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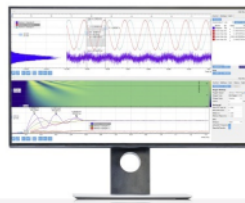
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# The Numeration With Lesson Study Assisted by E-learning Merdeka Campus of COVID-19 Contexts at Primary School Teachers Universitas PGRI Palembang

Jayanti<sup>1,2,b)</sup>, Zulkardi<sup>3,a)</sup>, R I I Putri<sup>2,c)</sup> and Y Hartono<sup>2</sup>

<sup>1</sup>Department of PGSD, Universitas PGRI Palembang, Jl. Gotong lorong Plaju, 30264, South Sumatera, Indonesia

<sup>2</sup>Department of Mathematics Education, Universitas Sriwijaya, 30139, South Sumatera, Indonesia

<sup>a)</sup>Corresponding author: [zulkardi@unsri.ac.id](mailto:zulkardi@unsri.ac.id)

<sup>b)</sup>[jayanti2hr@gmail.com](mailto:jayanti2hr@gmail.com)

<sup>c)</sup>[ratuilma@unsri.ac.id](mailto:ratuilma@unsri.ac.id)

**Abstract.** Teaching Classroom Management for the implementation of numeracy learning where using the COVID 19 context requires attention to every step that must be by the characteristics and principles of PMRI and also on PISA questions of PISA mathematical reasoning ability content where PISA in numeration pays attention to the level of students' knowledge where the resulting questions lead to primary school teacher candidate level of reasoning. This research is research that follows a literature theory study. However, the implementation of this study is the first step for dissertation research which is a stage in research development. This study uses e-learning assistance wherein PGRI there is already a special application, namely, sisfo where a primary school teacher can access online learning using the internet. The purpose of this study is to follow up on what numeracy is in PISA and also how the principles and characteristics of PMRI in applying this theory to practice. Where later this learning also combines lesson study as something new for primary school teachers who require a lot of learning activities with students' mathematical reasoning abilities about numeracy. Qualitative descriptive data collection techniques, which develop all existing literature as a basic theory study and work on initial questions in learning where primary school teacher candidates are introduced to numeracy questions using the COVID-19 context. So that the results of these questions are analyzed descriptively qualitatively. The results will be in the form of mathematical numeration problems that are typed on a computer because they are based on e-learning. The problem is to introduce the extent to which students know what numeracy and lesson study is. The data collection technique is observation and documentation in learning. The result is numeracy learning for students in the form of observation sheets and student answer documents in working on numeracy questions and geometric shapes.

## INTRODUCTION

The elementary mathematics deepening course learning in the PGSD study program is one of the courses where it discusses deeper math problems. It can be seen that the importance of mathematics as one of the main lessons in school in shaping students to be qualified in thinking to study problems logically and systematically [1]. [2] and also as a basic science that is widely applied in various fields of life. According to [3] teachers and students in learning mathematics in elementary schools need good interaction and not only focus on learning mathematics in one direction. Mathematics learning is currently not fully affecting student-centered learning [4]. The fact that learning in mathematics turns out to be a lesson that is avoided by some students because it is considered difficult, serious, and only contains a collection of formulas [5]. [6] state that the reality in the field of students' understanding of concepts in mathematics learning is still low. Even though conceptual understanding is the basis and important foundation in the series of learning mathematics so that students can easily follow the advanced learning material.

[7] reveals that Reasoning is a process carried out to reach logical conclusions based on science related to facts and various relevant sources. Meanwhile, according to [8] the Realistic Mathematical Education (RME) learning model is considered quite appropriate in understanding and addressing the needs of students and teachers, especially at the elementary school level. The learning process is usually carried out face-to-face in schools between teachers and students. But at this time, it will be difficult to implement because of the Covid-19 pandemic. [9] stated

that the learning process was changed by using online learning methods to slow the spread of Covid-19 by always maintaining distance, thus demanding teachers to be more creative and innovative. This means that online learning is the right solution to use during the Covid-19 pandemic so that the learning process can continue as usual, even at home. One of the competencies that play an important role and becomes the main requirement in the implementation of learning is numeracy competence/ability. According to [10] said that numeracy literacy is a knowledge and skill in using symbols and related numbers in basic mathematics to solve everyday problems. Meanwhile, [11] stated that Numeration has three aspects in the form of numerical relations, arithmetic, and arithmetic operations.

