# Difficulty analysis of numerical ability of indigenous Papuans (Marind and Kanum Tribes) in Yanggandur and Wasur Villages, Merauke Regency

**Andi Sitti Suhartini**
Universitas Pendidikan Indonesia,
INDONESIA

**Indah Widanarti**
Universitas Pendidikan Indonesia,
INDONESIA

## Article Info

## Abstract

Mathematics is one of the subjects that provides the reasoning required to become a great human being. Counting is a minor aspect of mathematics, but it is crucial. This research aims to examine the numeracy difficulties of the Marind and Kanum tribal communities in Yanggandur and Wasur Villages, Merauke Regency. The methods employed are literature review and observation. According to the study's findings, the Marind and Kanum tribes have difficulty calculating operations in large numbers because most people's daily lives, namely hunting and fishing, do not require many additions and subtraction operations. The community also has staple foods, namely Kumbili and Sago, which are obtained from their villages, eliminating the need for complex transactions.

## INTRODUCTION

Indonesian citizens come from various socio-cultural backgrounds distinct from one another (Rais et al., 2018). Merauke Regency, which is nearly the size of Java Island, has a diverse natural environment and is home to tribes with diverse cultures. Merauke Regency's major tribes include the Marind tribe, the Kanum tribe, the Muyu tribe, the Kimam tribe, and others. These tribes' mathematical abilities differ.

Mathematics is one of the fundamental sciences that plays an important role in everyday life and modern technological advancement today (Anwar, 2018; Suandito, 2017). Because of its importance, mathematics is even referred to as the "root of science" (Sumarni, 2018). Mathematics emerges and is integrated into all aspects of people's lives, no matter where they are (Juano & Jediut, 2019). Mathematics is a foundation for thinking and understanding to overcome and master a wide range of social, economic, and natural problems (Supriatna, 2016; Suwardi et al., 2016; Zahra, 2019).

Mathematics is an important subject (Purwanti et al., 2016). Mathematics education is inextricably linked to the dynamics of people's lives. Some mathematics materials generally cover the discussion of problems or implementations related to the daily life approach (Zulaekhoh & Hakim, 2021). Mathematics can be found in everyday activities, often unconsciously. It should be noted that learning mathematics in school and using mathematics in everyday life is not the same thing (Abi, 2017). Because school mathematics is too formal, the mathematics children encounter in their daily lives will be very different from what they learned in school.

Each person must have unique abilities. This can impact mathematics learning outcomes (Haryono & Tanujaya, 2018). Counting is one of the many mathematical abilities that must be mastered. A child's first step in learning mathematics is the ability to count (Sari et al., 2020). To understand other abilities in mathematics, an individual must first understand the ability to count. Students with strong or rapid numeracy skills are extremely beneficial in solving math problems (Al Musthafa & Mandailina, 2018). Dyscalculia refers to learning difficulties that cause children to lose their ability to count. This difficulty will affect the students' learning outcomes. The outcomes of mathematics learning have not been as anticipated (Permanasari & Pradana, 2021). Education must influence learning outcomes (Rahmawati et al., 2021).

---

*\* Corresponding author:*
Andi Sitti Suhartini, Universitas Pendiidkan Indonesia, INDONESIA. ✉ ndisitti.suhartini@upi.edu

Numeracy is the ability to use logic, reasoning, and numbers (Khan & Yuliani, 2016). Furthermore, numeracy skills can be defined as mastery of basic arithmetic, a subset of mathematics that includes addition, subtraction, multiplication, and division (Anshari et al., 2016; Mulyawati & Sarwinda, 2020; Mutiani & Suyadi, 2020; Ramadania et al., 2018). Two (2) factors influence a child's numeracy ability: internal and external factors. Internal factors include emotional maturity, motivation (spirit), each student's unique learning style, and student's interests and talents when participating in the learning process (Zuschaiya et al., 2021). External factors include the learning environment in the classroom, learning media, learning facilities, and socio-cultural factors. Some of these factors, such as socio-cultural factors, impact the development of one's numeracy skills. This is determined by the environment in which a person lives.

