

## Mathematical Language of Suku Abun in Tambraw Regency of Southwest Papua

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### ABSTRACT

The Abun tribe is located in Tambraw Province of Southwest Papua. There are a number of Abun tribal cultures that are closely related to the context of learning mathematics. However, educators in eastern Indonesia have not seen much of this culture as a context that can be used as a starting point in mathematics learning. Thus, this study aims to explore the mentioning of number words in the Abun tribal language that can be used as a starting point in mathematics learning. The study uses source ethnographic studies of library studies, field observations, and interviews with sources who understand the Abun tribal language well to clarify and/or provide greater understanding of the results of the literary study collected. The results of the research showed that there are several mathematical words used by the community of Tambraw in the Abun tribal language that can be used as a starting point in learning mathematics. This mathematical language includes the mentioning of numbers from 0 to 9.

**Keywords:** Language of Numbers, Suku Abun, Ethnomatematics

### INTRODUCTION

In today's modern era, it can be recognized that mathematics is one of the important subjects in formal school. However, teaching mathematics and transferring knowledge to students optimally is a difficult thing to do. (Gazali, 2016). The implementation of the 2013 revised edition of the curriculum as a symbolic reform in mathematics education in Indonesia for the present time has proved to provide a lot of learning demands that are quite heavy for students. Low student interest in mathematics is due to conventional mathematical learning processes. The teaching of mathematics in the school is disruptive, and so much to use contextual media so that what is learned by the student is not in line with real life. Mathematics is a bridge between mathematics and everyday life. Another consideration is that mathematics acquired in schools does not match the way of life or culture of local communities, making it difficult for students to understand math. One way to develop the intellectual capacity of students through cultural-based mathematical learning known as the term ethnomatematics.

Wahyuni (2013) is ethnomatematics that covers the mathematical ideas, thinking and practices developed by all cultures in the unity of life run by local communities downstream. The concepts of mathematics learned by students can be combined with local cultures around their surroundings (Maryati & Prahmana, 2018) so that they can learn from two sides, local culture and mathematical concepts. To facilitate the communication of mathematics through culture.

The language of the student becomes one of the essential things in learning

mathematics, in which the student is able to use the term or language they have in defining a mathematical concept. (Risdiyanti, Prahmana, & Shahrill, 2019). Furthermore, the culture of a region plays a significant role in the mathematical treasury of the students, so that a number of students recognize mathematics through the language or culture of their area rather than using mathematic terms directly. (Rakhmawati, 2016; Supriadi, Arisetyawan, & Tiurlina, 2016). (Prahmana, 2020) Student languages that originate from student experiences in a culture that has mathematical elements have a positive impact on student math understanding. Therefore, the experience of the students related to the language used on a daily basis can have a good effect on the student's mathematical understanding.

Some researchers have documented the results of their research related to the use of regional culture in mathematical learning, known as the term ethnomatematics. (Rakhmawati, 2016; Supriadi, Arisetyawan, & Tiurlina, 2016; Rahayu, Somakim, & Hartono, 2018; Risdiyanti & Prahmana, 2018; Pramudita & Rosnawati, 2019; Risdiyanti, Prahmana, & Shahrill, 2019). However, few researchers have explored the Abun tribal culture in an attempt to find mathematical elements that can serve as a starting point in learning mathematics. The Abun tribe region located in the Tambraw district of the southwest Papua province is still largely inhabited by indigenous people or more often known as Indigenous inhabitants, whom they grow and develop from birth along with the growth and development of the culture itself in Tambraw. Therefore, this research aims to conduct a comprehensive study of the language of mathematical numbers of students who can be used as a starting point in mathematics study-teaching activities in the region of East Indonesia in particular Tambraw district.

## LITERATURE REVIEW

D'Ambrosio (1985) was a Brazilian mathematician. "Ethnomathematics and its place in the history and pedagogy of mathematics; For the Learning of Mathematics, It has become a reference for researchers on mathematics and culture or a popular approach called ethnomathematics. Definition of Ethnomathematics "the mathematics which is practiced among identifiable cultural groups such as national-tribe societies, labour groups, children of certain age brackets and professional classes". Therefore, D'Ambrosio believes that when children learn mathematics they will be influenced by the lives, experiences and cultures that have been constructed in them previously acquired from the environment, families and local communities.

