½ cent which is used as a requirement and offering in Javanese weddings. The term *duwit sigar* refers more to small coins that circulated in the past in several regions in Indonesia, especially in Java. *Duwit sigar* was used as currency after the enactment of the sen buntet coin during the Dutch East Indies era of Wilhelmina (Rosyid, 2019:93). The nominal value of *duwit sigar* is much smaller than 1 cent. *Duwit sigar* is often used for small transactions such as buying snacks. Thus, the sen coin became a more standard currency unit than *duwit sigar* .

Gendul , *setangkep*, *satakir*, and *sakati* are included in non-standard units because their units are not recognized internationally. The characteristics of non-standard units usually do not have fixed values, cannot be converted into other units, and the measurement results vary. Non-standard units refer to measurement systems that vary between individuals, resulting in inconsistent data. The main weakness of non-standard units is the inconsistency of their measurement values, which makes them unable to be used as a universal reference (Mufidha, et al., 2024:523).

The term *gendul* refers to the word bottle in Indonesian. This can be seen in one of the quotes in Primbon Sabda Guru which reads *gantel lenga ½ gendul, lan banyu ½ gendul* . This explains that *gendul* is used to measure the volume of liquids, such as oil and water. The size of the *gendul unit* can be seen from the object being measured so that the volume can vary according to the size of the bottle.

Satakir in the context of measurement is not a unit that is commonly used internationally or even in certain traditional measurement systems. Most likely, the term *satakir* is a local term or a term that is very specific to a particular area in Java. The term *satakir* uses *takir* as a means of measurement. *Takir* is a traditional

container made of banana leaves that are shaped in such a way that they resemble a small boat or bowl. Takir is a traditional container constructed from banana leaves using *biting* as an adhesive. *Biting* itself is a piece of rib that has been sharpened at both ends with a size of about 3 centimeters (Fuad & Yusita, 2019:32-33). The use of takir as a food container has a long history in Javanese culture and is still often found today, especially in traditional events or celebrations. Takir is generally used to serve various types of food, such as rice, side dishes, and market snacks. Primbon Sabda Guru mentions that *raw gecok is served in takir-takir, every satakir nganggo duwit sigar (½ cent)* as a requirement and offering in Javanese weddings. This explains that takir is used as a container *for gacok* (a dish made from goat's head and feet). The takir is also used as a means of measurement called *setakir* in measuring the amount of *gacok*.

Setangkep is one example of Javanese cultural richness in terms of measurement systems. In everyday practice, people often use the *setangkep unit of measurement* to measure various objects. The term *setangkep* functions as a non-standard unit of measurement that is often used by certain communities. The use of this unit is generally limited to certain contexts or certain types of objects. It should be emphasized that *setangkep* is not included in the international system of units that have standard measurements that are globally recognized.

Based on the table data above, it is stated that there are requirements for marriage listed in the Primbon Sabda Guru, namely *satangkep coconut sugar*. When associated with the context of *coconut sugar* which is the data in the Primbon Sabda Guru, then *setangkep* also means two combs. Setangkep coconut sugar is an important element in a series of Javanese wedding ceremonies. In addition to being a ritual requirement, this coconut sugar also contains deep philosophical values. The sweetness of coconut sugar is interpreted as a symbol of hope for a married life full of happiness and affection, as well as being a symbol of a strong bond of love between the bride and groom.

In the traditional Javanese measurement system, *sakati* functions as a unit to determine the volume or capacity of an object, especially agricultural commodities. One *sakati* generally has a value equivalent to one large sack

containing agricultural products such as rice, corn, or the like. This unit is closely related to agricultural activities which are the main livelihood of the Javanese people. Each region may have slight differences in the size of *sakati* , but in general the meaning remains the same. Based on the table data above, one of the requirements for marriage listed in the Primbon Sabda Guru is *sakati rice* . In accordance with Javanese tradition, *sakati rice* given as a dowry has a rich symbolic meaning. Rice as a staple food symbolizes life and fertility. In the context of Javanese marriage, giving *sakati rice* contains the hope that the newlyweds will be blessed with abundant sustenance and quality offspring.

CONCLUSION

Primbon Sabda Guru contains knowledge about various predictions and life guidance based on birth date, weton, neptu, and various other aspects of life. Javanese traditional marriage is one of the topics in Primbon Sabda Guru that can be studied with ethnomathematics. The ethnomathematics study of Javanese marriage is an interesting combination of tradition, culture, and mathematical concepts that have been passed down from generation to generation. Practices such as installing *tarub* , calculations to see life in marriage, calculating *salaki rabi* , and conditions and offerings for mantu actually have mathematical elements hidden behind their philosophical and symbolic meanings. In addition to being a symbol of splendor and happiness, installing *tarub* also involves mathematical calculations related to the neptu of the day and market. Javanese people also often calculate *weton* or *neptu* to predict married life. When it comes to matchmaking, there are calculations of *salaki rabi* to predict the compatibility of a couple. In addition, the conditions and offerings in marriage have mathematical elements related to currency and non-standard units. The currencies written in the Primbon Sabda Guru as a requirement and wedding offering are *benggol*, *sen*, and *duwit sigar* . While the non-standard units are *gendul* , *satakir*, *satangkep*, and *sakati* . Each type of offering has a certain amount and symbol related to the concept of perfection, abundance, and balance. By delving deeper into ethnomathematics in Javanese weddings, we can discover the beauty and uniqueness of the combination of

tradition and science.

REFERENCE

- Amalia, RDP, & Neni, M. (2023). Exploration of Elementary School Mathematics Concepts on the Javanese Calendar in the Framework of Ethnomathematics. *Journal of Elementary School Teacher Education Research*, 11 (7), 1525-1535. <https://ejournal.unesa.ac.id/index.php/jurnal-penelitian-pgsd/article/view/53930>.
- Anam, HMK, & Ismail, Marzuki. (2023). Analysis of Islamic Law and Customary Law on Community Marriage Traditions based on Primbon (Case Study in Kumbang Sari Village, Jangkar District, Situbondo Regency). *Journal of Islamic Legal Education, Communication, and Thought*, 14 (2), 235-249. <https://ejournal.iaida.ac.id/index.php/darussalam/article/view/2144/1275>
- Aziz, S. (2017). Javanese Keraton Customary Wedding Traditions Form Sakinah Families. *Journal of Islamic Culture*, 15 (1), 22-41. <https://doi.org/10.24090/ibda.v15i1.724>.
- Bahran., et al. (2022). The "Bilangan" Tradition in the Traditional Dayak Bakumpai Wedding of Central Kalimantan (Case Study in Mangkahui Village, Murung District, Murung Raya Regency). *Hadratul Madamiah Journal*, 9 (2), 37-51. <https://doi.org/10.33084/jhm.v9i2.4485>.
- Christanti, AD, Fransisca, YS, & Elizabeth, PK (2020). Ethnomathematics in Yogyakarta Kawung Batik in Geometric Transformation. *National Briefing Seminar*, 1 (1), 435-444. <https://proceeding.unikal.ac.id/index.php/sandika/article/view/438/364>.
- Fadli, MR (2021). Understanding Qualitative Research Method Design. *Humanika, Scientific Study of General Courses*, 21(1), 33-54, <http://doi.org/10.21831/hum.v21i1.38075>.
- Fahra, Z. Indra, M. Nia, G. (2022). Ethnomathematics on the Use of Javanese Tradition Weton Calculation for the Two Prospective Brides and Grooms. *Proceedings of the National Panel Discussion on Mathematics Education*, 8 , 299-304.

<https://proceeding.unindra.ac.id/index.php/DPNPMunindra/article/view/5980>.

Fuad, AD, & Yusita, TH (2019). Traditional Food Lexicon in Javanese as a Reflection of Local Wisdom of Javanese Society. *Journal of Language and Literature Education*, 19 (1), 27-36.
<https://core.ac.uk/download/pdf/325993537.pdf>

Golontalo D., et al. (2023). Mantende Mamongo: Symbolic Meaning in the Traditional Engagement Ceremony of the Pamona Tribe in Poso Regency. *Kembara: Journal of Language, Literature, and Teaching*, 9 (1), 251-268.
<https://doi.org/10.22219/kembara.v9i1.24015>.

Hakim, A. (2020). Petung of Javanese Ethnic Wedding Day in Air Rami District, Mukomuko Regency in the Perspective of Islamic Law. *Qiyas: Journal of Islamic Law and Justice*, 5 (2), 1-9.
<http://dx.doi.org/10.29300/qys.v5i2.2995>.

Hakim, A., & Kiki, M. (2022) Determining an Auspicious Day for Marriage According to Javanese and Islamic Customs (A Study of Kaida Al-Adda Al-Muhakkamah). *Nizham: Journal of Religious Studies*, 10(1), 76-89.
<https://doi.org/10.32332/nizham.v10i1.6834>.

Hasanah, L et al. (2022). Development of Addition and Subtraction Concepts through the Jarimaika Method in Early Childhood. *Incrementapedia: Journal of Early Childhood Education*, 4 (2), 91-95.
<https://jurnal.unipasby.ac.id/index.php/incrementapedia/article/view/6641/4452>

Hendrycks, D., et al. (2021). Measuring Mathematical Problem Solving With the MATH Dataset. *Computer Science*, 1-22 .
<https://doi.org/10.48550/arXiv.2103.03874>

Jatinurcahyo., & Yulianto. (2022). Preservation of Traditional Wedding Ceremonies in the Pakualaman Regency of Yogyakarta. *Treasury of Knowledge: Journal of Tourism and Culture*, 13 (1), 47-54.
<https://doi.org/10.31294/khi.v13i1.12352>.

Kurniawan, AP, Mega, TB, & Rooselyna E. (2022). Development of Numeracy

- Questions Based on the Context of Javanese Primbon Cultural Values. *Journal of Mathematics Learning Review*, 7 (1), 20-24. <https://doi.org/10.15642/jrpm.2022.7.1.20-34>.
- Landau, E. (2021). *Elementary Number Theory*. New York: Chelsea Pub. https://books.google.co.id/books?hl=en&lr=&id=iHUjEAAAQBAJ&oi=fnd&pg=PP1&dq=A+multiple+of+a+number+is+the+product+of+that+number+with+another+whole+number.&ots=scqpqLwDjd&sig=skxUVJAXfS6YFD3j8mQJ3qYUQe8&redir_esc=y#v=onepage&q=A%20multiple%20of%20a%20number%20is%20the%20product%20of%20that%20number%20with%20another%20whole%20number.&f=false.
- Lestari, I., Kamaluddin., & Endang, E. (2023). The Existence of the Culture of Offerings in Javanese Traditional Weddings. Case Study of Bantan Hamlet, Torgamba District, South Labuhan Batu Regency. *Journal of Education and Socio-Culture*, 3 (6), 1434-1443. <https://doi.org/10.58578/yasin.v3i6.1889>.
- Liana, W., et al. (2024). *Textbook of Number Theory*. Jambi: PT Sonpedia Publishing Indonesia. [https://books.google.co.id/books?hl=en&lr=&id=LgISEQAAQBAJ&oi=fnd&pg=PA5&dq=Multiple+is+the+result+of+a+number+with+positive+integer+\(1,+2,+3,+4,+and+so+on\)&ots=B64NUj7RDn&sig=ewl31RomcplPY49_mR5eJMcs7s&redir_esc=y#v=onepage&q&f=false](https://books.google.co.id/books?hl=en&lr=&id=LgISEQAAQBAJ&oi=fnd&pg=PA5&dq=Multiple+is+the+result+of+a+number+with+positive+integer+(1,+2,+3,+4,+and+so+on)&ots=B64NUj7RDn&sig=ewl31RomcplPY49_mR5eJMcs7s&redir_esc=y#v=onepage&q&f=false)
- Mahmud, N., & Astuti, M. (2021). Application of Example non Example Learning Model to Improve Mathematics Addition Learning Outcomes in Grade II Students of Muhammadiyah I Gotalamo Elementary School, South Morotai District. *Scientific Journal of Wahana Pendidikan*, 7 (3), 151-161. <http://jurnal.peneliti.net/index.php/JIWP/article/view/786/558>
- Mufidha, TA, et al. (2024). Application of Quantities and Units in Life. *Madani: Multidisciplinary Scientific Journal*, 1 (2), 519-524. <https://jurnal.penerbitdaarulhuda.my.id/index.php/MAJIM/article/view/1527>.

- Muslim, R., & Mega, N. (2020). An Ethnomathematics Study of the Geulis Umbrella Craftsmen of Tasikmalaya, West Java. *Mosharafa: Journal of Mathematics Education*, 9 (1), 59-70. <https://doi.org/10.31980/mosharafa.v9i1.592> .
- Nafi'ah, Z., & Bagas, WS (2022). The Role of the Tradition of Calculating Marriage Weton Reviewed from the Perspective of Islamic Law. *Journal of Religious and Social Studies*, 18 (1), 46-56. <https://e-journal.iain-palangkaraya.ac.id/index.php/jsam/article/view/4224/1836>
- Nagell, T. (2021). *Introduction to Number Theory*. New York: Chelsea Pub. https://books.google.co.id/books?hl=en&lr=&id=Znc5EAAAQBAJ&oi=fnd&pg=PP1&dq=journal+about+number+addition+theory&ots=MGtq7iLCBJ&sig=zCgMrfptSlhvfT1IH42Y4WnU53A&redir_esc=y#v=onepage&q&f=false .
- Nirmaladewi, MI (2019). Social Culture in the Translation of the Novel Gadis Pantai Based on Cognitive Verbs by Pramoedya Ananta Toes. *TEDC Journal*, 12 (3), 241-248. <https://ejournal.poltektedc.ac.id/index.php/tedc/article/view/157> .
- Novitasari, N. (2023). The Implementation of Marriage on Songo Ramadhan Night is a Local Wisdom of the Parengan People of Tuban District. *Al Hakam: The Indonesian Journal of Islamic Family Law and Gender Issues*, 3 (2), 175-187. <https://doi.org/https://doi.org/10.35896/alhakam.v3i2.629> .
- Nuha, AU, & Nisak, FF (2020). Local Wisdom: Values in Mandi Kembang Leson in Gemblengan Village, Wonosobo Regency. *ASNA: Journal of Islamic and Religious Education*, 2 (1), 1-10. <https://ejournal.maarifnujateng.or.id/index.php/asna/article/view/26> .
- Pathuddin, H., & Sitti, R. (2019). Ethnomathematics: Traditional Bugis Food as a Source for Learning Mathematics. *Journal of Mathematics and Learning*, 7 (2), 307-327. <https://doi.org/10.24252/mapan.2019v7n2a10> .
- Pratama, BA, & Novita, W. (2018). Javanese Traditional Wedding in Nengahan Village, Bayat District, Klaten Regency. *Haluan Sastra Budaya Journal*, 2 (1), 19-40. <https://jurnal.uns.ac.id/hsb/article/view/19604/16644>

- Ridhollah, MA, et al. (2024). Ulu Komering Manuscript: A Philological Study. *Sindang: Journal of History Education and History Studies*, 6 (2), 33-38. <https://doi.org/10.31540/sindang.v6i2.2676>.
- Rosyid, M. (2019). Tradition and Meaning of Keris for Samin Residents in Kudus. *Journal of Culture*, 14 (2), 91-102. <https://jurnalpuslitjakdikbud.kemdikbud.go.id/index.php/kebudayaan/article/download/275/pdf>.
- Safitri, D., Achi, R., & Suherman. (2021). Exploration of Ethnomathematics in Traditional Wedding Ceremonies of the Lampung, Javanese, and Balinese Tribes. *Scientific Journal of Mathematics Education*, 8 (1), 386-392. <https://www.neliti.com/id/publications/504750/eksplorasi-etnomatematika-pada-upacara-adat-pernikahan-suku-lampung-jawa-dan-bal>
- Sari, DP, Mustafa, & Zulfitriah. (2023). Improving Addition Counting Ability through Number Stick Media in Grade III Deaf Students at SLB Negeri 1 Bima City. <https://eprints.unm.ac.id/28828/1/JURNAL%20DITA%20PUSPITA%20SARI.pdf>
- Setiawan, Eko. (2022). Prohibition of Weton Geyeng Marriage in Javanese Custom. *Journal of Urban Sociology*, 5 (2), 81-90. <https://journal.uwks.ac.id/index.php/sosiologi/article/view/2431/1354>
- Sugita, IW, & Pastika, I. (2021). Hindu Religious Education Values Contained in the Balinese Paribasa Cenk Blonk Shadow Puppet Performance. *Kamaya: Journal of Religious Studies*, 4 (1), 65-93. <https://jayapanguspress.penerbit.org/index.php/kamaya/article/view/1209>.
- Sumarni, S., Windi, DA, & Duano, SN (2024). *Elementary School Mathematics Learning for Early Grades*. Palembang: Bening Media Publishing. https://www.google.co.id/books/edition/Pembelajaran_Matematika_SD_Kelas_Awal/HnQSEQAAQBAJ?hl=id&gbpv=1&dq=pengertian+penjumlahan&pg=PA66&printsec=frontcover
- Syahrir, N., Andi, K., & M. Muzaini. (2023). *Introduction to Basic Mathematics*.