Several studies on numeracy analysis have been conducted, including those by Syamsuddin et al. (2018) and Utami & Humaidi, (2019), regarding the description of the level of numeracy ability of third-grade students. Hasanah et al. (2021) discuss the factors that cause early numeracy difficulties in children based on internal and external factors in their research. According to various studies, difficulty in counting is caused by a person's lack of focus in following the teaching and learning process; additionally, the surrounding environment affects these abilities, adding to the difficulty in counting. The support and motivation provided, as well as aspects of physical health, attitudes, interests, and motivation, all contribute to difficulties in learning mathematics in people with dyscalculia, particularly by the family, which is required to aid a person's development in improving numeracy skills. However, no research on the analysis of numeracy difficulties for ethnic groups in the Merauke Regency has been found in the search for relevant articles, so there is an element of novelty in this research. The Marind and Kanum tribes are the focus of this investigation. According to several community leaders and similarities in customs, habits, and culture, these two tribes share a common ancestor from Papua New Guinea. The purpose of this study was to analyze the difficulties in numeracy skills of the Marind and Kanum tribal communities in Yanggandur and Wasur Villages, Merauke Regency, based on the phenomena and symptoms of the problem described above.

## METHOD

This research is descriptive qualitative research. This descriptive research attempted to accurately reflect the object under consideration (Alyusfitri & Wahyuni, 2017). The researcher is the instrument in this research (human instrument) because the researcher is the determinant in data collection, analysis, and presentation. The participants in the study were residents of Yanggandur and Wasur villages in Merauke Regency, Papua Province.

Data was gathered through literature research and direct community observation in Yanggandur and Wasur Villages in Merauke Regency. Data analysis in qualitative research is done in stages and continues throughout the study. In qualitative research, data analysis techniques include data reduction (data reduction), data presentation (data display), conclusion drawing, and verification (conclusion drawing, verification) (Yanti & Syazali, 2016). These steps are summarized in the figure below.
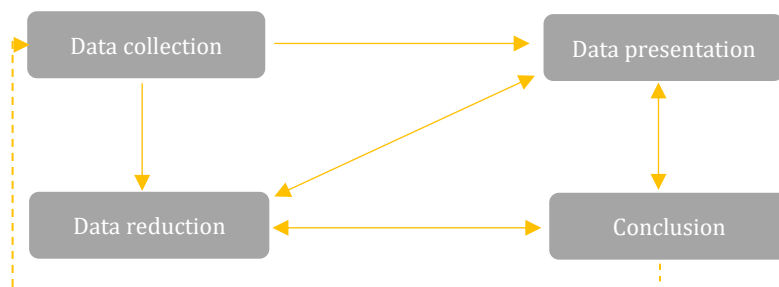


**Figure 1.** Qualitative Data Analysis Techniques

## RESULTS and DISCUSSION

Based on the Journal of the New Guinea study (1960), the ancestors of the earlier Marind tribe performed the following calculation operation:

**Table 1.** Calculation Operations by the Ancestors of the Marind Tribe

| Number | Pronouncing |
|--------|-------------|
| 1 | Izakod |
| 2 | Inah |
| 3 | Inah Izakod (2+1) |
| 4 | Inah-Inah (2+2) |
| 5 | Ra-Sanga |
| 6 | Ra-Sanga-Izakod (5+1) |
| 7 | Ra-Sanga-Inah (5+2) |
| 8 | Ra-Sanga-Inah-Izakod (5+2+1) |
| 9 | Sarek-Sa-Eavig |
| 10 | Sanga-Baren |
| 11 | Sanga-Baren-Tagu-Zakod (10+1) |
| … | … |
| 20 | Sanga-Baren-Tagu-Baren |
| 30 | Isi-Anem-Sanga-Baren |

It is unknown when Marind's method of counting became as simple as it is today. Some local community leaders believe that this shift began when this tribe relocated from Papua New Guinea to the area surrounding Merauke City. The Marind tribe is currently calculated in the following manner:

**Table 2.** Calculation Operations by the Marind Tribe Today

| Number | Pronouncing |
|--------|-------------|
| 1 | Okud |
| 2 | Syokud |
| 3 | Yokud |
| 4 | Yokud-Okud (3+1) |
| 5 | Yokud-Syokud (3+2) |
| 6 | Yokud-Yokud (3+3) |
| 7 | Yokud-Yokud-Okud (3+3+1) |