Mathematical concepts derived from everyday life experiences (White & Mitchelmore, 2010). A knowledge system developed to solve problems related to numbers, relationships, and space in everyday life. (Barton dalam Min Shuet al, 2013). Therefore, the design of mathematics and teaching curriculum should include student cultural experiences in order to the goal of equality in mathematical learning.

Koentjaraningrat defines that the language language can determine the culture of a group of societies passed down from generation to generation. Regional languages are a valuable asset of the state, but regional languages is the wealth of the community. The regional language can be described as an image of an independent community, and the regional language also includes the wisdom of the community. It can be said that the local language is a reflection of society. (Widianto, 2018).

Cultural studies that have a mathematical value and can be used as a rebound point for learning mathematics have been widely documented by researchers. (Muhtadi et al., 2021). There are cultural values contained in the local language. Therefore, words of numbers such as zero, one, two, three etc to be used as the starting point of learning mathematics. However, some researchers have not yet explored the Abun Tribe and its cultures.

### **Previous Related Study**

Risdiyanti, I., & Prahmana, R. C. I. (2017) This research is the exploration study to indicate the correlation between mathematics and Javanese culture. These studies have a purpose of exploring Javanese culture in Yogyakarta that contains mathematics concept namely Batik. The activity of society in making Batik in all regency at Yogyakarta is the focus of this study. The research use ethnography method. The technic to collection data uses principles in ethnography such as observation, interview, documentation, and field note making with the original ethnography description. The result is exploration ethnomathematics in the several motifs of Yogyakarta batik that contains philosophy, deep cultural value, and mathematics concept, especially geometry transform subject.

Prahmana, R. C. I. (2020). Yogyakarta is known as the city of culture. There are a number of Yogyakarta cultures that are closely related to the context of learning mathematics. However, educators in Yogyakarta have not seen much of this culture as a context that can be used as a starting point in learning mathematics. Thus, this study aims to explore the culture of the Yogyakarta community that can be used as a starting point in learning mathematics. This study uses ethnographic studies based on library studies, field observations, and interviews with sources that understand ancient Java well to clarify and/or provide greater understanding of the results of the literary studies collected. The results of the research show that there are a number of mathematical languages used by the Yogyakarta community in the Java language that can be used as a starting point in learning mathematics. This mathematical language includes the mentioning of numbers, spaces, angles, volumes, uncertain units, and the determination of units of time.

Fatih, N., & Plisiri, J. T. (2023). The Makian tribe is a tribe that inhabits Makian Island and part of the mainland of Kayoa Island, south of Halmahera, Indonesia. This area is in the district of North Maluku. The curse tribe is divided into two sub-tribes, namely the western curse and the eastern curse. Both have different languages, namely Jitine and Tabayana. There are a number of swearing ethnic cultures that are closely related to the context in learning mathematics however, most educators have not explored swearing ethnicity and its culture. Thus, this study aims to determine the cultural values contained in the regional language found in North Maluku, namely the island of curses regarding the mathematical language used in the tribes of internal swearing and external swearing. This study uses ethnographic studies by describing the study of mathematical objects in the elements of Makian language, which are sourced from library research, field observations and interviews with several informants who understand Makian language well to provide a deeper understanding of the results of the literature review collected

## **METHOD**

### **Design and Sample**

This research aims to explore the cultural language of the Abun Tribe of Tambraw district that has a connection in the context of mathematics through exploration research with an ethnographic approach. Koentjaraningrat (2009) explains that in the ethnographic approach there is a basic description that will be produced by the ethnographer, who is aware of the seven cultural elements: language, technological system, economic system, social organization, knowledge system, art and religion. Ethnomathematics is the study that studies the relationship of a particular culture to the mathematical concepts present in that culture. Thus, this study uses an ethnographic approach by describing the study of mathematical objects in the language of the Abun tribe.