Sukabumi: CV. Haura Utama.

https://www.google.co.id/books/edition/Pengantar_Dasar_Matematika/_7AOEQAAQBAJ?hl=id&gbpv=1&dq=pengertian+kelipatan+bilangan&pg=PA23&printsec=frontcover

Utami, N., Suminto, A., & Jailani. (2020). An Ethnomathematics Study of the Days on the Javanese Calendar for Learning Mathematics in Elementary School. *Elementary Education Online*, 19 (3), 1295-1305. <https://ilkogretim-online.org/index.php/pub/article/view7398>.

Wahyuni, N., Wawan, MP, & Nishfiya R. (2022). Development of Sipitung Media (Smart Counting Action) on Addition and Subtraction Material. *Al-Mujahidah: Journal of Elementary Madrasah Teacher Education*, 3 (2), 364-376. <https://scholar.archive.org/work/z7d3bkhv5rgdhoxypvhjtfqgta/access/wayback/http://ejournal.iaihnw-lotim.ac.id/almujahidah/index.php/Al-mujahidah/article/download/49/74>

Wahyuti, Y., Syafrial., Hadi, R. (2019). Symbolic Meaning in Javanese Traditional Wedding Ceremony in Tegal Rejo Hamlet, Padang Tualang District, Langkat Regency, North Sumatra. *Tuah Journal of Education and Language Teaching*, 1 (2), 163-171. <http://dx.doi.org/10.31258/jtuah.1.2.p.163-171>.

Wulandari, N., Nugraha., Anggar, K. (2023). The Philosophical Meaning of Uborampe Pasang Tarub and Siraman in Javanese Traditional Wedding Ceremony in Kradenan, Central Java. *Mukadimah: Journal of Education, History, and Social Sciences*, 7 (2), 265-276. <https://doi.org/10.30743/mkd.v7i2.7038>.

BIBLIOGRAPHY PROPOSAL

- 1) The Collection of National Library of Australia. 2024. Website: <https://www.nla.gov.au/>
- 2) Behrend, T. E., & Feinstein, A. H. (1990). *Katalog induk naskah-naskah Nusantara* 'Master catalog of Indonesian manuscripts' (Vol. 1). Jakarta:

Yayasan Obor Indonesia.

- 3) Zarrabizadeh, Saeed. 2011. "Mendeinisikan Mistisisme: Sebuah Tinjauan atas Beberapa Definisi Utama." 'Defining Mysticism: A Review of Some Key Definitions' *Journal Kanz Journal for Philosophy & Mysticism*, Volume 1, Number 1 – August – November 2011.
- 4) Hartono. 2016. "Petung dalam Primbon Jawa." 'Petung in Javanese Primbon' Surakarta: FKIP Universitas Sebelas Maret.
- 5) Utami, N. W., Sayuti, S. A., & Jailani, J. 2019. Math and Mate in Javanese Primbon: Ethnomathematics Study. *Journal on Mathematics Education*, 10(3), 341–356. <https://doi.org/10.22342/jme.10.3.7611.341-356>
- 6) Bak, J. M. (2012). An Introduction to Editing Manuscripts for Medievalists. In *Monographs* (No. 1). Salt Lake: Central European University, Budapest, BAKJM@CEU.HU. Diambil dari Central European University, Budapest, BAKJM@CEU.HU website: https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=1000&context=lib_mono
- 7) Koppel, M., Michaely, M., & Tal, A. (2016). Reconstructing Ancient Literary Texts From Noisy Manuscripts. *Proceedings of the Fifth Workshop on Computational Linguistics for Literature*, 40–46. San Diego: Association for Computational Linguistics. [https://doi.org/Association for Computational Linguistics](https://doi.org/Association%20for%20Computational%20Linguistics)
- 8) Djamaris, E. (1977). Filologi dan Cara Kerja Penelitian Filologi. 'Philology and How Philological Research Works'. *Bahasa dan Sastra*, 1(3).
- 9) Lubis, N. (1996). *Naskah, Teks, dan Metode Penelitian Filologi* 'Philological Manuscripts, Texts, and Research Methods'. Jakarta: Forum Kajian Bahasa & Sastra Arab, Fakultas Adab IAIN Syarif Hidayatullah.
- 10) Pudjiastuti, T. (2006). *Naskah dan Studi Naskah: Sebuah Antologi* 'Manuscripts and Manuscript Studies: An Anthology'. Jakarta: Akademia.
- 11) Robson, S. O. (1978). Pengkajian Sastra-Sastra Tradisional Indonesia 'Study of Traditional Indonesian Literature'. *Bahasa dan Sastra*, 4(6), 1–48. Diambil dari <https://archive.org/details/pengkajian-sastra-sastra-tradisional->

indonesia/page/n47/mode/2up

- 12) Vander Hook, S., Baroroh-Baried, S., Sutrisno, S., Soeratno, S. C., & Sawu, K. Z. I. (1994). Pengantar teori filologi Introduction to philological theory'. Yogyakarta: BPPF Fakultas Sastra Universitas Gadjah Mada. ABDO.
- 13) Bhattacharjee, S. (2017). Storage and handling of manuscripts. *International journal of humanities and social science invention*, 6(2), 30–32. Diambil dari [http://www.ijhssi.org/papers/v6\(2\)/version-2/E0602023032.pdf](http://www.ijhssi.org/papers/v6(2)/version-2/E0602023032.pdf)
- 14) Jumanto, H. 1999. *Ajaran Salat dalam Sastra Suluk Jawa: Sebuah Tinjauan Pragmatik* ' Prayer Teachings in Javanese Suluk Literature: A Pragmatic Review'. Bachelor Thesis, Faculty of Literature, Universitas Gadjah Mada.
- 15) Ascher, Marcia. 1991. *Ethnomathe, Eric atic; A Multicultural View I of Mathematical Ideas*. California: Brooks/Cole Publishing Company, Pacific Grove.
- 16) Gilsdorf, Thomas E. 2012. *Introduction To Cultural Mathematics With Case Studies In The Otomies And Incas*. Canada: Wiley A John Wiley & Sons, Inc., Publication.
- 17) Vandendriessche dan Rik Pinxten. 2022. *Indigenous Knowledge and Ethnomathematics*. Switzerland: Springer Nature.
- 18) Petit, C. (2023). Re/Creating 'Evocative Images'(sunannguanik iqqaigutunik): Procedural Knowledge and the Art of Memory in the Inuit Practice of String Figure-Making. In *Indigenous Knowledge and Ethnomathematics* (pp. 3-37). Cham: Springer International Publishing.
- 19) Fowler, D. 2010. Mathematics in science fiction: mathematics as science fiction. *World Literature Today*, 84(3), 48-52.
- 20) Endraswara, Suwardi. (2012a). *Filsafat Sastra* 'Philosophy of Literature'. Yogyakarta: Kontul Press.
- 21) New, Christopher. (2001). *Philosophy of Literature An Introduction*. London and New York: Routledge.
- 22) Kumar, A., McGlynn, J. H., & Hardjoprakoso, M. (1996). *Illuminations: The Writing Traditions of Indonesia: Featuring Manuscripts from the National Library of Indonesia*. New York: Weatherhill, Incorporated.

- 23) Schroeder, Severin. (2010). *Philosophy of Literature*. United Kingdom: Blackwell Publishing Ltd.
- 24) Parnovsky, Serge dan Aleksei Parnowski. (2018). *How the Universe Work; Introdusction to Modern Cosmology*. Tokyo: World Scientific.
- 25) Endraswara, Suwardi. (2012b). *Metodologi Penelitian Filsafat Sastra* 'Philosophy of Literature Research Methodology'. Yogyakarta: Kontul Press.

Second Article

THE CONCEPT OF JAVANESE UNITS RELATED TO CHILDREN'S HEALTH IN THE PRIMBON SABDA GURU (ETHNOMATHEMATICS STUDY)

ABSTRACT

This study aims to reveal the concept of Javanese units related to children's health as contained in *the Primbon Sabda Guru*. The object of this study is *the Primbon Sabda Guru* stored in Australia. The research method used is a qualitative descriptive research method. This study is based on an ethnomathematics perspective that examines Javanese culture by integrating mathematical concepts into everyday life. *Primbon Sabda Guru* as one of Javanese cultural heritages contains traditional knowledge that covers various aspects of life, including children's health. The data for this study are in the form of sentences, phrases, or words related to Javanese units in the context of children's health. Javanese units in the context of children's health are applied in making traditional herbal concoctions. The data analysis was carried out using a qualitative method. The data for this study were collected through a literature study with an instrument in the form of a data card. The data obtained were then analyzed in depth to identify the concept of Javanese units in the context of children's health. The data for this study were analyzed using qualitative analysis methods, namely (1) data reduction, (2) data classification, (3) data display, and (4) data interpretation. The results of the study showed that the concept of Javanese units used in *the Primbon Sabda Guru* related to children's health was very diverse. These units refer to traditional Javanese units, namely *saiji, iji, sairis, iris, sacengkang, sawuku, wuku, driji, aga, sasiyung, Lembar, dhenceng, teaspoon, salungsu, klungsu, and jodho*. The use of these units shows that Javanese people have a holistic understanding of children's health. This research is expected to contribute to the development of science, especially in the field of ethnomathematics.

Keywords: Primbon Sabda Guru, ethnomathematics, children's health, Javanese units, Javanese culture

ABSTRACT

This study aims to reveal the concept of Javanese units related to children's health as contained in the Primbon Sabda Guru. The object of this study was the Primbon

Sabda Guru stored in Australia. The research method used was a qualitative descriptive research method. This study was based on an ethnomathematics perspective that examines Javanese culture by integrating mathematical concepts into everyday life. The Primbon Sabda Guru as one of Javanese cultural heritages contains traditional knowledge that covers various aspects of life, including children's health. The data for this study were in the form of sentences, phrases, or words related to Javanese units in the context of children's health. The Javanese units in the context of children's health are applied in making traditional herbal medicine. The data analysis was carried out using a qualitative method. The data for this study were collected through a literature study with an instrument in the form of data cards. The data obtained were then analyzed in depth to identify the concept of Javanese units in the context of children's health. The data for this study were analyzed using qualitative analysis methods, namely (1) data reduction, (2) data classification, (3) data display, and (4) data interpretation. The results of the study showed that the concept of Javanese units used in the Primbon Sabda Guru related to children's health was very diverse. These units refer to traditional Javanese units, namely saiji, iji, sairis, iris, sacengkang, sawuku, wuku, driji, aga, sasiyung, sheet, dhenceng, teaspoon, salungsu, klungsu, and jodho. The use of these units showed that Javanese people have a holistic understanding about children's health. This research was expected to give contribution to the development of science, especially in the field of ethnomathematics.

Keywords: Primbon Sabda Guru , ethnomathematics, children's health, Javanese units, Javanese culture

INTRODUCTION

Mathematics has become the most solid foundation of human knowledge because it is a basic science in life. Since before Christ, mathematics has been deeply integrated into human daily life. The process of introducing mathematical concepts begins at an early age, even before children enter formal education. This is because children can learn mathematics through informal interactions with their surroundings. The role of mathematics in human cognition is so profound that mathematics has become commonplace and is often used unconsciously in various aspects of life (Zahira, Indra, Nia, 2022:300).

The application of mathematics in human life cannot be separated from the culture that becomes a habit. This is called ethnomathematics which combines mathematics and culture (Kencanawaty, Chatarina, & Ari, 2020:256). Simply put, ethnomathematics is the study of the emergence, development, and application of mathematics in various cultures around the world. This means not only seeing mathematics as a collection of abstract formulas and theories, but also as an integral part of everyday human life in various social and cultural contexts (Chissanti,

2019:245). Ethnomathematics is an interdisciplinary study that analyzes the relationship between mathematics and culture (Manapa, 2021:3). This field investigates cultural values, beliefs, languages, and social practices that influence the development and use of mathematics in different societies.

Ethnomathematics emphasizes that human perspectives on mathematical concepts such as numbers, shapes, and space are strongly influenced by cultural values. Ethnomathematics studies can provide in-depth insights in formulating relevant solutions to problems at the local level, especially in the fields of health, agriculture, and economics (Wati et al., 2021:28). Integration between traditional mathematical knowledge will produce more appropriate and sustainable solutions.

Traditional mathematical knowledge is certainly also one of the cultures produced by the Javanese people. The Javanese people have a unique traditional measurement and calculation system that has been used for centuries. These units are closely related to the daily activities of the Javanese people, such as agriculture, trade, household activities, and health. Javanese units are often relative and depend on the context or object used as a reference. For example, to measure length, the Javanese use the length of the arm or the width of the palm as a unit (Prahmana, 2020:285).

One of the Javanese works related to Javanese mathematical knowledge is *Primbon Sabda Guru*. *Primbon Sabda Guru* can be considered a form of ethnomathematics because it contains mathematical knowledge embedded in Javanese culture. *Primbon* contains guidelines for Javanese human life from conception, birth, adulthood, even to the day of death (Utami, Suminto, & Jailani, 2019:342) traditional Javanese knowledge. *Sabda Guru* refers to teachings or advice from ancestors or wise people. *Primbon Sabda Guru* contains traditional Javanese knowledge regarding various aspects of life, including children's health. The guidelines for child health care in *Primbon Sabda Guru* are inseparable from Javanese mathematical knowledge. Child health care in *Primbon Sabda Guru* is more holistic. In addition to physical aspects, *Primbon Sabda Guru* also pays attention to the spiritual and psychological aspects of children.