The environment is the environment where students are located, both in the school environment and in the community, which can be understood by students [12] The PMRI approach is a learning approach that is more concerned with student activities in the learning process in the classroom so that students can build knowledge of problems in mathematics. Realistic Mathematics Education (PMR) is mathematics education that is implemented by placing students' realities and experiences as a starting point for learning [13]. According to [14] PMR is a student-oriented approach to learning mathematics as a daily activity. While [15] has activities to solve daily problems. According to [16] said that Lesson Study is a process of developing professional competencies for teachers to systematically develop their existing competencies for the main purpose so that learning is better and more effective. In [17], and [18] which means electronic learning where Assisted Learning models with virtual classes (e-learning) are a breakthrough in the field of teaching and learning because they can minimize differences in teaching methods and materials so that quality standards of learning are given, which is more consistent.

Numerical learning that is used in the context of COVID-19 is directed based on the context for the problem consists of activities that lead to students' reasoning abilities. The theoretical study material that is the background is in research on the development of research development from [4] on the development of PMRI e-learning in prospective PGSD students, and also in research using PMRI which develops the pedagogic competence of mathematics teachers that has been implemented in Indonesia [19], [20], [21]; [22] or lesson study [23], [24]; and [25]. Research [4] regarding the development of e-learning-based PMRI learning which makes students more active and also works on questions based on the level of reasoning and problem-solving. So that researchers are interested in developing the next level to introduce what numeracy is and how to create activities and make numeracy questions that can be made to elementary students and made lesson plans introduced to PGRI Palembang students. The learning of numeracy carried out in the new study lesson has reached the stage of applying or learning about numeracy in the elementary mathematics deepening class at PGRI University Palembang. The title of this research is the Numeracy with Lesson Study Assisted by E-learning Merdeka Campus Primary Teacher Universitas PGRI Palembang. This study aims to obtain the results of numeracy learning where the relevant literature review is the initial stage in the preparation of a dissertation for further action. Researchers want to know the extent to which prospective elementary school teacher students understand numeracy by providing and reviewing several theories that form the basis of a PISA and PMRI numeration which will be combined with the basic theory of e-learning assisted lesson study. The results obtained are in the form of results in the form of student answers about numeracy learning and some numeration in the form of questions made for student studies regarding PISA and PMRI numeracy which can be taught to students in elementary mathematics deepening courses at PGSD Study Program, PGRI University Palembang

## METHOD

The method used in this research is to use a descriptive method which is also carried out following up from literature review studies, with literature studies by implementing numeracy learning in elementary mathematics deepening class [26] The research method is a scientific way to obtain data with specific purposes and ends. The method used in this research is a qualitative descriptive method. According to [27] that qualitative descriptive research is research that is used to describe a situation scientifically. The study on [28] contains several stages in the literature study, namely broken down according to problem formation, literature search, evaluation of existing data, analysis of theoretical studies, and interpretation in assessing a theory and sustainable actions to be taken. To get conclusions from the results of data analysis. The descriptive analysis technique used in this study discusses student questions and answers in answering questions about numeracy in deepening mathematics courses. The data collection technique is observational to see how far students know what numeracy is and what kind of context it uses for learning. The analysis technique is described in an elaboration that summarizes the numeration

## RESULT AND DISCUSSION

In the learning research that was carried out using the Covid 19 context on the material of flat shapes and geometric shapes as well as on number patterns. It is taken by learning based on PISA questions and content and the context refers to PMRI. PMRI, or often known as context camouflage, means that the context uses a lesson but it is not meaningful or not by actual conditions or with the topic [29] In this study, the activities have not been completed because they are only until learning and introducing what simulation is in lesson study, next in future research a special article will be made for the lesson study activities that are obtained. In researching the results of the analysis of student learning in answering PISA numeracy questions where the context obtained and used is by the principles and characteristics of numeracy, while in learning the questions given use real contexts in everyday life [30], and [31]. Based on the literature review, preliminary results of research, and discussions with elementary school teacher education lecturers, the course design is designed to create active learning among students, such as dialogue, interactive and collaborative activities [32] and [33]. In PMRI, context plays an important role in learning because it helps students understand topics, when designing learning, choosing the context becomes a pressure point to do it [31] and PMRI learning outcomes are in line with that. research by [34] and [35] which motivate the environment or learning according to the problems in the field.

