Using Mek Papua Counting Systems to Improve Math Skills in Indonesia

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Presentation Overview

• Indonesia literacy and numeracy infographic.
• Mek Kosarek Language Group Context.
• Wana Walinge School with MTB-MLE Approach.
• The difference between counting in Mek system and in the base 10 system.
• The implementation and best practices using Mek counting system to improve math skills.
• Impact.
• Hope for the next level.
Languages of Indonesia

INDONESIAN CONTEXT

Estimate of living languages from “Languages of Indonesia” published by SIL – International – Indonesia, 2007
Language Diversity and Education in Indonesia

- Indonesia is made up of 13,000 inhabited islands containing almost 750 indigenous languages.
- All the formal schools in Indonesia are obliged to use the National curriculum using the lingua franca, Bahasa Indonesia.
- Papua is the island with the most language diversity: 271 languages.
- Papua is sitting near the bottom in terms of literacy and numeracy performance.
Literacy & Numeracy Infographic in Indonesia (2021)

Asesmen Nasional mengevaluasi hasil belajar kognitif (literasi dan numerasi), hasil belajar karakter, serta kualitas lingkungan belajar (pembelajaran dan iklim sekolah) yang melibatkan 7 juta murid, 3,9 juta pendidik, dan 285 ribu kepala satuan pendidikan pada jenjang dasar dan menengah.
Math score is degrading from 2015 to 2018

UNICEF Study Result in 2015 shows 50% of early stage students in Papua can’t read and write, that leads to very poor basic literacy and numeracy skills.
OUR CONTEXT
OUR CONTEXT

- Located in Kosarek District, Yahukimo Regency in remote Highlands of Papua, Indonesia
- No infrastructures: no electricity, phone signal, stores, road access, etc.
- Monolingual community with oral culture
- Mek Kosarek people and language group.
- 2 currently running elementary schools and 1 kindergarten.
- Approximately a thousand school aged children.
- 100% Mek Kosarek speakers
Wana Walinge School

- A formal Christian school under Suluh Insan Lestari Foundation applying Indonesian curriculum.
- Currently from Kindergarten to Year 4 elementary school.

- Using MTB-MLE approach for KG to Year 2
- Work together with local tutors to teach mother tongue. All tutors is dropped out or never been to school.
Video: Mek Way of Counting

• Base 27 numbering system
• Using upper body part as a number line. Specific body parts means also the same as a number.
• Using fingers but not finger-counting
Video: Mek Way of Counting
Implementation & Best Practices

• We train tutors to be able to teach by using song, cards, and anchor chart of Mek style of counting.
• In Math operations and problems, the terms and verbs we use related with this body part counting.
Implementation & Best Practices
“Skip Counting” Video

- Merging skip counting to the specific body part to memorize multiplication and division.
- Using the 2-3 digits Kosarek numbering system (base 27) as a Math challenge on long multiplication and division with remainder.
Impact

• Applied as learning tools and bridge to introduce the base 10 system and counting that later aid the numeracy proficiency.

• Students quickly grasp the base 10 system concept of counting, such as: addition, subtraction, and multiplication.

• After a year learning numbers using Mek way of counting in kindergarten, students could accelerate the first semester of Year 1 Math National Curriculum twice as fast in number sense and counting skill.
Impact

• Students and tutors are proud with their own way of counting and it conserves Mek culture.
• The local tutors are more confident and capable to teach basic Math to the K - year 2 level because they master their own way.
Challenges

- The Mek people are skeptical and show little interest on using the traditional counting way in school.

The operational number in Mek counting style is limited, couldn’t exceed the number 756.

- Now is fewer and fewer people use this method that becomes harder to find local tutors.
Hope For The Next Level

• This traditional approach can be further immersed in the formal curriculum for early stage Math.

• Build and create more engaging activities on this traditional counting method such as games, virtual on device or conventional.

• Hope to have more inspiration from fellow practitioners to develop the curriculum of this approach. Hope this can inspire other MTB-MLE educators that it is possible to improve basic Math skill with traditional approach.
WALI...TERIMA KASIH... THANK YOU

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