Javanese society has a comprehensive understanding of children's health.

Health is not only limited to a healthy physical condition, but also includes a balance between physical, mental, and spiritual aspects. The family is the first and foremost environment for children in maintaining health. Parents should provide affection, attention, and guidance to support healthy child growth and development (Ambarwati et al., 2021:332). Javanese society pays close attention to children's physical growth, both in terms of height, weight, and motor development. The food given to children must be nutritionally balanced, paying attention to the nutritional content that is appropriate for the child's age and activities. Traditional medicine such as herbal medicine and baby massage are often used to maintain children's physical health. In making herbal concoctions, Javanese people often utilize plants found in the surrounding environment (Saputri, 2022:266). In addition, Javanese people also believe that the use of traditional medicine is more effective than modern medicine which often causes side effects.

The Javanese view of child health can be harmoniously integrated with the development of medical science. The combination of traditional and modern medical practices can increase the effectiveness of body health care (Sumarni et al., 2022:483). In the Javanese primbon, as an ancestral heritage rich in knowledge, it contains various types of traditional medicine that have been practiced for centuries (Elsera, Hairun, & Sri, 2023:263). The use of medicinal plants is one of the most common traditional treatment methods in the primbon. Various types of plants are believed to have properties to cure various diseases (Adiyasa & Meiyanti, 2021:131).

Based on the description above, this study opens a new window of understanding about the relationship between local wisdom, traditional mathematics, and ancient Javanese health practices. This study not only seeks to preserve endangered knowledge, but also reveals the concept of mathematics integrated into the daily lives of Javanese people, especially in the context of child health. By exploring the wealth of information in *Primbon Sabda Guru* from an ethnomathematics perspective, this study has the potential to bridge the gap between traditional and modern health practices and encourage a more holistic approach to child health care. Therefore, this ethnomathematics study is expected

to increase appreciation of the complexity of ancestral knowledge and enrich our understanding of the diversity of mathematical applications in culture.

RESEARCH METHODS

This study uses a qualitative paradigm with a descriptive research design to provide a comprehensive picture of the implementation of mathematical concepts in Javanese culture in the form of traditional units related to child health. The main objective of this study is to deeply understand the meaning and function of mathematics in the socio-cultural context of Javanese society as described in qualitative research literature (Muslim & Mega, 2020:62). The main data source for this study is the ancient manuscript *Primbon Sabda Guru*, an Old Javanese manuscript currently stored in a library in Australia. Data analysis focused on all parts of the text related to Javanese units in the context of child health. The data collection method used was a literature study with an instrument in the form of a data card to organize and analyze the data obtained.

Data analysis in this study uses qualitative methods. The analysis process follows four main stages as explained by Waruwu (2024:208-209), namely data reduction, data classification, data presentation, and data interpretation. In the initial stage, research data is simplified and focused on aspects that are thematically relevant to the research problem. The data selected is data that is considered to have significance, novelty, and relevance to the research objectives. The results of the data simplification process are then grouped thematically to form a more specific research focus. Furthermore, through the data presentation stage, the research focus is described in depth and systematically. This in-depth analysis process aims to identify patterns, new themes, or theoretical concepts that emerge from the data. Thus, the reconstructed data is expected to contribute to the development of a more comprehensive understanding of the research problem.

In each stage of the research, data selection is carried out repeatedly and comprehensively, involving various methods and various data sources. The conclusions obtained need to be critically evaluated to ensure a high level of validity. What must be done to achieve this goal is to re-collect field data using

different methods but still relevant to the research objectives. This approach not only strengthens the credibility of the conclusions but also ensures the completeness of the data collection process.

HERBAL MIXTURE FOR NEWBORN BABIES

Jamu is a traditional herbal medicine produced from a combination of various types of medicinal plants (Susanto, Hake, & Gloria, 2019:352). The careful processing of plant parts such as roots, stems, leaves, flowers, or fruits produces a drink rich in active compounds with properties to maintain and improve health (Adji & Heri, 2021:59). This drink has become a very important part of the Indonesian traditional medicine system. In the context of Javanese culture, herbal concoctions have a very significant and complex value, namely reflecting the richness of local knowledge (Gunarti, Lia, & Eko, 2023:4). Jamu is a very important part of Javanese cultural heritage, often passed down from generation to generation within the family. Knowledge of herbal concoctions is generally taught from generation to generation as part of the family's healing tradition.

The selection of each herbal medicine concoction is generally based on specific properties that are believed to support health, accelerate the healing process, or maintain the body's immune system (Sumarni, Sudarmin, & Sumarti, 2019:2). This reflects the Javanese people's deep knowledge of the properties of plants and their interactions with the human body. Herbal medicine is not only part of traditional medicine practices, but also a means of health education for the community (Anindita & Dede, 2021:61). The practice of consuming herbal medicine, especially after giving birth or when feeling unwell, reflects the Javanese people's concern for the physical and spiritual aspects of health. Although the influence of modernization is getting stronger, the tradition of consuming herbal medicine is still preserved by the Javanese people. Even herbal medicine is packaged to be more practical while maintaining its natural properties (Sugiarto et al., 2021:161).

The tradition of consuming Jamu by the Javanese people has existed since ancient times and is intended for various age groups. Even in *the Primbon Sabda*

Guru, it discusses the *administration of jamu* for newborn babies. *Jamu* is one of the traditional practices in Javanese society that involves giving herbal concoctions orally (Ekowati, et al., 2024:65). This practice is based on the belief in the natural efficacy of medicinal plants in improving health and treating various diseases (Maulida, Indri, & Susilo, 2019:57). The herbal concoctions used have various compositions and are adjusted to the conditions to be treated. This is related to the study of ethnomathematics, especially Javanese units. *The Primbon Sabda Guru* certainly discusses the composition of the herbal concoctions that are commonly used to administer to babies. This can be seen in the following table.

Primbon Category	Quote	Translation	Page
Herbal medicine concoction for newborn babies	Cekok saben esuk kanggo bayi lair tekan puput puser. Brambang saiiji, kunci sairisi, woh kelor 3 iji, kayu legi sacengkang, uyah sawuku kapipis lembut kabuntel ing pipih kang resik banjur kacekokake.	A newborn baby is force-fed every morning until the umbilical cord falls off. One red onion, one slice of key, 3 moringa seeds, one stick of cinnamon, one finely ground brick of salt, wrapped in a clean penyetan shape, then force-fed.	95

Based on the table above, the herbal medicine concoction for newborns uses a mathematical concept in the form of Javanese units. The Javanese units contained in the composition of the herbal medicine concoction are *saiiji*, *iji*, *sairisi*, *sacengkang*, and *sawuku*. The use of terms like this in traditional medicine or herbal medicine recipes indicates the traditional Javanese calculation and measurement system applied in health practices. This reflects a practical approach to measurement that is easy to understand and apply by the Javanese people.

The term ' *saiji* ' in Javanese vocabulary refers to a traditional unit of measurement equivalent to 'one fruit' or 'one unit' (Mumfangati & Suyami, 2021:168). Etymologically, the word ' *saiji* ' is formed from a combination of the elements ' *sa* -' which means 'one' and ' *iji* ' which means 'seed' or 'fruit'. In the context of everyday use, ' *brambang saiji* ' literally means 'one shallot'. Although the size can vary depending on the type of shallot used, it generally refers to one medium-sized clove of shallot. In this case, the practice of making herbal medicine, the use of the ' *saiji* ' unit is seen in the quantity of ingredients that can be adjusted according to recipe needs or taste. The use of the ' *saiji* ' unit in Javanese society reflects the application of basic numerical concepts in everyday life, an interesting aspect to study in the field of ethnomathematics.

The term ' *sairis* ' which comes from Javanese has the literal meaning of 'one slice' or 'a small piece' (Sasti, 2017:35). This word is a combination of the prefix ' *sa* -' which means 'one' and the root word ' *iris* ' which means 'piece'. This term is usually used to express the size of objects that can usually be cut using a knife, such as meat and bread (Prahmana, 2020:296). In the context of its use in *Primbon Sabda Guru* , the phrase ' *kunci sairis* ' refers to one slice of the rhizome of the key which is generally around 2-3 millimeters thick. The size of this slice can vary according to needs and habits. The technique of cutting the rhizome of the key is generally carried out transversely to the length of the rhizome to produce round or oval slices. Although ' *sairis* ' etymologically refers to one unit, in practice the number of slices can be adjusted according to the size of the rhizome or the desired intensity of taste. From an ethnomathematics perspective, the use of the term ' *sairis* ' reflects the application of the concept of division and units of measurement in the context of everyday life of the Javanese people.

In the traditional Javanese measurement system, the unit ' *sacengkang* ' generally refers to a piece or bar of a material. The term *sacengkang* can also refer to a specific size, especially width (Yuliantoro, 2024:51). The term ' *kayu legi sacengkang* ' in this context means a piece of cinnamon about 5-7 centimeters long. *Sacengkang* cinnamon is usually in the form of a roll of intact cinnamon bark. Although the size can vary slightly according to local customs, ' *sacengkang* '

generally refers to a whole piece of cinnamon. The use of this unit ' *sacengkang* ' reflects a system of measurement that has developed empirically and adaptively to local needs, so it may not have the same precision as the modern metric system. However, in the context of traditional use, this unit has proven effective.

The term ' *sawuku* ' is a unit of measurement commonly used in Javanese tradition, especially in the context of herbal medicine recipes or traditional medicine. ' *Sawuku* ' literally means 'one brick of salt' or 'one small package' (Prahmana, 2020:294). The use of ' *sawuku* ' in the phrase ' *uyah sawuku* ' refers to one brick of salt or a number of salts that can be wrapped in small folds of natural materials such as banana leaves or paper (Adji, 2019:10). In general, one ' *sawuku* ' of salt is estimated to be equivalent to 10-20 grams. This size can certainly vary depending on the size of the folds and the amount of salt taken. This measurement method usually involves taking salt by pinching it with your fingers and then wrapping it. The flexibility in the size of ' *sawuku* ' reflects the characteristics of the traditional measurement system which is highly dependent on the context and tools used (Isnawati, 2021:8). From an ethnomathematics perspective, the use of ' *sawuku* ' illustrates that Javanese society has developed a measurement system that is rooted in daily activities and utilizes natural materials around it.

SEMBUR SAWAN

sembur sawan ritual is a form of traditional Javanese medicine that aims to cure or protect children from various diseases or disorders believed to originate from supernatural or supernatural powers called *sawan* (Adji & Heri, 2021:58). This practice is included in the animist and dynamism belief system that has long been inherent in Javanese culture. Along with the entry of Islam into the archipelago, the *sembur sawan ritual* then experienced acculturation with elements of Islamic religious beliefs. Javanese people believe in various types of *sawan* , such as *sawan tani* which is characterized by continuous crying, *sawan panas* which is accompanied by high fever, *sawan keceklik* which is characterized by difficulty breathing or choking, *sawan bulan* which is associated with the phases of the moon, and many other types of *sawan* (Gardjito, Harmayani, & Suharjono,

2021:27-28).

Sembur sawan is usually performed by a shaman or someone who is considered to have spiritual abilities (Jelani & Salmah, 2021:94). The procedure involves 1) reciting prayers or mantras, 2) spraying water that has been prayed over to the sick part of the child's body, 3) using natural ingredients such as certain leaves or spices. The implementation of *sembur sawan* is often associated with beliefs about certain times that are considered sacred in the Javanese calendar, such as when the seasons change or on days that are believed to have magical powers. This is certainly because *sembur sawan* is often associated with mystical or supernatural powers. In addition, the herbal concoction used for *sembur sawan* is believed to have special powers to expel evil spirits or negative energy that causes *sawan*.

Based on *Primbon Sabda Guru*, there are elements of traditional Javanese mathematics in the measurement of ingredients used in the *sembur sawan ritual*. The concoction, which comes from herbal plants and is believed to have properties to calm and relieve *sawan*, is measured using traditional Javanese units. The following is the composition of the *sembur sawan concoction* in *Primbon Sabda Guru* which uses Javanese units as a form of ethnomathematics.

Primbon Category	Quote	Translation	Page
Spontaneous eruption	Oyot kacubung abang 3 driji, brambang 3 iji kapipis, banjur kasemburake ing badan sakojur.	3 finger-long red datura roots, 3 shallots, pounded, then sprayed onto the body.	95

Based on the table above, the concoction for *sembur sawan* uses mathematical concepts in the form of Javanese units. The Javanese units contained in the composition of the *sembur sawan concoction* are *driji* and *iji*. In ethnomathematics studies, understanding the use of terms like this is very important. These terms include mathematical concepts that are understood and

applied in specific cultural contexts, especially in traditional health practices. This also shows that mathematics does not always have to be formal or abstract, but can be very practical and integrated into everyday life and local languages.

The word " *driji* " in Javanese is the equivalent of the word "jari" in Indonesian. In addition, there is also the term *dariji* which has the same meaning as *driji* (Sinungharjo, Adj, & Adj, 2023:44) . The use of " *driji* " as a unit of measurement reflects the traditional metric system that uses body parts as a reference. Thus, " *sadriji* " refers to a length equivalent to one finger joint (Prahmana, 2020:258). In the context of " *oyot kacubung abang 3 driji* ", the length of the red amethyst plant root is measured using three finger joints as a reference. This unit of measurement generally refers to the width or length of an adult's index finger, which ranges from 1.5 to 2 centimeters per finger joint. This quantity can vary slightly depending on the size of the individual's finger taking the measurement. The practice of measuring using fingers requires a person's ability to estimate. This indicates that Javanese people in the past had developed approximate counting skills in the context of everyday life. In addition, the concept of " *3 driji* " also represents the idea of length in mathematics. This shows people's understanding of linear measurement using repeatable units of measurement (such as the width of a finger).

The term ' *iji* ' in Javanese which refers to seeds or fruits refers to a traditional Javanese counting system that refers to individual object units (Mumfangati & Suyami, 2021:62). Objects that can be measured using ' *iji* ' units include grains or fruits (Sinungharjo, Adj, & Adj, 2023:48). The use of ' *iji* ' as a unit of count in phrases such as ' *brambang 3 iji* ' (three onions) reflects an understanding of the concept of cardinal numbers in a mathematical context. This indicates that Javanese people already have a quantitative understanding that is applied in everyday life. In addition, counting using ' *iji* ' reflects the concept of discrete mathematics which is described by the way objects are counted separately and intact. The use of ' *iji* ' as a unit of count also illustrates a non-standard measurement system that developed locally and was adapted to the needs of Javanese people. This system is considered more practical and easier to understand

in the context of everyday life compared to the modern standard measurement system.

In ethnomathematics studies, the use of *driji* and *iji* as units of calculation in the sentences ' *oyot kacubung abang 3 driji*' and ' *brambang 3 iji*' illustrate mathematical concepts and practices embedded in the daily lives of Javanese people, especially in the context of traditional medicine preparation. This shows that the understanding and application of mathematical concepts can vary across cultures and develop according to local needs and contexts.

