

CHAPTER I

INTRODUCTION

1.1. Background

Van Brummelen clearly explained that Mathematics is one of the facts that human discover from experiences and activities that brings out a sense of awe and wonder in the design of God's creation. He also stated that mathematics is not separated or self-sufficient body of knowledge but it is an indispensable tool in most areas of life that help us to understand more about our Creator through the basic order and law structure (2002). Mathematics is everywhere and God enable human to discover things that seems abstract to something symbolic that contain patterns and law structure in it which also leads to other knowledge that bring human to realization of God's creation and purpose.

Learning mathematics start from a very young age. Mississippi College (2018, April 20), explained that there are so many questions that young learners have about the world and how the world works, math provides a framework for how to find the answers, therefore math skills are the tools for them to understand, analyze and impact the communities where they live. From there, it clearly tells that learning mathematics is important even for the young learners because young learners have lots of questions about this world and how it works and numeracy skills will enable the young learners to understand, analyze and give impact to where and how they live.

In every school, curriculum and teachers help students to learn mathematics, for example, when teacher researcher taught grade II at Christian school in Bogor, they were learning about money. In order to make a meaningful learning that ask for contextual situation, they learn Indonesian money even when the school use International Curriculum. Yet, before they learn money they learned how to count forward, comparison, addition, and subtraction. From those topics they learn that there is an order from counting, differences they have in real life through comparison, how to add and subtract something that they find in everyday life situation. When they learn money, they will understand that money is a thing where human can buy things to support life and can share something with the money even do a charity for those who need it, to wisely use the money. That is what God wants in human life, to not be controlled by money but, human manage the money to be blessing for others.

There are some standards about numeracy skills that need to be achieved in curriculum they use. The school is using International Baccalaureate. In document of Primary Years Programme Mathematics scope and sequence (2009), some standards that they cultivate the students in mathematics subject are; estimate and measure objects using standard units of measurement: length, mass, capacity, money and temperature, use standard units of measurement involving length, mass, capacity, money and temperature. The learning objectives for this topic are; students will be able to recognize each value of Indonesian coins and bills, students will be able to count coins and bills money. Those skills are usually called as numeracy skills in specific. As Neill (2001) explain numeracy skills is “the ability

of a person to make effective use of appropriate mathematical competencies for successful participation in everyday life.”

In fact, through the mentor feedback compiled in Appendix 1, there are three students of grade II cannot meet the expectations/standards, while the other half mastered the standard, even mastered beyond the standard. Some of the students are mastering the basic skills of mathematics, while the other students still struggling in basic skills of mathematics. Thus, when they entering money unit, some of them really struggling to just count and recognize the value of each Indonesian money, while the other ask for more challenging task to count the money and give exchange. For some students, the materials and the tasks are too easy where they can finish for only a few minutes that cause boredom and ado in the classroom. While, the other students are still struggling to mastering the material and finish their tasks even when teacher researcher gave them several meetings to finish their tasks. This phenomenon shows clearly that they have intellectual diversity especially in mathematics.

Van Brummelen (2009, p.204) explained that “every student is a uniquely gifted person created in the image of God.” This means that there are diversities among the students. It could be from students’ background, students’ readiness, students’ personalities, talents, abilities, prior knowledge, learning preference and multiple intelligences. The reason why there are diversities in the classroom is because God created every human unique in so many ways. There will always be diversities and so does in a classroom community. One of diversities in the classroom is intellectual diversity. Van Brummelen (2009, p.206) stated “some

students are ‘gifted’ and need additional learning challenges, others have specific learning difficulties.” The uniqueness that students have, bring students to the point where every person has strengths and weaknesses, means that its lead each one of them to certain talents and some difficulties in some areas that can actually create the ‘gap’ among the students.

Besides the realization about students’ diversities, teacher researcher also realize that there is also a part where teacher researcher have not created a learning environment that allow them to develop maximally in their own phase and readiness by applying direct teaching for the most time. As teachers are actually ought to be sensitive of students’ need to accommodate all learners, embracing exceptional learners, and try any possible effective method to be applied. Align with Knight (2006, p. 209) that also explain, “the Christian educator must recognize and respect the individuality, uniqueness, and personal worth of each person.” Meanwhile, teacher researcher has not yet recognized the individual and uniqueness of each person by only applying interactive lecturing as a whole class for most time, that also cause more ‘gap’ among the students.

Therefore, after discussing with teacher mentor about the characteristics of the students, time limitation, and teaching strategy’s effectiveness, teacher researcher decided to apply tiering strategies as the most appropriate teaching strategy towards this context and circumstances to accommodate both categories of the students, so that they can learn maximally based on their readiness. Teacher researcher consider tiering strategies as the most appropriate strategy to be applied also because, align with Association for Supervision and Curriculum Development

(2011, p.8) that claim, “its designed to maximize student growth and students cannot grow if what they are asked to learn is way too easy or way too hard.” The claim remind teacher researcher to her students’ condition where the learning way too easy for some and way too hard for the rest. Therefore, other than the things above, teacher researcher prefer this strategy to be applied in order to give teacher researcher chance to focus on both level of students, so that the learning will be just right for both ‘cup’ level of students.

1.2. Research Question

1. Does tiering strategies improve 2nd grader’s numeracy skills?
2. How does tiering strategies affect 2nd grader’s numeracy skills?

1.3. Research Purposes

1. To find out whether tiering strategies improve 2nd grader’s numeracy skills.
2. To find out the way tiering strategies can affect 2nd grader’s numeracy skills.

1.4. Explanation of Terms

1.4.1. Tiering Strategy

According to Tomlinson in (Doubet & Hockett, 2018), tiering method or strategies is a type of differentiation instruction that can be thought of as either a process or a concept that can be useful if a teacher wants to ensure different degrees of learning proficiency of the diverse students to work on the same essential goal. When (Richards & Omdal, 2007) conclude that, “Tiered instruction is grouping students for instruction based on their prior background knowledge in a given

subject area.” Therefore, tiering strategy is a way to grouping students based on their prior knowledge that work on the same essential goal. The steps that used in this research are as follows;

1. Teacher split the students into groups based on students’ readiness from the assessment result.
2. Teacher give students different tasks with different level of complexity but the same learning goals or objectives.
3. Teacher give each group time to be supported by the teacher.
4. Teacher using small-group instruction for students that has a spesific need.
5. Teacher provide clear instruction (verbal and text instruction).
6. Teacher give time at the end to bring students together for closure and share their learning.

1.4.2. Numeracy Skills

Mills (2018) stated that “Numeracy is more than mathematics and may be seen as making sense of mathematics as it builds bridges between itself and the real world”. Numeracy skills is making sense abstract things to standardized symbol that find in real world situation and make connection with it. Thus (Mercader, Miranda, Presentación, Siegenthaler, & Rosel, 2018) explain that numeracy skills include 3 important components such; logical operations, counting, and magnitude comparison abilities.” Those 3 things are the main skills in numeracy in order to make function in real life situations. So, numeracy skills is the primary ability that human has to learn for further knowledge and complex things in the real world. Teacher researcher decided the indicators in this research are based on the lesson objectives for money topic that has been

discussed and approved by teacher mentor, as follows; Students will be able to recognize each value of Indonesian coins and bills; and Students will be able to count coins and bills of Indonesian money.