This shift impacts the Marind tribe's way of life, particularly in numeracy. The Kanum tribe had a method of counting that went like this:

**Table 3.** Calculation Operations by the Ancestors of the Kanum Tribe

| Number | Pronouncing |
|--------|-------------|
| 1 | Namper |
| 2 | Yempoka |
| 3 | Yuau |
| 4 | Eser |
| 5 | Tampui |
| 6 | Tarowo |
| 7 | Pesmeri-Emper |
| 8 | Pesmeri-Yalmpo |
| 9 | Pesmeri-Yela |
| 10 | Pesmeri-Eser |
| 11 | Pesmeri-Tampui |
| 12 | Pesmeri-Tarowo |

The Kanum Tribe is also changing at the moment. This is also thought to be due to the Kanum tribe's migration from Papua New Guinea to the area around Merauke. The following are the changes:

**Table 4.** Calculation Operations by the Kanum Tribe Today

| Number | Pronouncing |
|--------|-------------|
| 1 | Mpi |
| 2 | Yalempe |
| 3 | Yela |
| 4 | Esel |
| 5 | Tampui |
| 6 | Trowo |
| 7 | Pesmeri-Mpi |
| 8 | Pesmeri-Yalempe |
| 9 | Pesmeri-Yela |
| 10 | Pesmeri-Esel |
| 11 | Pesmeri-Tampui |
| 12 | Pesmeri-Trowo. |

The different ways of counting from each tribe coexists make it difficult for people to conduct large-scale transactions. According to several Merauke community leaders, the decline in counting is because everything required is already available. The Marind tribe can more easily enjoy natural wealth because of the sago tree, the trunk of which can be used as a house pole, and the bark of which can be used as a roof. The leaf stalks of the sago palm tree can be used as walls, and the leaves can be used as a roof. This enables the Marind tribe to enjoy natural wealth more easily, resulting in fewer people carrying out exchange transactions for daily necessities.

The Kanum tribe, unlike the Marind tribe, does not live near the coast, so they must rely on fish from the swamps. The Kanum tribe's staple food is kumbili (a type of tuber that grows in community gardens). After harvesting the kumbili, the community will pile it at home in piles of 6 kumbili or multiples thereof for each family member. This became the basis for the Kanum tribe to always count in groups of up to six, making it difficult for people to conduct transactions. The Kanum tribe is also closed to outsiders. For example, they are unwilling to relocate if a transmigration settlement is nearby.

Hunting and fishing are daily activities for the Marind and Kanum tribes. The community will consume the game, and any leftovers will be sold in exchange for other basic commodities. The Marind and Kanum tribes are closely related to mathematical activities in the buying and selling process. This is consistent with Pratama & Setyaningrum (2018); despite not understanding mathematics, people apply complex mathematical concepts to their daily activities. The method of counting the two tribes affects daily life. When the Marind or Kanum people go to the market, they stockpile their goods in large or large quantities. It is typically made up of four to eight stacks. This is consistent with the findings of Kou et al., (2021), who discovered that before trading, merchandise is collected based on similarity of type. However, the practice makes the buyer's life difficult in this case. For example, a single stack of turmeric costs IDR 20,000 and weighs up to 1/2 kg. Even though the buyer only requires a small amount, there is no offer to buy in quantities other than one stack, and bidding at the predetermined price is extremely difficult. This practice is similar to what occurred in the Kepatihan Market in Jember Regency, where buying and selling interactions frequently occur without any price bargaining between traders and buyers (Muzdalifah et al., 2019). Such counting patterns affect the children of the Marind and Kanum tribes. Children find it difficult and unsettling to count in large groups.

When a man wants to marry a woman in Marind society, he is not required to pay a dowry. This is also true for the Kanum tribe. The difference is that if a Kanum tribe woman marries a man from another tribe, the couple is required to stay in the Kanum tribal village. If the couple wishes to relocate to another village, the man must give up his brother or daughter to be given to the Kanum tribe as a replacement for the married woman. Among the many problems that arise, the application of the Marind and Kanum tribes' counting method has a positive value in that it can protect and maintain cultural values (Pratama & Lestari, 2017).