SAWAN JAMU FOR CHILDREN

Jamu *sawan* is a traditional herbal medicine that is believed by some Javanese people to be able to help overcome seizures in babies or children. This herbal medicine is usually made from various types of medicinal plants that are considered to have properties to calm and relieve seizures (Huda, 2022:161). Knowledge about jamu *sawan* is generally transmitted from generation to generation, reflecting the concept of traditional mathematics preserved in a cultural context (Fau, 2020:562). There is no standard regarding the composition and method of making jamu *sawan*. Each region or family may have different herbal medicines. Although jamu *sawan* is part of the cultural heritage, its use in babies must be done with great care and under medical supervision (Fatimah & Ratna, 2019:8). The health and safety of babies must be the main priority.

Through ethnomathematics studies, we can appreciate how the application of mathematical concepts has been deeply embedded in the lives and cultures of Javanese society. This practice not only reflects local wisdom that has developed over centuries, but also shows how traditional societies have developed a complex understanding of quantity and space. Thus, this study makes an important contribution to the preservation and development of human knowledge.

Primbon Category	Quote	Translation	Page
Sawan herbal medicine for children	Oyot legundi 3 driji, brambang 3 iji, sawise dipipis sing separo kacekokake separone kaborahake ing awak ... Kunir 3 iris, jinten 2 aga, adas 9 iji, temulawak sairis, tumbar 3 aga, mungsi 2 aga, dlingo 3 iris, bengle sairis, kunci 3 iris, brambang sasiyung, kabeh kapipis lembut, enggone gunakake; sing separo kaombekake separone kaborahake ing awak.	3 finger lengths of legundi root, 3 shallots, after being pounded, half is forced into the mouth and half is rubbed on the body. ... Turmeric 3 slices, cumin 3 seeds the size of saga tree seeds, fennel 3 pieces, ginger a slice, coriander 3 seeds the size of saga tree seeds, mungsi 2 seeds the size of saga tree seeds, dlingo 3 slices, bengle a slice, key 3 slices, red onion one clove . All finely ground. Usage: half drunk and half rubbed on the body.	96

Based on the table above, the herbal medicine *sawan concoction* for children uses a mathematical concept in the form of Javanese units. The Javanese units contained in the composition of the herbal medicine *sawan concoction* are *driji* , *iji* , *iris* , *sairis* , *aga* , and *sasiyung* . The units *driji* , *iji* , and *sairis* have been discussed in the previous topic. The following is a discussion of Javanese units such as *iris* , *aga* , and *sasiyung* .

The term ' *iris* ' in Indonesian refers to a part or piece of an object (Mumfangati & Suyami, 2021:44). This concept has the same meaning as the term

' *sairis* ' which has been discussed previously. However, ' *iris* ' is used to indicate the number of pieces that are more than one. For example, ' *kunir 3 iris* ' refers to three pieces of turmeric. In addition to the term ' *iris* ', Javanese people can also use the words *lining* and *wawar* to express a size that means pieces (Sasti, 2017:45 & 67). However, the context of use between the words *iris*, *lining*, and *wawar* is somewhat different. The term *lining* is usually only used to indicate the size or number of pieces of watermelon, while the term *wawar* is used to indicate the number of pieces of coconut flesh that have been pried off. When viewed from an ethnomathematics perspective, the use of ' *iris* ' as a unit of measurement reflects the integration of mathematical concepts in the daily lives of Javanese people. Javanese people have developed a practical and easy-to-understand measurement system by using parts of an object as a reference.

In Javanese culture, ' *aga* ' is a traditional unit of measurement used specifically to measure the volume of dry ingredients such as grains or spices. Literally, ' *aga* ' itself is the name of the saga tree seed. When viewed from its morphology, saga seeds have a round shape like a chicken egg, with a hard surface and a thickness of about 4 to 5 millimeters (Putri & Asep, 2020:4760). Each saga tree seed has an average weight of about 0.26 grams (Edi, 2022:491). Therefore, the unit ' *aga* ' can be interpreted as '0.26 grams' or 'seeds that are 4-5 mm thick'. For example, ' *jinten 2 aga* ' indicates that the amount of cumin in question is 2 x 0.26 grams or equivalent to 0.52 grams. The use of the unit ' *aga* ' in measurement reflects the Javanese people's understanding of the concept of weight units in mathematics. This is because the shape and size of the saga seeds are relatively the same. Therefore, the unit ' *aga* ' is used as a unit of weight, although it is not universally recognized as a standard unit of measurement. The unit ' *aga* ' remains relevant as a unit of weight understood in the local context. Based on the ethnomathematics perspective, the application of the unit ' *aga* ' illustrates how Javanese society developed a measurement system rooted in the use of plant parts found in the surrounding environment.

The term ' *sasiyung* ' in Javanese refers to a unit of measurement equivalent to 'one clove' or 'one ulas' (Prahmana, 2020:291). Etymologically, the word ' *sasiyung* ' is derived from the Javanese word ' *sasi* ' which means 'one' and ' *yung* ' which means 'clove'.

sasiyung ' is a combination of the prefix ' *sa-* ' which means 'one' and the root word ' *siyung* ' which refers to the individual part of the onion bulb. The use of the term ' *siyung* ' in onions is because one clove of onion is similar in shape to a *blind canine tooth* (Sasti, 2017:60). In the context of the phrase ' *brambang sasiyung* ', this term specifically refers to one clove of shallot. The use of ' *sasiyung* ' as a unit of measurement reflects a traditional measurement system that utilizes the natural part of an object in the form of a bulb that is measured as a unit (Sinungharjo, Adj, & Adj, 2023:49). In this case, one intact clove of shallot is a representation of the unit of measurement. When viewed through an ethnomathematics perspective, this shows a fundamental understanding of the concept of units and integers embedded in the local knowledge of the Javanese people. Thus, ' *sasiyung* ' is not just a term, but also reflects a system of knowledge that has developed from generation to generation.

TAPEL FOR CHILDREN WITH DIARRHEA

Diarrhea in children is a fairly common health problem (Abdillah & Iga, 2019:119). In Javanese society, parents often use traditional medicine as first aid (Suwistika, Agus, & Ika, 2019:2). One of them is by giving a *tapel*. *Tapel* is a Javanese term for medicine that is used by rubbing it on the stomach (Mahmud, 2021:297). This *tapel* is generally made using natural ingredients in the form of warm liquid that is rubbed on the child's stomach (Hidayat & Susanti, 2024:254). The natural ingredients used are processed by grinding them, then mixed with liquids such as water or oil (Mulyani et al., 2021:2). Furthermore, the concoction is applied to a soft, warm cloth, then attached to the area of the body that is experiencing complaints or pain. This practice turns out to have a scientific basis and is interesting to study from an ethnomathematics perspective.

In the practice of giving *tapel*, we can see several mathematical concepts that are intuitively adopted by the Javanese people. The Javanese people have traditional units of measurement that are used in everyday life, including in making *tapel*. In making *tapel*, the Javanese people use various traditional units to measure the ingredients used. Although they do not use standard units of measurement and

formal mathematical concepts, the Javanese people have developed an effective knowledge system to overcome health problems.

Primbon Category	Quote	Translation	Page
A mask for a boy who is tired of drinking	Lempuyang mentah mateng 3 iris, jinten ireng 3 aga, brambang 3 iji, uyah 3 wuku, kabeh kapipis lembut, banjur katapelake	Raw and cooked ginger 3 slices, black cumin 3 seeds the size of a saga tree seed, 3 shallots, three bricks of salt. All are finely ground, then applied.	96

Based on the table above, the composition of the traditional Javanese medicine concoction for children with diarrhea using the mathematical concept of Javanese units. The Javanese units contained in the composition of the drug mixture are *iris*, *aga*, *iji*, and *wuku*. The units *iris*, *aga*, and *iji* have been discussed in the previous topic. The following is a discussion of the Javanese unit of *wuku*.

The term '*wuku*' in Javanese is usually used in the context of measuring the amount of brick salt (Prahmana, 2020:294). If '*sawuku*' is equivalent to one brick salt, then '*wuku*' is used to measure more than one brick salt. In addition, '*wuku*' can also refer to the size of a 'small package' or a small amount. For example, '*uyah 3 wuku*' means three brick salts or three small packages of salt. If the estimate of *sewuku* is 10-20 grams, then '*uyah tiga wuku*' is estimated to be 30-60 grams of salt. Salt is usually taken by *pinching* and wrapped in small folds of banana leaves or paper. When viewed from an ethnomathematics aspect, the use of the word '*wuku*' describes Javanese society that develops a measurement system based on everyday objects and practices (Isnawati, 2021:8). This reflects a measurement system that develops from practical experience and local knowledge that may not always be precise by modern standards, but is very functional and meaningful in its

cultural context.

TAPEL FOR CHILDREN WITH WORM

Worms are a common health problem in children, especially in tropical areas such as Indonesia. Worms include infections by parasitic worms that can interfere with children's health, cause malnutrition, and various symptoms such as bloating, abdominal pain, and diarrhea (Dewi & Nida, 2023:1146). Handling worms is important to maintain children's health and growth. Since ancient times, Javanese people have had various ways to overcome this problem, one of which is by using tapel which aims to provide a therapeutic effect (Triandini et al., 2024:1644). Tapel is generally a warm compress made using medicinal plants (Andarwulan, 2021:55). This traditional Javanese medicine is believed to help remove worms from the body. The heat produced by the tapel has a calming effect on the body so that children will feel more comfortable and relaxed (Nilawati, Erli, & Tri, 2021:58). In addition, the warm air from the tapel is believed to kill worms or make worms uncomfortable so that they come out of the body.

The practice of giving tapel to children with worms is an interesting example of how mathematical knowledge can be integrated into the culture and daily life of the Javanese people. Although it does not have a strong scientific basis, this practice reflects the local intelligence and ability of the Javanese people to utilize natural resources to overcome health problems. In addition, the use of traditional Javanese units of measurement in the practice of giving tapel shows the existence of a measurement system that has developed locally. The following is the concept of Javanese units in *the Primbon Sabda Guru* which reflects the concept of ethnomathematics in the composition of the tapel concoction for children with worms.

Primbon Category	Quote	Translation	Page
A mask for a wormy boy	Kapiliha salah siji: - Godong lombok jemprit 1 lembar, godong meniran 3 dhenceng, godong kelor 3 dhenceng, 3 sendok teh awu layan, enjet salungsu, kabeh kapipis banjur katapelake - Godong cubung lumah-kurep 3 jodho, enjet 2 klungsu, kapusus banjur katapelake.	Select one: 1 piece of cayenne pepper leaves, 3 bunches of meniran leaves, 3 bunches of Moringa leaves, 3 teaspoons of ash, <i>enjet</i> the size of 1 tamarind seed, all crushed and then attached. 3 pairs of datura leaves, cut into pieces the size of 2 tamarind seeds, put together and stick them together.	97

Based on the table above, the composition of the drug mixture for children with worms using the mathematical concept of Javanese units. The Javanese units contained in the composition of the drug concoction are *sheets*, *dhenceng*, *teaspoons*, *jodho*, *salungsu*, and *klungsu*. The use of traditional units of measurement like this is related to ethnomathematics studies because it shows mathematical concepts that are integrated into the culture and daily life of Javanese society.

The term '*sheet*' in units of measurement is usually realized in the sense of

the number of strands of an object (Abidin, 2021:320). In traditional Javanese herbal medicine recipes, the term '*sheet*' used to measure *godong lombok jemprit 1 sheet* refers to one whole leaf. This measurement refers to one whole leaf, without being cut or divided. This unit of measurement is part of a traditional measurement system that uses natural parts of plants as a reference. The part of the plant that is usually measured in '*sheet*' units is usually leaves (Hadi, 2016:56). The use of '*sheet*' in this context reflects a practical and easy-to-understand ethnomathematics approach in Javanese society.

The term '*dhenceng*' in the context of '*godong meniran 3 dhenceng*' refers to a traditional Javanese unit of measurement used in herbal medicine. One '*dhenceng*' is equivalent to one bundle consisting of several small stems of the plant, including the leaves (Gericke & Roorda, 1901:325). In herbal medicine recipes, '*godong meniran 3 dhenceng*' means three bundles of meniran plants tied together that are used as herbal ingredients. The length of each stem usually ranges from 5 to 10 centimeters, but can vary depending on the natural size of the meniran plant. When viewed from an ethnomathematic perspective, the use of '*dhenceng*' as a unit of measurement shows that Javanese people have developed a measurement system that is rooted in the natural structure of plants. This reflects pragmatic local wisdom, where measurements are made directly based on observations of plants without the need for special measuring instruments.

In traditional Javanese herbal medicine recipes, '*spoon*' is a non-standard volume measurement unit that has been used for generations until now (Anriana et al., 2023:304). This unit refers to the amount of ingredients that can be accommodated in the hollow of a regular teaspoon. In the context of *3 teaspoons of awu layan*, the term *spoon* is a measuring tool used in the traditional Javanese measurement system, especially for herbal medicine recipes or traditional medicine. One teaspoon is usually equivalent to about 5 ml or 5 grams for dry ingredients. Although the size of a teaspoon can vary slightly, its use provides a level of standardization in measurement. The use of spoons as a unit of measurement reflects a combination of local knowledge and everyday practice in the traditional Javanese measurement system.

The term '*jodho*' in the traditional Javanese measurement system is used for paired objects (Zaenuri et al., 2021:43). This refers to a unit of measurement consisting of a pair or two objects. In other words, in addition, there is also the term *sajodho* to describe something that is one pair (Hastuti, Slamet, & Ani, 2021:9). This concept is one of the characteristics of the traditional measurement system that developed in Javanese culture. In the phrase '*godhong cubung lumah-kurep 3 jodho*', there are six cubung leaves arranged into three pairs. Each pair consists of one leaf in a supine position (*lumah*) and one leaf in a prone position (*kurep*). The use of '*jodho*' as a unit of measurement reflects the Javanese worldview which often refers to the concept of pairs or unity in various aspects of life, including in the measurement system.

In the traditional Javanese measurement system, the term '*salungsu*' refers to a unit of measurement equivalent to 'one seed'. This term also has similarities with the measurement system called *salueng* used by traditional Thai society. However, *salueng* is usually used to measure the amount of rice that can be purchased with *baht* currency (Puaksom, 2023:411). In addition, the *salungsu* unit can be specifically used in concocting herbal medicine or traditional medicines to measure the amount of ingredients that are the size of seeds or grains. The size of one '*salungsu*' can vary depending on the type of seed being measured (Sinungharjo, Adji, & Adji, 2023:47). The phrase '*enjet salungsu*' refers to a medicinal concoction that uses exactly one betel lime seed as one of its main ingredients. As a unit of measurement, '*salungsu*' is included in the category of discrete units used to count individual objects, especially in the context of natural ingredients used in traditional Javanese medicine. The use of '*salungsu*' in the traditional Javanese measurement system reflects local wisdom in measuring and measuring natural ingredients. This shows a deep understanding of the Javanese people regarding the right proportions and measurements in mixing traditional medicines.