The purpose of this study is to look to the extent of the numeration learning known to the primary teacher and how the numeration learning is supported by E-learning and also a lesson study. The lesson study conducted in this study is plan do see, which is how the plan means were to plan what to do in the numerical study. Do means what is done in research when numeration study there is an activity in its learning consistent with PMRI and the content of Pisa. See means see and I review what results are in learning. There are no further simulations in research as an observation results from only learning Research with observation and documentation His research technique. Plan-Do-See-Redesign. The lesson study conducted in this study is plan-do-see-redesign, which means how the plan means were to plan what to do in the numerical study. Do means what is done in research when numeration study there is an activity in its learning consistent with PMRI and the content of Pisa. See means see and redesign means me to review the results of what it does in learning. There are no further simulations in research as an observation results from only learning.

The numeracy learning used in learning introduces PISA TYPE modification questions which are studied by prospective elementary school teacher students at the PGRI Palembang University as well as assisted learning with e-learning Sisfo Universitas PGRI Palembang. The front page of this study uses the SISFO application from the PGRI Palembang University which is carried out in the Elementary Mathematics Depth Course.

Figure 1 The numeracy learning used in the lesson introduces the modified PISA TYPE that is studied by primary school teacher students at Universitas PGRI Palembang, while learning is assisted by e-learning SISFO Universitas PGRI Palembang. The front page of this research uses the SISFO application from the Universitas PGRI Palembang which is carried out in the Elementary Mathematics deepening course.

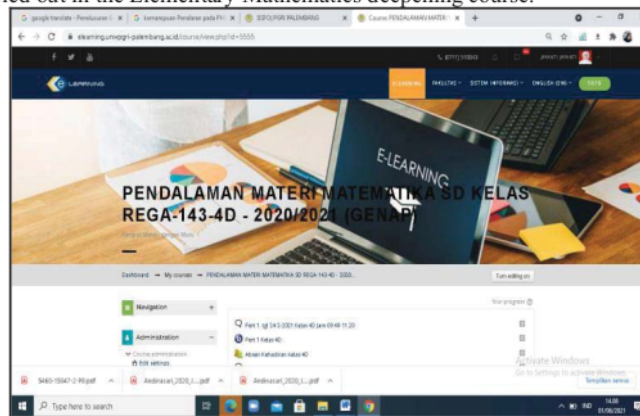
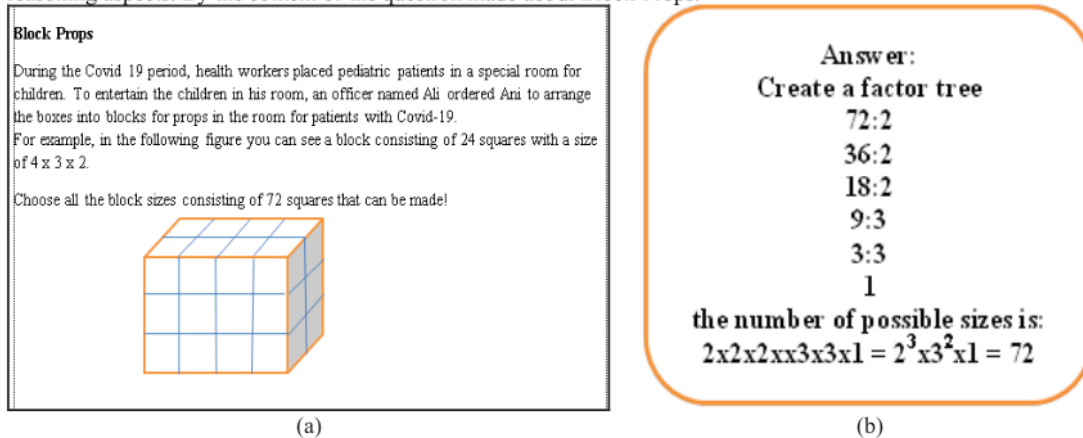