## CONCLUSION

Because of their lifestyle and daily lives, the Marind and Kanum tribal communities have difficulty counting. People who gather or live from nature do not engage in many buying and selling transactions. When used in large numbers, community counting patterns become quite complicated, making it difficult for people to count in large or large numbers. The author recommends that additional research be conducted on the Marind and Kanum tribes and other tribes in Merauke Regency, Papua New Guinea.

## AUTHOR CONTRIBUTIONS STATEMENT

ASS became the main conceptor of the research. He looked for problems, constructed instruments, and analyzed the data. At the same time, IW helped narrate articles and revise them until they were ready to be published.

## REFERENCES

Abi, A. M. (2017). Integrasi etnomatematika dalam kurikulum matematika sekolah. *JPMI (Jurnal Pendidikan Matematika Indonesia)*, *1*(1), 1–6.

Al Musthafa, S., & Mandailina, V. (2018). Meningkatkan kemampuan berhitung siswa SD menggunakan metode jarimatika. *JCES | FKIP UMMat*, *1*(1), 30–33.

Alyusfitri, R., & Wahyuni, Y. (2017). Analisis diagnostik kesulitan belajar mahasiswa PGSD pada mata kuliah konsep dasar matematika II. *Al–Jabar : Jurnal Pendidikan Matematika*, *8*(2), 145.–154

Anshari, M., Pramono, M. A. B., & Wahyu, R. (2016). Pembuatan permainan aritmatika roda putar angka menggunakan adobe flash. *Phasti: Jurnal Teknik Informatika Politeknik Hasnur*, *2*(2), 11–16.

Anwar, N. T. (2018). Peran kemampuan literasi matemtis pada pembelajaran matematika abad–21. *Prosiding Seminar Nasional Matematika*, *1*, 364–370.

Haryono, A., & Tanujaya, B. (2018). Profil Kemampuan penalaran induktif matematika mahasiswa pendidikan matematika UNIPA ditinjau dari gaya belajar. *Journal of Honai Math*, *1*(2), 127–138.

Hasanah, P. M., Martati, B., Aristiana, & Rahayu, P. (2021). Analisis faktor penyebab kesulitan berhitung permulaan pada anak usia 4–5 tahun di TK Aisyiyah Bustanul Athfal 14 Surabaya. *PEDAGOGI: Jurnal Anak Usia Dini Dan Pendidikan Anak Usia Dini*, *7*(1), 116–129.

Juano, A., & Jediut, M. (2019). eksplorasi etnomatematika dan hubungannya dengan konsep geometri pada matematika sekolah dasar dalam budaya masyarakat Manggarai. *Jurnal Pendidikan Dan Kebudayaan Missio*, *11*(2), 270–278.

Khan, R. I., & Yuliani, N. (2016). Meningkatkan kemampuan berhitung anak usia dini melalui permainan bowling kaleng. *Universum*, *10*(1), 65–71.

Kou, D., Nahak, S., & Mamoh, O. (2021). Eksplorasi aktivitas etnomatematika di pasar tradisional Noemuti kabupaten Timor Tengah Utara (TTU). *RANGE: Jurnal Pendidikan Matematika*, *3*(1), 77–88.

Mulyawati, I., & Sarwinda, W. (2020). IbM Workshop metode matematika gasing bagi guru SD Muhammadiyah se Jakarta Timur. *J. Pengabdian Masyarakat MIPA Dan Pendidikan MIPA*, *4*(2), 79–85.

Mutiani, R., & Suyadi, S. (2020). Diagnosa diskalkulia generasi alpha: Masalah dan perkembangannya. *Edumaspul: Jurnal Pendidikan*, *4*(1), 104–112.

Muzdalifah, S., Sukidin, S., & Suharso, P. (2019). Karakteristik pedagang tradisional di pasar Kepatihan kabupaten Jember. *Jurnal Pendidikan Ekonomi: Jurnal Ilmiah Ilmu Pendidikan, Ilmu Ekonomi Dan Ilmu Sosial*, *13*(1), 94–100.

Permanasari, L., & Pradana, K. C. (2021). Model Pembelajaran Active Knowledge Sharing Terhadap Hasil Belajar Matematika Siswa Smp. *Ensiklopedia: Jurnal Pendidikan Dan Inovasi Pembelajaran Saburai*, *1*(1), 1–7.