The term '*klungsu*' in Javanese is a traditional unit used to measure the number of small objects, especially grains or grains. Actually, *klungsu* is the term for tamarind seeds in Javanese (Utami, 72:2020). This is the equivalent of the unit

of measurement for seeds or grains. The word '*klungu*' is the plural form of '*salungsu*' which means one seed. In other words, '*klungsu*' refers to a number of seeds or grains. In the context of traditional Javanese medicine, such as in herbal concoctions, '*klungsu*' is often used to measure the amount of ingredients. For example, the phrase '*enjet 2 klungsu*' means that the concoction uses two seeds or grains of betel lime. The use of this traditional unit reflects the local wisdom of the Javanese people in measuring using units taken from the names of parts of plants (Sinungharjo, Adji, & Adji, 2023:47).

CONCLUSION

This study has succeeded in uncovering the richness of the concept of Javanese units hidden in *the Primbon Sabda Guru*, especially in the context of the composition of herbal concoctions or traditional medicines for children's health. The main findings indicate that this ancient manuscript reflects a deep integration between mathematical knowledge and Javanese traditional medicine practices. Several traditional Javanese units identified in the composition of herbal concoctions or traditional medicines for children include *saiji*, *iji*, *sairis*, *iris*, *sawuku*, *wuku*, *sacengkang*, *driji*, *aga*, *sasiyung*, *Lembar*, *dhenceng*, *teaspoon*, *salungsu*, *klungsu*, and *jodho*. The use of these units shows that Javanese people have a measurement system in concocting medicines. In addition, the existence of the concept of these units shows the level of knowledge and experience of Javanese people in the field of traditional pharmacy. This reveals that Javanese people in the past have developed a complex measurement and composition system by integrating mathematical understanding to concoct traditional medicines for children's health. This ethnomathematics study of *the Primbon Sabda Guru* can certainly enrich insight into Javanese local wisdom, especially in the context of traditional healing practices as a way to maintain children's health.

REFERENCE

Abdillah, ZS & Iga, DP (2019). Nursing Care for Children with Diarrhea. *Health Bulletin Publication in the Health Sector*, 3 (1), 118-136. <https://akper->

pasarrebo.e-journal.id/nurs/article/view/64/39

- Abidin, Z. (2021). Terminology of Measurement Units Provided by the Big Indonesian Dictionary (KBBI) Online. *Scientific Journal of Language and Literature*, 15 (2), 310-322. <https://doi.org/10.26499/tt.v15i2.3946>.
- Adiyasa, M. Reiza & Meiyanti. (2021). Utilization of Traditional Medicine in Indonesia: Distribution and Influential Demographic Factors. *Journal of Biomedicine and Health*, 4 (3), 130-138. <https://doi.org/10.18051/jbiomedkes.2021.v4.130-138>.
- Adji, FT (2019). Variations of Traditional Healing Systems in the Serat Primbon Reracik Jampi Jawi Manuscript. *International Symposium on Javanese Culture and the Manuscripts of the Ngayogyakarta Hadiningrat Palace, Kasultanan Ballroom*. <https://repository.usd.ac.id/37767/>.
- Adji, FT & Heri, P. (2021). “Esuk Lara, Sore Mati”: History of Pageblug and its Management in 20th Century Java. *Patrawidya Journal*, 22 (1), 43-68. <https://patrawidya.kemdikbud.go.id/index.php/patrawidya/article/view/297/159>
- Ambarwati, E. Retna., et al. (2021). Community Empowerment in Maternal and Child Health as an Effort to Improve Health Status. *Scientific Journal of Health*, 7 (2), 331-336. <https://journal.stikespemkabjombang.ac.id/index.php/jikep/article/view/846/599>.
- Andarwulan, S. (2021). *Complementary Therapy for Midwifery*. West Java: Guepedia. https://books.google.co.id/books?hl=id&lr=&id=L9pKEAAQBAJ&oi=fnd&pg=PA3&dq=TAPEL+UNTUK+ANAK+WHICH+IS+SICK+OF+WORM&ots=u1x10ICbrF&sig=6Sp9rjGztLgbzh858nQO_1r6cWY&redir_esc=y#v=onepage&q&f=false
- Anindita, R. & Dede, DN (2021). Education on the Making and Utilization of Traditional Medicine (Jamu) to Improve the Immune System during the Covid-19 Pandemic through Online Media. *Jurnal Mitra Masyarakat*, 2 (1), 60-70.

<https://jmm.stikesmitrakeluarga.ac.id/index.php/jmm/article/view/54>

Anriana, R., et al. Ethnomathematics Study in Measurement of Bengkalis Malay Community as Mathematics Resource for Elementary School. *Ethnography and Education*, 18 (3), 299-322. <https://doi.org/10.1080/17457823.2023.2232500>.

Chrissanti, MI (2019). Ethnomathematics as an Effort to Strengthen Local Wisdom in Mathematics Learning. *Math Didactic: Journal of Mathematics Education*, 4 , 243-252. <https://jurnal.stkipbjm.ac.id/index.php/math/article/view/191/107>.

Dewi, SU & Nida, AK (2023). Family Empowerment through Health Counseling to Improve Knowledge and Attitudes in Preventing Worm Disease in Children: Case Study. *Multidisciplinary Research Journal*, 2 (1), 1145-1156. <https://melatijournal.com/index.php/Metta/article/view/337/313>

Edi, DN (2022). Potential of Seeds and Leaves of Saga Tree (*Adenanthera pavonina L.*) as Alternative Feed Ingredients for Poultry and Ruminants. *Journal of Research and Conceptual*, 7 (2), 489-502. [https://d1wqtxts1xzle7.cloudfront.net/89797760/pdf-libre.pdf?1660719801=&response-content-disposition=inline%3B+filename%3DPotensi Seeds and Leaves Saga Adenant Trees.pdf&Expires=1727682321&Signature=T0FxO6rSPMuvDHT2lEgbkucUMiTPCDEKdpqqyh2JWwVs9-DIIHo80HGk0Be0YQMD1mn2ucLe0U65DuR4RLchOTyYMRJk4CGimcp1vxAWCAR6w1xezOnRNsAXAiIDjdTYMnHDcuPzBibtGY0vyYd20T88dQ9jdMBMHzyx7vKQ9LN8vDUkZP~3MlloTW0dVWTiH68k22ROueu172opEH44d1vZclR6r2HV1DShAYiBHZOYJKVQz7WiQ29HyIosGkXnCi469Iwu3QCmA1vBUF655WyE4PwEJg66oRyLD1HaB160Iets7uLbVE8cqrF~qNupAzlsQ1GBojfkj15g~PAQlw_&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA](https://d1wqtxts1xzle7.cloudfront.net/89797760/pdf-libre.pdf?1660719801=&response-content-disposition=inline%3B+filename%3DPotensi%20Seeds%20and%20Leaves%20Saga%20Adenanthera%20pavonina%20L.%20Trees.pdf&Expires=1727682321&Signature=T0FxO6rSPMuvDHT2lEgbkucUMiTPCDEKdpqqyh2JWwVs9-DIIHo80HGk0Be0YQMD1mn2ucLe0U65DuR4RLchOTyYMRJk4CGimcp1vxAWCAR6w1xezOnRNsAXAiIDjdTYMnHDcuPzBibtGY0vyYd20T88dQ9jdMBMHzyx7vKQ9LN8vDUkZP~3MlloTW0dVWTiH68k22ROueu172opEH44d1vZclR6r2HV1DShAYiBHZOYJKVQz7WiQ29HyIosGkXnCi469Iwu3QCmA1vBUF655WyE4PwEJg66oRyLD1HaB160Iets7uLbVE8cqrF~qNupAzlsQ1GBojfkj15g~PAQlw_&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA)

Ekowati, VI, et al. (2024). Unlocking Ancient Desire: Validating the Sensual Secret of Sprue Medication From Javanese Manuscripts. *International Journal of*

- Multicultural and Multireligious Understanding*, 11 (6), 54-72.
<http://dx.doi.org/10.18415/ijmmu.v11i6.5745>.
- Elsera, M., Hairun, N., & Sri, W. (2023). Traditional Medicine of the Sungai Guntung Community, Indragiri Hilir Regency. *Dianmika Socio-Cultural Journal*, 25 (2), 262-269. <https://journals.usm.ac.id/index.php/jdsb/article/view/7876/3697>.
- Fatimah, N. & Ratna, A. (2019). Design and Construction of an Automatic Herbal Drink Mixing System Based on Microcontroller. *Journal of Information Technology and Computer Engineering*, 3(1), 8-17.
<http://jitce.fti.unand.ac.id/index.php/JITCE/article/view/26/22>
- Fau, A. (2020). Utilization of Plant Types Used as Ingredients for Making Herbal Medicine in the Area Around Telukdalam, South Nias Regency. *Journal of Education and Development*, 8 (2), 561-566.
<https://journal.ipts.ac.id/index.php/ED/article/view/1830/948>
- Gardjito, M., Harmayani, E., & Suharjono, KI (2021). *JAMU: Authentic Indonesian Healthcare, A Legacy for the Nation: JAMU: The Heritage of the Nation's Health Guard, Original to Indonesia*. Yogyakarta: UGM PRESS.
https://books.google.co.id/books?hl=id&lr=&id=AaBREAAAQBAJ&oi=fnd&pg=PP1&dq=tradisi+sembur+sawan&ots=400zuqhNXm&sig=cnuP-tk5WVcjCJX5XYaD_E0lOxE&redir_esc=y#v=onepage&q&f=false
- Gericke, J. F. C., & Roorda, T. (1901). *Javaansch-Nederlandsch Handwoordenboek*. Amsterdam : Johannes Muller.
- Gunarti, N. Sari., Lia F., & Eko, SW (2023). Counseling on the Benefits of Herbal Medicine for Health for the Community and Students in Karawang Regency. *Community Service Journal*, 4 (2), 5-10.
https://ejurnal.universitas-bth.ac.id/index.php/P3M_JUPEMAS/article/view/884/905
- Hadi, I. (2016). Traditional Unity and Measure Using Hands by Kinari Village: Anthropologist Study. *Salingka, Scientific Journal of Language and Literature*, 13 (1), 49-61.
<http://salingka.kemdikbud.go.id/index.php/SALINGKA/article/view/43>.

- Hastuti, S., Slamet, SY, & Ani, R. (2021). Ecological Politeness on Sedekah Bumi Ceremony in Merapi Mountainside. *International Conference on Language Politeness* , 7-15. <http://dx.doi.org/10.2991/assehr.k.210514.002>.
- Hidayat, SS & Susanti, S. (2024). Complementary Therapy for Mental Health of Postpartum Mothers at Pratama Medical Center Clinic. *Journal of General Health Sciences*, 2 (2), 245-255. <https://journal.arikesi.or.id/index.php/Vitamin/article/view/329/329>
- Huda, N. (2022). Utilization of Selected Spices as Immunity Herbal Medicine in the New Normal Era. *Surya Masyarakat Journal*, 4 (1), 160-168. <https://jurnal.unimus.ac.id/index.php/JSM/article/view/8767/6212>
- Isnawati, DL (2021). Traditional Herbal Drinks as Local Wisdom of the Majapahit Kingdom Community in the 14th Century AD. *Journal of History Education*, 11 (2), 1-10. <https://ejournal.unesa.ac.id/index.php/avatara/article/view/42175>.
- Jelani, JPA & Salmah, JBNM (2021). Features and Local Wisdom of the Malay Community Using Fruits in Medicine. *Malay Journal*, 20 (1), 93-108. <http://journalarticle.ukm.my/16697/1/47710-154487-1-SM.pdf>
- Kencanawaty, G., Chatarina F., & Ari I. (2020). Contribution of Ethnomathematics in Elementary School Mathematics Learning. *Journal of Medives: Journal of Mathematics Education IKIP Veteran Semarang*, 4 (2), 255-262. <https://doi.org/10.31331/medivesveteran.v4i2.1107>.
- Mahmud, A. (2021). Understanding Herbal Poems in the Anthology My Name is a Flower by LK Ara. *Scientific Journal of Language and Literature*, 9 (2), 287-299. <https://totobuang.kemdikbud.go.id/jurnal/index.php/totobuang/article/view/313/175>
- Mulyani, S., et al. (2021). *Essential Oils of Medicinal Plants* . Yogyakarta: Gadjah Mada University Press. https://books.google.co.id/books?hl=id&lr=&id=CXgWEAAAQBAJ&oi=fnd&pg=PA35&dq=+TAPEL+UNTUK+ANAK+WHICH+WHICH+IS+SICK+OF+DIARRHEA&ots=mq3myVdSUL&sig=doE_z4AJaEBvc3BOio

[gGcXnoPCQ&redir_esc=y#v=onepage&q&f=false](#)

- Manapa, IYH (2021). Ethnomathematics: Cultural Wealth of Alor Regency as a Source of Learning Media for Mathematics in Elementary Schools. *Jurnal Numeracy*, 8 (1), 1-24. <https://ejournal.bbg.ac.id/numeracy/article/view/1396/1185>.
- Maulida, A., Indri, KD, & Susilo, Y. (2019). Attitudes and Knowledge towards Jamu in the Yoga First Klaten Community. *Journal of Midwifery and Traditional Health*, 4(2), 57-61. <http://jurnalbidankestrad.com/index.php/jkk/article/view/114/93>
- Mumfangati, T., & Suyami. (2021). *Usada Jaw: Traditional Javanese Medicine for Babies and Children in Serat Primbon Racikan Jampi Volume 1*. Yogyakarta: BPNB DIY.
- Muslim, R., & Mega, N. (2020). An Ethnomathematics Study of the Geulis Umbrella Craftsmen of Tasikmalaya, West Java. *Mosharafa: Journal of Mathematics Education*, 9 (1), 59-70. <https://doi.org/10.31980/mosharafa.v9i1.592>.
- Nilawati, I., Erli, Z., & Tri. ES (2021). Midwifery Care Practice Module with Complementary Approach Services in the Community. College of Health Sciences. <http://repository.stikessaptabakti.ac.id/192/1/modul%20PRAKTIK%20AS UHAN%20KEBIDANAN%20Komplementer%20dalam%20Komunitas.pdf>
- Puaksom, D. (2023). The origins of Scientific Buddhism in Nineteenth Century Thai Intellectual Thouhgt. *Journal of Southeast Asian Studies*, 54 (3), 389-418. <https://doi.org/10.1017/S0022463423000607>.
- Prahmana, RCI (2020). Mathematical Language of Yogyakarta Society: An Ethnographic Study. *Jurnal Elemen*, 6 (2), 277-301. <https://doi.org/10.29408/jel.v6i2.2101>.
- Putri, SDP & Asep, S. (2020). Processing of Saga Seeds as the Main Material for Jewelry. *e-Proceeding of Art & Design*, 7 (2), 4759-4764. <https://openlibrarypublications.telkomuniversity.ac.id/index.php/artdesign/>

[article/view/12116/11926](#)