FIGURE 1. Home of Sisfo e-Learning Universitas PGRI Palembang

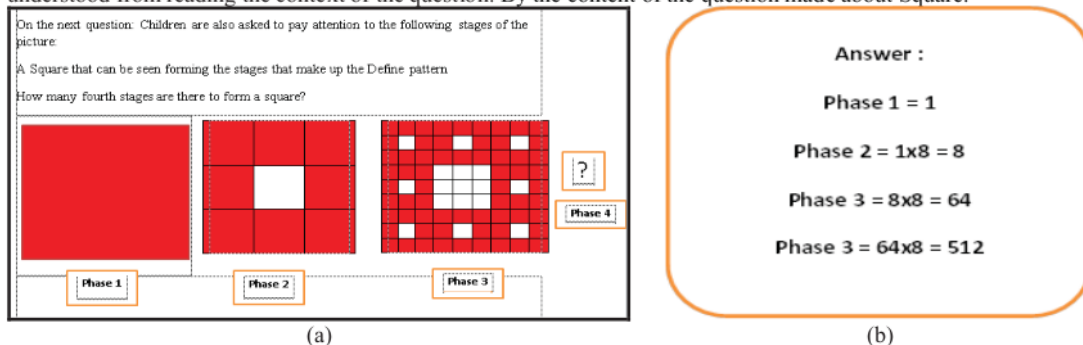
In Figure 2. (a) the context used in the reasoning problem is discussed from numeration which teaches the principles and characteristics of PMRI and introduces what PISA is and the aspects of PISA content that need to be studied. It can be seen that the context and content used by using the content of the Display Blocks, questions about a pattern in numbers. Based on the explanation above, indirectly the question regarding numbers related to number pattern research has a mathematical aspect, namely calculating a pattern that is by primary school mathematics learning, namely number material. This is my previous research, [4] states that there are counting activities in elementary mathematics learning for students regarding number patterns. The research [36] resulted in research on students' mathematical reasoning in Number Pattern Learning where mathematical reasoning abilities appear a lot in number pattern material and many results are obtained that support the importance of students' mathematical reasoning aspects. By the content of the question made about Block Props.



**FIGURE 2.** Student Questions and Answers on Numerical Context Block Props

Answer Figure 2 (b) There are many kinds of answers from students, but one of them that is unique in the attention to discuss is the pattern in determining the game block contest where the child answers using the factorization method. Whereby using the factor tree can be found the paving block pattern is also by reasoning by dividing and diverting. The variety of children's answers shows the child is starting to explore ideas at his level of ability. This is by [4] and [36] which states that students with high-level thinking skills can find patterns with factor trees and can also make other patterns according to what is asked of the question. Where the level of needs of children is different.

In Figure 3. (a). Meanwhile, [37] research found the tangram context in PMRI learning carried out on PGRI Palembang students,. And [38] research resulted in a study where students were able to explore students' literacy and numeracy skills in questions on number pattern material that used everyday contexts. [39] the results of this study show that a series of activities in teaching can help students to be able to learn number counting operations, both addition, and subtraction. Research in this study discusses students' questions and answers in carrying out student learning activities in my class trying to make questions to determine a pattern that will occur next that can be understood from reading the context of the question. By the content of the question made about Square.



**FIGURE 3.** Student Questions and Answers on Numerical Context Square

Answer Figure 3 (b). The primary school teacher candidate's answer points to or focuses on the red square image so by counting the red pattern he can multiply the other square patterns. This is the number pattern that will be obtained. However, some students focus on white square images. This research on learning is in line with research [37], [38], and [39] by determining the shape of an image that finds a pattern in the image so that it can provide other geometric shapes.


Figure 4. (a) The results of [40] are five characteristics and principles of PMRI seen with overall good results in the form of a three-dimensional geometry material that has a high level of difficulty and abstraction. My research makes the questions lead to the context of life around where we live where the measurement process is a flat shape and also a cake that we often eat to be used as context in learning later which is intended to measure the level of students' reasoning in solving problem-solving. It can be seen that the questions show the form of numeration questions on a flat plane and also a space field, which has a different context according to the needs and daily introductions of objects that surround students in their surrounding lives. [41] results in a study that shows that students can use mathematical thoughts and ideas by mathematical rules in a familiar context. By the content of the question made about Cake Shop.

**Cake Shop The Lumiere Pondok Indah**


The Lumiere Pondok Indah Cake Shop provides a price reduction during the Covid 19 period, for each cake the price has definitely decreased from usual, the shop seems to provide two types of tube-shaped cakes with the same thickness, but different sizes. The surface of the small cake is 3 cm in diameter and 15 cm in length and the large cake is 15 cm in diameter and 10 cm in length.

If each small and large cake is sold for Rp. 16,000.00 and Rp. 88,000.00, which is more profitable, buying five small cakes or one large cake? Write down your reasons!

(1)



(2)



(1) <https://tempa.com/blog/lumiere-loko-lumiere-recommended-milik-anang-dan-ashanty-di-pondok-indah/>  
(2) <https://shopee.co.id/CRISPY-PUFF-LUMIERE-CAKE-LU%27MIERE-i.106453563636419416>

**Answer :**

Because the price between 5 small cakes and 1 large cake is the same, namely the price of Rp. 16,000.00 x 5 cakes = Rp. 80,000.00, and 1 large cake Rp. 88,000.00.