Pratama, L. D., & Lestari, W. (2017). Eksplorasi etnomatematika petani dalam lingkup masyarakat Jawa. *Seminar Nasional Matematika dan Pendidikan Matematika (2ndSENATIK)*, 91–97.

Pratama, L. D., & Setyaningrum, W. (2018). Algoritma berhitung Blijaˆh pada masyarat Madura di Kabupaten Probolinggo: Alternatif pendekatan pembelajaran operasi bilangan. *Pythagoras: Jurnal Pendidikan Matematika*, *13*(2), 203–213.

Purwanti, R. D., Pratiwi, D. D., & Rinaldi, A. (2016). Pengaruh pembelajaran berbatuan geogebra

terhadap pemahaman konsep matematis ditinjau dari gaya kognitif. *Al–Jabar : Jurnal Pendidikan Matematika*, *7*(1), 115–122.

Rahmawati, Y., Pradana, K. C., Novalia, Rinaldi, A., & Syazali, M. (2021). Curiosity and creative characters: The impact on students' munerical ability. *Desimal: Jurnal Matematika*, *4*(2), 231–246.

Rais, N. S. R., Dien, M. M. J., & Dien, A. Y. (2018). Kemajuan teknologi informasi berdampak pada generalisasi unsur sosial budaya bagi generasi milenial. *Jurnal Mozaik*, *10*(2), 61–71.

Ramadania, F., Wulandari, N. I., & Nahlini, N. (2018). Peranan komunikasi bahasa dalam pembelajaran matematika pada siswa kelas V SDN Keraton 3 Martapura. *Math Didactic: Jurnal Pendidikan Matematika*, *3*(1), 23–32. https://doi.org/10.33654/math.v3i1.52

Sari, N. M., Yetti, E., & Hapidin, H. (2020). Pengembangan media permainan mipon's daily untuk meningkatkan kemampuan berhitung anak. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, *4*(2), 831–839.

Suandito, B. (2017). Bukti informal dalam pembelajaran matematika. *Al–Jabar : Jurnal Pendidikan Matematika*, *8*(1), 13–24.

Sumarni, Y. (2018). Matematika dalam ilmu manajemen. *Education*, *1*(1), 11–24.

Supriatna, H. (2016). Pembentukan kemampuan literasi matematika dan jiwa kewirausahaan pada pembelajaran matematika model problem based learning berpendekatan. *PRISMA, Prosiding Seminar Nasional Matematika*, *2014*, 203–216.

Suwardi, S., Firmiana, M. E., & Rohayati, R. (2016). Pengaruh penggunaan alat peraga terhadap hasil pembelajaran matematika pada anak usia dini. *Jurnal Al–Azhar Indonesia Seri Humaniora*, *2*(4), 297–305.

Syamsuddin, S., Jafar, M. I., & Patta, R. (2018). Analisis kemampuan berhitung siswa kelas III SD Negeri kecamatan Ulaweng kabupaten Bone. *Publikasi Pendidikan*, *8*(1), 71–75.

Utami, N. A., & Humaidi. (2019). Analisis kemampuan penjumlahan dan dengurangan bilangan pada siswa SD. *Jurnal Elementary*, *2*(2), 39–43.

Yanti, A. P., & Syazali, M. (2016). Analisis proses berpikir siswa dalam memecahkan masalah matematika berdasarkan langkah–langkah bransford dan stein ditinjau dari adversity quotient. *Al–Jabar : Jurnal Pendidikan Matematika*, *7*(1), 63–74.

Zahra, F. (2019). Upaya guru bimbingan dan konseling untuk mengatasi siswa berkesulitan belajar matematika di MAN 1 Medan. *Jurnal Ikatan Alumni Bimbingan dan Konseling Islam (IKABKI)*, *1*(2), 117–130.

Zulaekhoh, D., & Hakim, A. R. (2021). Analisis kajian etnomatematika pada pembelajaran matematika merujuk budaya Jawa. *JPT: Jurnal Pendidikan Tematik*, *2*(2), 216–226.

Zuschaiya, D., Wari, E., Agustina, Y., & Lailiyah, S. (2021). Pengaruh kesiapan belajar dan kemampuan berhitung terhadap hasil belajar matematika. *JPMI–Jurnal Pembelajaran Matematika Inovatif*, *4*(3), 517–528.