- Saputri, D. Asih., et al. (2022). Ethnomedicine in Traditional Medicine of Javanese Ethnic Communities in East Buay Madang District, East Oku Regency, South Sumatra. *Mahalayati Media Journal*, 7 (1), 265-275. <https://ejournalmalahayati.ac.id/index.php/medika/article/view/6020/pdf>.
- Sasti, PM (2017). *Terms of Units of Measurement in Javanese*. Semarang: Central Java Language Center, Ministry of Education and Culture. <https://repositori.kemdikbud.go.id/6070/1/Istilah%20Satuan%20Ukuran%20dalam%20Bahasa%20Jawa.Oke.pdf>.
- Sinungharjo, FX, Adji, SEP, & Adji, FT (2023). Javanese Medical Measure Lexicons (Numeral Classifiers) in Serat Primbon Racikan Jampi Jawi. *International Journal of Humanity Studies*, 7 (1), 36-52. <https://doi.org/10.24071/ijhs.v7i1.4998>.
- Sugiarto, et al. (2021). Efforts to Increase Community Immunity against the Covid-19 Delta Pandemic through Making Instant Herbal Medicine. *Journal of Community Empowerment Learning*, 2 (2), 160-166. <https://riset.unisma.ac.id/index.php/JP2M/article/view/13246/10348>
- Sumarni, W., Sudarmin, S., & Sumarti, S. (2019). The Scientification of Jamu: A Study of Indonesia's Traditional Medicine. *Journal of Physics: Conference Series*, 1321 (3), 1-7. <https://doi.org/10.1088/1742-6596/1321/3/032057>.
- Sumarni, W., et al. (2022). Indigenous Knowledge of Indonesian Traditional Medicines in Science Teaching and Learning Using a Science Technology Engineering Mathematics (STEM) Approach. *Cultural Studies of Science Education*, 17, 467-510. <https://doi.org/10.1007/s11422-021-10067-3>.
- Susanto, B., Hake, S., & gLORIA, v. (2019). RDFS-Based Information Representation of Indonesian Traditional Jamu. *Lecture Notes in Engineering and Computer Science: Proceedings of International Multiconference of Engineers and Computer Scientists*, 352-357. https://www.iaeng.org/publication/IMECS2019/IMECS2019_pp352-357.pdf.
- Suwistika, R., Agus, PU, & Ika, P. (2019). Ethnobotany of Medicinal Plants for

- Baby Care of the Using Indigenous Community, Kemiren Village, Banyuwangi Regency. *Journal of Biology and Biology Learning* , 1-11. <http://repository.unmuhjember.ac.id/7042/1/JURNAL.pdf>
- Triandini, IGAAH, et al. (2024). Socialization of the Utilization of Local Sasak Herbs for Pregnant Women's Class Materials. *Journal of Progressive Community Service*, 8 (2), 1639-1647. <https://journal.ummat.ac.id/index.php/jpmb/article/view/23516/9485>
- Utami, NW, Suminto, AS, & Jailani. (2019). Math and Mate in Javanese Primbon: Ethnomathematics Study. *Journal on Mathematics Education*, 10 (3), 341-356. <https://doi.org/10.22342/jme.10.3.7611.341-356>.
- Utami, RE (2020). Wangsalan with Plant Elements. *Philosophica: Journal of Language, Literature, and Culture*, 3 (2), 65-76. <https://doi.org/10.35473/po.v3i2.785>.
- Waruwu, M. (2024). Qualitative Research Approach: Concept, Procedure, Advantages, and Role in Education. *Journal of Educational Research and Evaluation*, 5 (2), 198-211. <https://doi.org/10.59698/afeksi.v5i2.236>.
- Wati, L. Listiana, et al. (2021). Exploration of Ethnomathematics in Gedog Batik. *Journal of Mathematics Learning Research*, 3 (1), 27-34. <http://journal.unirow.ac.id/index.php/jrpm/article/view/259/210>.
- Yuliantoro, A. (2024). *Teaching Poetry Appreciation* . Yogyakarta: Andi Publisher.
- Zaenuri, M., et al. (2021). *Nusantara Ethnomathematics* . Tasikmalaya: Indonesian Brilliant House Association.
- Zahira, F., Indra, MR, & Nia, G. (2022). Ethnomathematics on the Use of Javanese Tradition Weton by the Two Prospective Brides and Grooms. *Proceedings of the National Panel Discussion on Mathematics Education*, 8 , 299-304. <https://proceeding.unindra.ac.id/index.php/DPNPMunindra/article/view/5980/1568>.

APPENDIX 1. BIODATA OF THE PROPOSER
CHAIRMAN BIODATA

Name	Prof. Dr, Suwardi, M.Hum.
NIDN/NIDK	0003046408
Rank/Position	Pembina Utama IV/e/Guru Besar
E-mail	suwardi_fbs@uny.ac.id , suwardi_endraswara@yahoo.com
Sinta ID	001038
Scopus ID	57215664749
ID Orcid	0000-0002-3029-8675
h-Index	39
Citation	13585

Publications in indexed International Journals

No	Article Title	Role (First author, Corresponding author, atau co-author)	Journal Title, Publication Year, Volume, Number P-ISSN/E-ISSN	URL article (if any)
1.	Ecocriticism: Javanese Cosmology and Ecoethic in Tetralogy Romance by Ki Padmasusastra	Co-Author	Proceedings of the International Seminar on Recent Language, Literature, and Local Cultural Studies, 2018	https://www.atlantispress.com/proceedings/basa-18/25906118
2	Environmental wisdom: An observation of ecocriticism towards the javanese cyber literature in 20th century	Co-Author	International Journal of Advanced Science and Technology, 2019	http://serisc.org/journals/index.php/IJAST/index
3	Metaphor as a Strategy of	Co-Author	Proceedings of the International Conference	https://www.atlantispress.com/proceedings/i

	Language Politeness: A Study of the Novel Tetralogy by Ki Padmasusastra		on Language Politeness, 2020	clp-20/125956627
4	Javanese cosmology: Symbolic transformation of names in Javanese novels	Co-Author	HTS Teologiese Studies/Theological Studies, 2021	https://www.ajol.info/index.php/hts/article/view/212493
5	Healthy through Magic: Health Solutions in Mantra Kidung Jawa	Co-Author	Javanologi: International Journal of Javanese Studies, 2021	https://portal.uns.ac.id/javanologi/wp-content/uploads/sites/26/2021/07/

Publications in National Journals Accredited Rank 1 and 2

No	Article Title	Role (First author, Corresponding author, atau co-author)	Journal Title, Publication Year, Volume, Number P-ISSN/E-ISSN	URL article (if any)
1.	Development of Literary Anthropology Through Thesis Writing as a Competitive Superior for the Future	Co-author	Advances in Social Science, Education and Humanities Research, 2018, Vol.231, Hal: 1563-155	http://creativecommons.org/licenses/by-nc/4.0/
2	Pengembangan Teks Dongeng Lokal Masyarakat Kecamatan Tumbang Titi Kalimantan Barat dalam Pembelajaran Bahasa Indonesia untuk Siswa Kelas III	Co-author	Jurnal Pendidikan Dasar, 2018, Vol.6, No.2, Hal: 40-56	http://www.jurnalstkipmelawi.ac.id/index.php/JPD/article/viewFile/141/220

No	Article Title	Role (First author, Corresponding author, atau co-author)	Journal Title, Publication Year, Volume, Number P-ISSN/E-ISSN	URL article (if any)
	Sekolah Dasar (Local Community Fairy Tale Texts Tumbang Titi District, West Kalimantan in Learning Indonesian for Class III Students Elementary school)			
3	Ajaran Budi Pekerti Luhur Dalam Sastra Mistik Penghayat Kepercayaan Untuk Membangun Pendidikan Karakter Bangsa (Teachings of Noble Character in the Mystical Literature of Believers to Build National Character Education)	First author	JISABDA: Jurnal Ilmiah Sastra dan Bahasa Daerah, Serta Pengajarannya, 2019, Vol.1, No.2 , Hal: 31-46	http://journal.upgris.ac.id/index.php/jisabda/article/download/4742/2740
4	Pengembangan model sekolah berkarakter budaya di sekolah dasar di kecamatan Ngaglik (Development of a school model with cultural characteristics in elementary schools in Ngaglik sub-district)	Co-author	Humanika, Kajian Ilmiah Mata Kuliah Umum, 2019, Vol.19, N0.1, Hal: 1-19	https://journal.uny.ac.id/index.php/humanika/article/view/30154

Indexed international seminar/conference proceedings

N o	Article Title	Role (First author, Corresponding author, atau co-	Journal Title, Publication Year, Volume, Number P-ISSN/E-ISSN	URL article (if any)
--------	---------------	--	---	----------------------

		author)		
1	Pembelajaran Etnoliterasi Sastra (Literary Ethnoliteracy Learning)	Firs author	Prosiding Seminar Nasional Himpunan Sarjana Kesusastraan Indonesia (Hiski)," Literasi Sastra Dan Pengajarannya", 2017, Hal: 76-88	https://core.ac.uk/reader/322464550
2	Living Policy In Botani Literature On The Show Of Sengkuni Lakon On Anthropobotanical Perspective Of Literature	Firs author	Proceeding of The International Conference on Literature, 2019, Vol. 1, No. 1, Hal: 562-574	https://jurnal.usk.ac.id/ICOL/article/view/14505
3	Multi-dicipline: postmemory, posthumanism, and post-truth literature	First Author	Prosiding HISKI	
4	Metaphor as a Strategy of Language Politeness: A Study of the Novel Tetralogy by Ki Padmasusastra	First Author	Proceeding International Conference on Language Politeness	
5	Emprit Goreng Commodification in Museum Tembi Rumah BUdaya, Bantul Yogyakarta	2020	International Conferennce on Arts Language and Culture	

Book

No	Book Title	Publication Year	Title Translation	ISBN	Publisher	URL
1.	Metodologi Penelitian	2021	Literary Botany Research	978-602-	Gadjah Mada	

	Botani Sastra		Methodology	386-994-7	Universiti Press	
2.	Teori Kajian Sastra Kritis: Perspektif Tokoh Sastra di Indonesia	2021	Critical Literary Study Theory: Perspectives of Literary Figures in Indonesia	978-602-5586-40-8	Textium	
3.	Keistimewaan Yogyakarta dalam Perspektif Zoologi	2021	The Specialties of Yogyakarta from a Zoological Perspective	978-623-97893-5-0	Grafika Indah	
4.	Keistimewaan Yogyakarta dalam Perspektif Ekologi	2021	Specialties of Yogyakarta from an Ecological Perspective	754239789374	Grafika Indah	
5.	Keistimewaan Yogyakarta dalam Perspektif Gastronomi	2021	Specialties of Yogyakarta from a Gastronomic Perspective	754239789374	Grafika Indah	
6.	Keistimewaan Yogyakarta dalam Perspektif Etnobotani Budaya	2021	The Specialties of Yogyakarta from a Cultural Ethnobotany Perspective	784239789343	Grafika Indah	
7.	Keistimewaan Yogyakarta dalam Perspektif Pedagogi	2021	The Specialties of Yogyakarta from a Pedagogical Perspective	987-623-97893-8-1	Grafika Indah	
	Metodologi Penelitian Fenomenologi Sastra	2021	Literary Phenomenology Research Methodology	978-623-5896-22-9	Eureka Media Aksara	
8	Metodologi Penelitian Posthumanologi Sastra	2022	Literary Posthumanology Research Methodology	978-979-21-7125-9	PT Kanisius	
9	Teori Sastra Multidisiplin (Ed.)	2022	Literary Theory (Ed.)	978-623-6013-51-9	Pustaka Larasan	

10	Teori Kajian Memori Sastra	2022	Theory of Literary Memory Studies	978-6235-382296	Eureka Media Aksara	
11	Metodologi Penelitian Memori Sastra	2022	Literary Memory Research Methodology	978-623-5382-13-5	Eureka Media Aksara	
12	Metodologi Penelitian Hermeneutika Sastra	2022	Literary Hermeneutics Research Methodology	978-602-0899-97-8	Eureka Media Aksara	
13	Keistimewaan Yogyakarta dalam Perspektif Arkeologi	2022	The Specialties of Yogyakarta from an Archaeological Perspective	978-602-1233-37-5	Tandabaca Press	
14	Metodologi Penelitian Arkeologi Sastra	2023	Literary Archaeological Research Methodology	978-602-1239-56-3	Graha Ilmu	

Acquisition of KI

No	KI title	Year of Acquisition	Types of KI	Number	KI status (registered/granted)	URL (if any)
1	Metodologi Penelitian Antropologi Sastra	2015	Books	C00201504198	078117	
2	Rayuan Sastra dan Pariwisata Kata	2020	Books	EC00202028379	000199218	
3	Metodologi Penelitian Botani Sastra	2021	Books	EC00202168433	000298014	
4	Mengolah Rempah: Menggoda Imun Sastra	2021	Books	EC00202173269	000299673	

History of research funded by the Ministry of Education and Culture

No	Title	Year	Funds Approved
1	PENGEMBANGAN MEDIA PEMBELAJARAN BAHASA BERBASIS LINGKUNGAN DAN TEKNOLOGI	2016	112.500.000
2	PENGEMBANGAN MEDIA PEMBELAJARAN BAHASA BERBASIS LINGKUNGAN DAN TEKNOLOGI	2013	100.000.000

Yogyakarta, 30 Januari 2024



Prof. Dr. Suwardi, M.Hum.

NIP. 19640403 199001 1 004

MEMBER 1

Name	Prof. Dr. Marsigit, MA
NIDN/NIDK	0019075707
Rank/Position	IVd/ Pembina Utama Madya/ Guru Besar
E-mail	marsigit@uny.ac.id
Sinta ID	5980631
h-Index	13

Publications in indexed International Journals

No	Article Title	Role (First author, Corresponding author, or co-author)	Journal Name, Year of publication, Volume, Number, P-ISSN/E-ISSN	Article URL (if any)
1	Dewi, HL, & Marsigit, M. (2018). Mathematical creative thinking and problem posing: an analysis of vocational high school students' problem posing	Third author	Journal of Physics: Conference Series, 1097(1),	https://iopscience.iop.org/article/10.1088/1742-6596/1097/1/012134
2.	Putranto, S., & Marsigit, M. (2018). Is peer tutoring with realistic mathematics education approach effective for developing conceptual understanding of slow learners?	Second Author	Journal of Physics: Conference Series, 1097(1), p.012127.	https://iopscience.iop.org/article/10.1088/1742-6596/1097/1/012127/meta
3.	Retnowati, E., Murdiyani, N.M., Marsigit,	Third author	Journal of Physics: Conference Series, 983(1), p.012126. doi	https://iopscience.iop.org/article/10.1088/1742

	M., Sugiman, S., & Mahmudi, A. (2018). Improving pedagogic competence using an e-learning approach for pre-service mathematics teachers.		:10.1088/1742-6596/983/1/012126	- 6596/983/1/012126
--	--	--	---------------------------------	---------------------

Publications in National Journals Accredited Rank 1 and 2

No	Article Title	Role (First author, Corresponding author, or co-author)	Journal Name, Year of publication, Volume, Number, P-ISSN/E-ISSN	Article URL (if any)
1.	Fahmi, S., & Marsigit, M. (2014). Development of Macromedia Flash Multimedia with a Contextual Approach and Its Effectiveness on Students' Attitudes towards Mathematics. Pythagoras:	Second Author	Journal of Mathematics Education, 9(1), 90-98. doi:	https://doi.org/10.21831/pg.v9i1.9071
2.	Zaini, A., & Marsigit, M. (2014). Comparison of the Effectiveness of Mathematics Learning with Realistic and Conventional Mathematics Approaches in View of Students' Mathematical Reasoning and Communication Abilities.	Second Author	Journal of Mathematics Education Research, 1(2), 152-163.	https://doi.org/10.21831/jrpm.v1i2.2672
3.	Siregar, N., & Marsigit, M. (2015). The influence of the discovery approach which emphasizes analogous aspects on learning	Second Author	Journal of Mathematics Education Research, 2(2), 224 -	https://doi.org/10.21831/jrpm.v2i2.7336