### **Instrument and Procedure**

All research data is obtained based on field observations, library studies, documentation, and interviews. The interview was conducted directly with students from Papua which included the Abun tribe of Tambraw district in the southwestern Papua province. The subjects in this study will provide the information the researcher needs in conducting research.

### **Data Analysis**

Furthermore, the study activities of the library by conducting studies of a number of books, articles published in journals, and relevant sources related to the language of reference to the number of people of the Abun tribe that have mathematical elements.

## **RESULT AND DISUSSION**

The study explored the special mathematical language commonly used by the Abun tribe community in daily activities. The use of this special mathematical language is still widely used by the Abun tribe community of Indigenous Tambraw districts, especially those who live in the village. To be clearer, the results of exploration related to a number of mathematical languages used by the tribe of Abun, are as follows.

### **Mathematical language of the tribe of Abun of Tambraw Regency in the name of number of units**

The reference to whole numbers in the community of the Abun tribe refers to the basic numbers of the numbers 0-10 have different sounds, then the number 11-19 has sounds that are added Back with sounds 1-9. As regards the mathematical language of the tribe of Abun in the mention of these numbers is as follows:

1. Number of units
  - a. *Monde*, This term is used to refer to the number zero.
  - b. *Dik*, This term is used to refer to the number one.

- c. *We*, This term is used to refer to the number two.
  - d. *Gri*, This term is used to refer to the number three.
  - e. *Hat*, This term is used to refer to the number four.
  - f. *Mek*, This term is used to refer to the number five.
  - g. *Mat*, This term is used to refer to the number six.
  - h. *Fit*, This term is used to refer to the number seven.
  - i. *Munggo*, This term is used to refer to the number eight.
  - j. *Musi*, This term is used to refer to the number nine.
2. Bilangan puluhan
- a. *Musyu*, This term is used to refer to the number ten.
  - b. *Musyu We*, This term is used to refer to the number twenty.
  - c. *Musyu Gri*, This term is used to refer to the number thirty.
  - d. *Musyu Hat*, This term is used to refer to the number forty.
  - e. *Musyu Mek*, This term is used to refer to the number fifty.
  - f. *Musyu Mat*, This term is used to refer to the number sixty
  - g. *Musyu Fit*, This term is used to refer to the number seventy
  - h. *Musyu Munggo*, This term is used to refer to the number eighty
  - i. *Musyu Musi*, This term is used to refer to the number ninety.
3. Bilangan Ratusan
- a. *Wotindik*, This term is used to refer to the number one hundred.
  - b. *Wotinwe*, This term is used to refer to the number two hundred
  - c. *Wotingri*, This term is used to refer to the number three hundred.
  - d. *Wotinhathat*, This term is used to refer to the number four hundred.
  - e. *Wotinmek*, This term is used to refer to the number five hundred.
  - f. *Wotinmak*, This term is used to refer to the number six hundred

The results of the exploration of the mathematical language of the Abun tribe society add to the treasures of previous research related to the cultural context that has the elements of mathematics in it. In addition, Rosa and Orey (2011) explained that mathematics in schools has always been studied as subjects unrelated to culture and away from everyday life, thus affecting the low thinking ability and reasoning of students in solving mathematical questions related to real life. In this regard, ethnomathematics can be seen as a field of study to investigate the way a person from a particular culture understands, expresses and uses concepts and practices of their culture that are described as something mathematical, and can bridge between culture and learning mathematics. (Karnilah, 2013; Wahyuni, Tias, & Sani, 2013)

## CONCLUSION

The community of the Abun tribe of Tambraw has a number of special mathematical languages that are expressed in the form of the abun language to determine a number. This mathematical language is commonly used in their daily activities, such as in

sales and purchases, work activities, and daily conversations of communities, and is still widely used by communities living in villages. Thus, the results of this comprehensive study can be used as a starting point in the study-teaching activities of mathematics in Papua to cultivate the mathematical understanding of students, especially students from rural areas.

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