No	Article Title	Role (First author, Corresponding author, or co-author)	Journal Name, Year of publication, Volume, Number, P-ISSN/E-ISSN	Article URL (if any)
	achievement, reasoning abilities, spiritual emotional intelligence.		234.	
4.	Nasrullah, A., & Marsigit, M. (2016). The effectiveness of problem posing and problem solving is seen from the achievement of mathematical competencies, methods and attitudes. Pythagoras:	Second Author	Journal of Mathematics Education, 11(2), 123-135.	https://doi.org/10.21831/pg.v11i2.11180
5.	Pertiwi, I., & Marsigit, M. (2017). Implementation of character education in junior high school mathematics learning in Yogyakarta City.	Second Author	Journal of Mathematics Education Research, 4(2), 153-165.	https://doi.org/10.21831/jrpm.v4i2.11241
6.	Prasekti, E., & Marsigit, M. (2017). Comparison of the effectiveness of problem-based learning and project-based learning methods in high school statistics learning.	Second Author	Pythagoras: Journal of Mathematics Education, 12(2), 161-172.	https://doi.org/10.21831/pg.v12i2.17714
7.	Wijayanti, L., & Marsigit, M. (2015). Development of Learning Tools for Fraction Material Based on Bruner's Theory in Class IV of SD Labschool Unesa.	Second Author	Prima Education Journal, 3(2), 143 - 154.	https://doi.org/10.21831/jpe.v3i2.6460

Indexed international seminar/conference proceedings

No	Article Title	Role (First author, Corresponding author, or co-author)	Journal Name, Year of publication, Volume, Number, P-ISSN/E-ISSN	Article URL (if any)

Book

No	Book title	Year of Publication	ISBN	Publisher	URL (if any)
1	Published book: "Character Education in a Theory and Practice Perspective (a chapter in Character Education in a Theory and Practice Perspective)"	2011	ISBN: 978-979-8418-63-1	UNY Press	http://library.fis.uny.ac.id/elibfis/index.php?p=show_detail&id=1795
2	Published book: "Mathematics Teachers Professional Development through Lesson Study In Indonesia (a chapter in Lesson Study: Challenges In Mathematics Education)"	2015	ISBN: 978-981-4641-08-1	World Scientific (Singapore)	https://www.worldscientific.com/worldscibooks/10.1142/7045#t=aboutBook
3	Mathematics education curriculum development	2018	ISBN: 978-602-5584-12-1; EISBN: 978-602-5584-	Academy Media	-

No	Book title	Year of Publication	ISBN	Publisher	URL (if any)
	"		13-8		
4	Published book: "Primary school mathematics : A reflective realistic approach"	2018	978-602-51220-0-2; EISBN: 978-602-51220-1-9	Academy Media	-
5	Published book: "Philosophy of mathematics and praxis of mathematics education"	2018	ISBN: 978-602-452-967-3	Grasindo	-

Acquisition of KI

No	KI title	Year of Acquisition	Types of KI	Number	KI status (registered/granted)	URL (if any)

History of research funded by the Ministry of Education and Culture

No	Title	Year	Funds Approved
1.	"Development of Subject Specific Pedagogy (SSP) Based on Ethnomathematics to Improve Elementary School Students' Mathematical Literacy Abilities"	2018	110 million
2.	"Designing Culture-based Learning Instruction to Develop Mathematical Literacy (Designing Culture-Based Mathematics Learning to Develop Mathematical Literacy)"	2018	53 million
3.	"Development of Subject Specific Pedagogy (SSP) Based on Ethnomathematics to Improve Elementary School Students' Mathematical Literacy Abilities" (Second Year)	2019	110 million

MEMBER 2

Name	Venny Indria Ekowati, M.Litt.
NIDN/NIDK	0017127901
Rank/Position	Pembina Tk.I/ Lektor Kepala
E-mail	venny@uny.ac.id
Sinta ID	6023646
h-Index	7

Publications in indexed International Journals

No.	Article Title	Role (First author, Corresponding author, or co-author)	Journal Name, Year of publication, Volume, Number, P-ISSN/E-ISSN	Article URL (if any)
1	Character Education in Serat Sabdajati The Last R.Ng. Ranggawarsita's Work	Co-Author	Cakrawala Pendidikan, 43(3), 2022	https://doi.org/10.21831/cp.v43i3.48760
2	Leadership Education of Javanese King's Character in <i>Serat Wulang Reh</i>	Co-Author	Journal of Advanced Research in Dynamical and Control Systems, 11(12 special issue), 2019 1943-023X	https://doi.org/10.5373/JARDCS/V11SP12/20193224
3	Program for International Student Assessment-Based Analysis for Javanese Test Juni 2023	First Author	International Journal of Evaluation and Research in Education (IJERE) Vol.: 12 No.2 ISSN/ISBN: p-ISSN: 2252-8822, e-ISSN: 2620-5440 Penerbit: Institute of Advanced Engineering and Science Hal: 1122-1135	http://doi.org/10.11591/ijere.v12i2.24426

Publications in National Journals Accredited Rank 1 and 2

No	Article Title	Role (First author, Corresponding author, or co-author)	Journal Name, Year of publication, Volume, Number, P-ISSN/E-ISSN	Article URL (if any)
1.	Traditional Javanese Medicine in the <i>Jampi Jawi Primbon Manuscript</i>	Co-Author	Litera, 2017, 16(1) 2460-8319	https://doi.org/10.21831/ltr.v16i1.14257
2	Assessing the needs for Javanese learning for speakers of other languages	First Author	DIKSI Vol. 31, No. 2, pp. 155-170	https://doi.org/10.21831/diksi.v31i1.64944

Indexed international seminar/conference proceedings

No	Article Title	Role (First author, Corresponding author, or co-author)	Nama Jurnal, Tahun terbit, Volume, Nomor, P-ISSN/E-ISSN	URL artikel (jika ada)
1.	Javanese Letters: Symbols Of Javanese Civilization:(Introduction, History, Philosophical Values, Learning Methods, Utilizations, To Uch Of Technology In Javanese Letters)	First author	1st Mae Fah Luang University International Conference	
2.	Storytelling in High Education Institutions: How To Enrich The Learning Experience in Multidiscipline Areas?	Third Author	INTED2017 Proceedings (2017)	

BOOK

No	Book Title	Title Translation	Year of Publication	ISBN	Publisher	URL (if any)
1.	Alih Aksara Menak Amir Hamza (Add 12309) Jilid 2	Amir Hamza's Menak Transliteration (Add 12309) Volume 2	2022	978-623-7332-8-0	Dinas Kebudayaan Daerah Istimewa Yogyakarta	
2.	Gigih	Persistent	2022	978-623-5677-53-8	Balai Bahasa Yogyakarta	
3.	Alih Aksara Menak Amir Hamza (Add 12309) Jilid 1	Amir Hamza's Menak Transliteration (Add 12309) Volume 1	2021	978-623-7332-8-0	Dinas Kebudayaan Daerah Istimewa Yogyakarta	
4.	Kodikologi: Teori, Metode, dan Aplikasinya dalam Manuskrip Jawa	Codicology: Theory, Methods, and Applications in Javanese Manuscripts	2021	978-623-6063-43-9	Cantrik Pustaka	
5.	Dunia Manuskrip Jawa	The World of Javanese Manuscripts	2018	978-602-6645-89-0	Cantrik Pustaka	
6.	Filologi Jawa: Panduan Lengkap Praktik Penelitian Filologi	Javanese Philology: A Complete Guide to Philological Research Practices	2017	978-602-6338-95-2	UNY Press	
7	Buku Pendidikan Khas Kejojjaan Tingkat Menengah	Typical Middle Level Jogjaan Education Book	2023	9786236392744	DIKPORA DIY	

Perolehan HKI

No	KI title	Year of Acquisition	Types of KI	Number	KI status (registered/granted)	URL (if any)
1.	Kodikologi	2022	Buku	000343185	Granted	
2.	Dunia Manuskrip Jawa	2018	Buku	000142312	Granted	
3.	Filologi Jawa	2018	Buku	000111814	Granted	

Riwayat penelitian didanai kemdikbud

No	Title	Year	Funds Approved
1.	Fitotherapy dalam Manuskrip-Manuskrip Jawa Th. I	2013	40 juta
2.	Fitotherapy dalam Manuskrip-Manuskrip Jawa Th. I	2014	54 juta
3.	Pengobatan Tradisional pada Manuskrip-manuskrip Mangkunegaran, Kasunanan Surakarta, dan Museum Radyapustaka Tahun I	2015	50 juta
4.	Pengobatan Tradisional pada Manuskrip-manuskrip Mangkunegaran, Kasunanan Surakarta, dan Museum Radyapustaka Tahun I	2016	54 juta
5.	Aplikasi Motif Iluminasi Manuskrip Jawa dalam Media Komunikasi Visual	2017	48juta

Yogyakarta, 24 Januari 2024



Venny Indria Ekowati, S.Pd., M.Litt.
NIP 197912172003122003.



**DIREKTORAT RISET DAN PENGABDIAN KEPADA MASYARAKAT
UNIVERSITAS NEGERI YOGYAKARTA**

SURAT PERJANJIAN PELAKSANAAN PENELITIAN

No. FRM/LPPM-PNL/302

Revisi : 01

Tgl 01 Maret 2019

Hal 1 dari 6

**PERJANJIAN PELAKSANAAN PENELITIAN
PENELITIAN KERJASAMA INTERNASIONAL (LUAR ASIA TENGGARA) BATCH 2
Nomor : T/31.2/UN34.9/PT.01.03/2024**

Pada hari ini **Kamis** tanggal **Dua** bulan **Mei** tahun **Dua Ribu Dua Puluh Empat** kami yang bertanda tangan di bawah ini :

1. Prof. Dr. Yudik Prasetyo, S.Or., M.Kes. : Direktur Direktorat Riset dan Pengabdian kepada Masyarakat Universitas Negeri Yogyakarta yang beralamat di Kampus UNY Karangmalang Yogyakarta dalam hal ini bertindak untuk dan atas nama UNY; selanjutnya disebut **PIHAK PERTAMA**.
2. Prof. Dr. Drs. Suwardi, M.Hum. : Dosen dari Fakultas Bahasa, Seni, dan Budaya, Universitas Negeri Yogyakarta, yang beralamat di Kampus UNY Karangmalang Yogyakarta, dalam hal ini bertindak sebagai Ketua Pelaksana Penelitian Tahun Anggaran 2024 untuk selanjutnya disebut **PIHAK KEDUA**.

PIHAK PERTAMA dan PIHAK KEDUA yang selanjutnya secara bersama-sama disebut **PARA PIHAK**
Dengan berdasarkan pada ketentuan sebagaimana tersebut di bawah ini:

**PASAL 1
DASAR HUKUM**

1. Undang-Undang Republik Indonesia Nomor 12 Tahun 2012 tentang Pendidikan Tinggi;
2. Peraturan Pemerintah Republik Indonesia Nomor 35 Tahun 2022 tentang Perguruan Tinggi Negeri Badan Hukum Universitas Negeri Yogyakarta;
3. Peraturan Menteri Riset, Teknologi dan Pendidikan Tinggi Republik Indonesia Nomor 20 Tahun 2018 tentang Penelitian;
4. Keputusan Menteri Pendidikan dan Kebudayaan Nomor: 5723/MPK/RHS/KP/2021 tentang Pengangkatan Rektor Universitas Negeri Yogyakarta Periode Tahun 2021 - 2025.
5. Peraturan Rektor Universitas Negeri Yogyakarta Nomor 24 Tahun 2014 tentang Rencana Pengembangan Jangka Panjang UNY 2015 – 2025;
6. Peraturan Rektor Universitas Negeri Yogyakarta Nomor 51 Tahun 2022 tentang Organisasi dan Tata Kerja Universitas Negeri Yogyakarta;



**DIREKTORAT RISET DAN PENGABDIAN KEPADA MASYARAKAT
UNIVERSITAS NEGERI YOGYAKARTA**

SURAT PERJANJIAN PELAKSANAAN PENELITIAN

No. FRM/LPPM-PNL/302

Revisi : 01

Tgl 01 Maret 2019

Hal 2 dari 6

7. Keputusan Rektor Universitas Negeri Yogyakarta Nomor: B/335/UN34/KP.08.01/2024 tanggal 26 Maret 2024 tentang Pemberhentian dan Pengangkatan Direktur Direktorat Riset dan Pengabdian kepada Masyarakat Universitas Negeri Yogyakarta Periode Tahun 2024-2025;
8. Rencana Kerja dan Anggaran Direktorat Riset dan Pengabdian kepada Masyarakat Universitas Negeri Yogyakarta Tahun 2024;
9. Surat Keputusan Rektor Universitas Negeri Yogyakarta Nomor: 23.1/UN34/III/2024 tanggal 1 Maret 2024 tentang Penerima Hibah Penelitian Dana Universitas Negeri Yogyakarta Tahun 2024 Tahap 2.

PIHAK PERTAMA dan PIHAK KEDUA secara bersama-sama bersepakat mengikatkan diri dalam suatu Perjanjian Pelaksanaan Penelitian dengan ketentuan dan syarat-syarat sebagai berikut:

**PASAL 2
PELAKSANAAN PENELITIAN**

- (1) PIHAK PERTAMA memberi tugas kepada PIHAK KEDUA, dan PIHAK KEDUA menerima tugas tersebut sebagai penanggung jawab pelaksanaan Penelitian dengan judul :**"COMPARISON OF JAVANESE MYSTICISM THROUGH THE PETUNG TRADITION IN THE PRIMBON COLLECTION OF SONOBUDOYO LIBRARY AND THE NATIONAL LIBRARY OF AUSTRALIA WITH AN ETHNOMATHEMATICS PERSPECTIVE"**
- (2) PIHAK PERTAMA memberi tugas kepada PIHAK KEDUA, dan PIHAK KEDUA bersedia dipantau dan dievaluasi oleh PIHAK PERTAMA.
- (3) PIHAK PERTAMA memberikan dana Penelitian dengan judul sebagaimana tercantum dalam ayat (1) sebesar **Rp. 75.000.000 (Tujuh Puluh Lima Juta Rupiah)** sesuai Surat Keputusan Rektor Universitas Negeri Yogyakarta 23.1/UN34/III/2024 tanggal 1 Maret 2024 tentang Penerima Hibah Penelitian Dana Universitas Negeri Yogyakarta Tahun 2024 Tahap 2.
- (4) PIHAK KEDUA berhak menerima dana tersebut pada ayat (1) dan berkewajiban menggunakan sepenuhnya untuk pelaksanaan penelitian dengan judul sebagaimana tercantum dalam ayat (1) sampai selesai sesuai ketentuan pembelanjaan keuangan negara
- (5) Dalam hal PIHAK PERTAMA berhenti dari jabatannya sebelum Surat Perjanjian ini berakhir, maka PIHAK PERTAMA akan menyerahkan tanggungjawabnya kepada pejabat baru yang menggantikan.
- (6) Perubahan terhadap susunan tim pelaksana dan substansi penelitian dapat dibenarkan apabila telah mendapat persetujuan dari PIHAK PERTAMA.
- (7) Apabila Ketua tim pelaksana penelitian tidak dapat menyelesaikan penelitian atau mengundurkan diri, maka PIHAK KEDUA mengusulkan persetujuan tertulis penggantian Ketua tim pelaksana penelitian yang merupakan salah anggota kepada PIHAK PERTAMA.
- (8) Susunan tim pelaksana penelitian sebagai berikut: Prof. Dr. Drs. Suwardi, M.Hum. (Ketua Peneliti), dengan: Venny Indria Ekowati, S.Pd., M.Litt. (Anggota 1); Prof. Dr. Marsigit, MA. (Anggota 2).



DIREKTORAT RISET DAN PENGABDIAN KEPADA MASYARAKAT
UNIVERSITAS NEGERI YOGYAKARTA

SURAT PERJANJIAN PELAKSANAAN PENELITIAN

No. FRM/LPPM-PNL/302

Revisi : 01

Tgl 01 Maret 2019

Hal 3 dari 6

PASAL 3

JANGKA WAKTU PELAKSANAAN PENELITIAN

Jangka waktu pelaksanaan penelitian sebagaimana dimaksud dalam Pasal 2 terhitung mulai ditandatangani perjanjian ini sampai dengan tanggal **15 Oktober 2024**.

PASAL 4

HAK DAN KEWAJIBAN

- (1) PIHAK PERTAMA mempunyai kewajiban :
 - a. Memberikan kontrak pelaksanaan penelitian pada PIHAK KEDUA
 - b. Mengkoordinir dan bertanggung jawab atas terlaksananya penelitian
 - c. Melakukan penjaminan mutu penelitian
 - d. Memantau pengunggahan ke laman SIMPPM
- (2) PIHAK KEDUA mempunyai kewajiban :
 - a. Melaksanakan penelitian sesuai dengan kaidah penelitian sampai dengan selesai penelitian
 - b. Mempertanggungjawabkan hasil penelitian
 - c. Mempertanggungjawabkan penggunaan dana penelitian sesuai dengan peraturan yang berlaku
 - d. Melakukan unggahan ke laman SIMPPM: laporan perkembangan penelitian, luaran penelitian dan laporan akhir penelitian.

PASAL 5

CARA PEMBAYARAN

- (1) Pembayaran dana Penelitian ini akan dilaksanakan melalui Direktorat Riset dan Pengabdian kepada Masyarakat UNY dan dibayarkan ke PIHAK KEDUA dengan ketentuan sebagai berikut :
 - a. Pembayaran Tahap Pertama (70%) sebesar **Rp. 52.500.000 (Lima Puluh Dua Juta Lima Ratus Ribu Rupiah);**
 - b. Pembayaran Tahap Kedua (30%) sebesar **Rp. 22.500.000 (Dua Puluh Dua Juta Lima Ratus Ribu Rupiah);**
- (2) Pembayaran pendanaan penelitian Tahap Pertama sebagaimana dimaksud pada ayat (1) huruf a, diberikan setelah Surat Perjanjian Penelitian ditandatangani.
- (3) Pembayaran Tahap kedua sebagaimana dimaksud pada ayat (1) huruf b dibayarkan kepada PIHAK KEDUA dengan ketentuan apabila PIHAK KEDUA telah menyerahkan ke PIHAK PERTAMA *hardcopy* dari laporan hasil penelitian sebanyak 1 (satu) eksemplar dan luaran wajib dan luaran tambahan penelitian sebanyak 1 (satu) eksemplar, Surat Pernyataan Tanggungjawab Belanja (SPTB) dan salinan bukti penggunaan anggaran sebanyak 1 (satu) eksemplar.



DIREKTORAT RISET DAN PENGABDIAN KEPADA MASYARAKAT
UNIVERSITAS NEGERI YOGYAKARTA

SURAT PERJANJIAN PELAKSANAAN PENELITIAN

No. FRM/LPPM-PNL/302

Revisi : 01

Tgl 01 Maret 2019

Hal 4 dari 6

PASAL 6

PERTANGGUNGJAWABAN AKADEMIK

- (1) PIHAK KEDUA berkewajiban mengunggah ke laman SIMPPM dokumen sebagai berikut :
 - a. Laporan akhir penelitian;
 - b. Luaran penelitian;paling lambat tanggal **5 November 2024**.
- (2) PIHAK KEDUA berkewajiban menyerahkan ke PIHAK PERTAMA dokumen sebagai berikut dalam bentuk *softcopy* dan *hardcopy*:
 - a. laporan penelitian;
 - b. luaran penelitian;
 - c. Surat Pernyataan Tanggungjawab Belanja (SPTB);
 - d. *Hardcopy* dari laporan hasil penelitian sebanyak 1 (satu) eksemplar dan luaran penelitian sebanyak 1 (satu) eksemplar, Surat Pernyataan Tanggungjawab Belanja (SPTB) dan salinan bukti penggunaan dana sebanyak 1 (satu) eksemplar dengan ketentuan sebagai berikut :
 - i. Bentuk/ukuran kertas ukuran A4;
 - ii. Warna sampul ;
 - iii. Di bagian bawah cover ditulis :

Dibiayai oleh Universitas Negeri Yogyakarta Berdasarkan Surat Keputusan Rektor Universitas Negeri Yogyakarta 23.1/UN34/III/2024 tanggal 1 Maret 2024 tentang Penerima Hibah Penelitian Dana Universitas Negeri Yogyakarta Tahun 2024 Tahap 2.paling lambat tanggal **10 November 2024**.
- (3) PIHAK KEDUA berkewajiban untuk melaporkan perkembangan pencapaian target luaran kepada PIHAK PERTAMA.
- (4) Mempresentasikan hasil penelitiannya pada seminar yang akan dilaksanakan oleh PIHAK PERTAMA
- (5) Luaran penelitian yang berupa publikasi ilmiah wajib mencantumkan pemberi dana penelitian.

PASAL 7

PERTANGGUNGJAWABAN KEUANGAN

- (1) PIHAK KEDUA berkewajiban mempertanggungjawabkan pembelanjaan dana yang telah diterima dari PIHAK PERTAMA dan menyimpan bukti-bukti pengeluaran yang telah disesuaikan dengan ketentuan pembelanjaan keuangan Negara.
- (2) PIHAK KEDUA berkewajiban mengembalikan sisa dana yang tidak dibelanjakan kepada PIHAK PERTAMA untuk selanjutnya disetorkan ke Universitas Negeri Yogyakarta.
- (3) Biaya pajak materai dalam surat perjanjian ini, seminar proposal dan seminar hasil penelitian dan pajak yang timbul dari kegiatan penelitian dibebankan pada PIHAK KEDUA



**DIREKTORAT RISET DAN PENGABDIAN KEPADA MASYARAKAT
UNIVERSITAS NEGERI YOGYAKARTA**

SURAT PERJANJIAN PELAKSANAAN PENELITIAN

No. FRM/LPPM-PNL/302

Revisi : 01

Tgl 01 Maret 2019

Hal 5 dari 6

**PASAL 8
SANKSI**

- (1) Apabila sampai batas waktu perjanjian PIHAK KEDUA belum menyerahkan laporan akhir hasil penelitian kepada PIHAK PERTAMA, maka PIHAK KEDUA dikenakan sanksi berupa bunga keterlambatan sebesar 1‰ (satu permil) setiap hari keterlambatan sampai dengan setinggi-tingginya 5% (lima persen) dari nilai surat perjanjian pelaksanaan penelitian, terhitung dari tanggal jatuh tempo yang telah ditetapkan sampai dengan berakhirnya pembayaran dana penelitian oleh PIHAK PERTAMA.
- (2) Bagi Peneliti yang tidak dapat menyelesaikan kewajibannya dalam Tahun Anggaran yang sedang berjalan dan waktu proses pencairan biayanya telah berakhir, maka seluruh dana yang belum sempat dicairkan dinyatakan hangus dan kembali ke Universitas Negeri Yogyakarta.
- (3) Apabila PIHAK KEDUA tidak dapat melaksanakan tugas sebagaimana dimaksud dalam Pasal 1 maka harus mengembalikan seluruh dana yang telah diterimanya kepada PIHAK PERTAMA, untuk selanjutnya disetor ke Universitas Negeri Yogyakarta.
- (4) Apabila dikemudian hari terbukti bahwa judul penelitian sebagaimana dimaksud dalam Pasal 2 dijumpai adanya indikasi plagiat dengan penelitian lain dan/atau diperoleh indikasi ketidakjujuran dan itikad kurang baik yang tidak sesuai dengan kaidah ilmiah, maka penelitian tersebut dinyatakan batal dan PIHAK KEDUA wajib mengembalikan seluruh dana penelitian yang telah diterimanya kepada PIHAK PERTAMA untuk selanjutnya disetor ke Universitas Negeri Yogyakarta.
- (5) Dalam hal tidak dipenuhinya Pertanggungjawaban Akademik sebagaimana dimaksud Pasal 6 dan Pertanggungjawaban Keuangan sebagaimana dimaksud Pasal 7, maka PIHAK KEDUA dikenai sanksi administratif.

**PASAL 9
HASIL PENELITIAN**

- (1) Hasil Penelitian berupa Hak Kekayaan Intelektual dari pelaksanaan penelitian tersebut, dimiliki Universitas Negeri Yogyakarta dan hak invensinya dimiliki oleh peneliti dan diatur sesuai dengan peraturan dan perundang-undangan yang berlaku.
- (2) Setiap publikasi, makalah, dan/atau ekspos dalam bentuk apapun yang berkaitan dengan hasil penelitian ini wajib mencantumkan pemberi dana dalam hal ini Universitas Negeri Yogyakarta;
- (3) Luaran wajib berupa publikasi ilmiah memiliki status terbit (*published*) pada tahun 2025 dan diunggah di simppm;
- (4) Hasil penelitian berupa peralatan dan atau alat (barang inventaris) yang dibeli dari kegiatan penelitian ini adalah milik negara atas nama Universitas Negeri Yogyakarta.



DIREKTORAT RISET DAN PENGABDIAN KEPADA MASYARAKAT
UNIVERSITAS NEGERI YOGYAKARTA

SURAT PERJANJIAN PELAKSANAAN PENELITIAN

No. FRM/LPPM-PNL/302

Revisi : 01

Tgl 01 Maret 2019

Hal 6 dari 6

**PASAL 10
KEADAAN KAHAR**

- (1) PARA PIHAK dibebaskan dari tanggungjawab atas keterlambatan atau tidak terlaksananya kewajiban seperti tercantum dalam perjanjian penelitian disebabkan atau diakibatkan oleh peristiwa atau kejadian diluar kekuasaan PARA PIHAK yang dapat digolongkan sebagai keadaan memaksa (*force majeure*) yang secara langsung mempengaruhi terlaksananya perjanjian penelitian, antara lain : bencana alam, wabah penyakit, kebakaran, perang, blokade ekonomi, sabotase, revolusi, pemberontakan, kekacauan, huru-hara, kerusuhan, mobilisasi, keadaan darurat, gangguan navigasi;
- (2) Apabila terjadi keadaan memaksa (*force majeure*) sebagaimana dimaksud pada ayat (1) di atas, maka pihak yang mengalami wajib memberitahukan kepada pihak yang berwenang secara tertulis, selambat-lambatnya dalam waktu 7 (tujuh) hari kerja sejak terjadinya keadaan memaksa (*force majeure*) untuk mendapatkan pengesahan, dan PARA PIHAK dengan i'tikat baik segera membicarakan penyelesaiannya.

**PASAL 11
PENUTUP**

- (1) Apabila terjadi perselisihan antara PARA PIHAK dalam pelaksanaan perjanjian penelitian ini akan dilakukan penyelesaian secara musyawarah;
- (2) Surat Perjanjian pelaksanaan penelitian ini dibuat rangkap 2 (dua), dan dibubuhi meterai sesuai dengan ketentuan yang berlaku, dan mempunyai kekuatan hukum yang sama.
- (3) Pasal-pasal dalam perjanjian ini bersifat mengikat secara mutlak, apabila terjadi perubahan atau penambahan terhadap isi perjanjian ini, PIHAK PERTAMA dan PIHAK KEDUA dapat melakukan musyawarah dan dituangkan dalam Addendum Perjanjian yang merupakan bagian yang tidak terpisahkan dari perjanjian ini.

PIHAK PERTAMA



Prof. Dr. Yudik Prasetyo, S.Or., M.Kes.
NIDN: 0015088201

PIHAK KEDUA



Prof. Dr. Drs. Suwardi, M.Hum.
NIDN: 0003046408



DIREKTORAT RISET DAN PENGABDIAN KEPADA MASYARAKAT
UNIVERSITAS NEGERI YOGYAKARTA

SURAT PERJANJIAN PELAKSANAAN PENELITIAN

No. FRM/LPPM-PNL/302

Revisi : 01

Tgl 01 Maret 2019

Hal 6 dari 6

**PASAL 10
KEADAAN KAHAR**

- (1) PARA PIHAK dibebaskan dari tanggungjawab atas keterlambatan atau tidak terlaksananya kewajiban seperti tercantum dalam perjanjian penelitian disebabkan atau diakibatkan oleh peristiwa atau kejadian diluar kekuasaan PARA PIHAK yang dapat digolongkan sebagai keadaan memaksa (*force majeure*) yang secara langsung mempengaruhi terlaksananya perjanjian penelitian, antara lain : bencana alam, wabah penyakit, kebakaran, perang, blokade ekonomi, sabotase, revolusi, pemberontakan, kekacauan, huru-hara, kerusuhan, mobilisasi, keadaan darurat, gangguan navigasi;
- (2) Apabila terjadi keadaan memaksa (*force majeure*) sebagaimana dimaksud pada ayat (1) di atas, maka pihak yang mengalami wajib memberitahukan kepada pihak yang berwenang secara tertulis, selambat-lambatnya dalam waktu 7 (tujuh) hari kerja sejak terjadinya keadaan memaksa (*force majeure*) untuk mendapatkan pengesahan, dan PARA PIHAK dengan i'tikat baik segera membicarakan penyelesaiannya.

**PASAL 11
PENUTUP**

- (1) Apabila terjadi perselisihan antara PARA PIHAK dalam pelaksanaan perjanjian penelitian ini akan dilakukan penyelesaian secara musyawarah;
- (2) Surat Perjanjian pelaksanaan penelitian ini dibuat rangkap 2 (dua), dan dibubuhi meterai sesuai dengan ketentuan yang berlaku, dan mempunyai kekuatan hukum yang sama.
- (3) Pasal-pasal dalam perjanjian ini bersifat mengikat secara mutlak, apabila terjadi perubahan atau penambahan terhadap isi perjanjian ini, PIHAK PERTAMA dan PIHAK KEDUA dapat melakukan musyawarah dan dituangkan dalam Addendum Perjanjian yang merupakan bagian yang tidak terpisahkan dari perjanjian ini.

PIHAK PERTAMA



Prof. Dr. Yudik Prasetyo, S.Or., M.Kes.
NIDN: 0015088201

PIHAK KEDUA

Prof. Dr. Drs. Suwardi, M.Hum.
NIDN: 0003046408