To find out the benefits by calculating the volume of each cake. Since the thickness is the same, we can calculate it from the surface area of the cake.

Tube surface area = 2 x Base area + Tube blanket area  
Surface area of the tube =  $2 \times (\pi \times r^2) + 2 \times \pi \times r \times h = 2 \times \pi \times r \times (r + h)$

Small cake surface area = 5 x tube surface area  
The surface area of a small cake =  $Lp = 2 \times \pi \times r \times (r + h)$   
 $= 2 \times 22/7 \times 1.5 (1.5 + 15)$   
 $= 44 \times 25$   
 $= 155.57 \text{ cm}^2$   
Small cake surface area = **80,000 / 155.57 cm<sup>2</sup>**

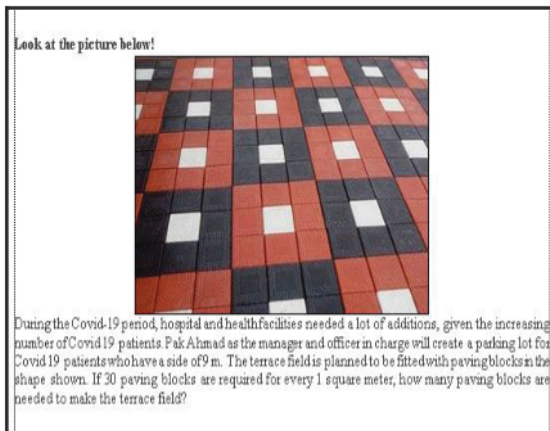
Large cake surface area = 1 x tube surface area  
The surface area of the large cake =  $Lp = 2 \times \pi \times r \times (r + h)$   
 $= 2 \times 22/7 \times 7.5 (7.5 + 10)$   
 $= 825 \text{ cm}^2$   
Large cake surface area = **88,000 / 825 cm<sup>2</sup>**

So what is more profitable is to buy a small cake.

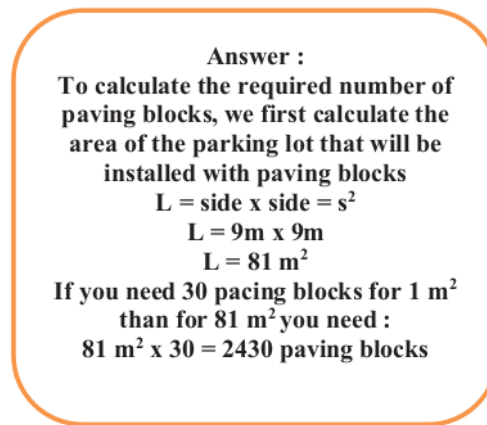
FIGURE 4. Student Questions and Answers on Numerical Context Cake Shop The Lumiere Pondok Indah

Answer Figure 4(b). The students' answers can be seen where they have to determine the surface area of large and small tube-shaped cakes and also just multiply it by the unit price set by the shop. Students need to do reasoning where they can read the meaning of the questions. Many students' answers are also wrong where they determine the volume of the cylinder and do not focus on the unit price. In line with research [40] and [41] in determining the price of an object.

Figure 5 (a) Learning the surface area of flat-sided space using PMRI [23] and [42] produces an understanding of the learning context of students in the real world for the concept of a flat surface area. It can be seen from the picture of the context chosen in making numeracy questions with the context of a rectangular shape that requires reasoning for elementary students. By the content of the question made about Paving Block.



(a)



(b)

FIGURE 5. Student Questions and Answers on Numerical Context Paving Block

In answer 5 (b). In this question, students need correct reasoning. They can be fooled by their wishes because a lot of it is only focused on the area made without knowing the area first, then making the reasoning ability is needed a lot of paving blocks to make parking lots for Covid 19 victims. This research is in line with [23] and [42] the area or area of the object.

## CONCLUSION

It can be concluded that the activities in the introduction and preparation of questions for primary school teacher students. There is an aspect of the level of mathematical reasoning, calculating, and reasoning in the activity of finding or determining patterns that occur in a number where; Calculate the pattern in each given question by looking at the picture. Then in the activity in flat and building a room, a primary school teacher must reason about the meaning of the questions asked about the area of the plane and also the volume of the shape where it can have an observed comparison to be able to determine a price for buying cakes in daily activities. In this study, only one mathematical aspect was calculated, namely calculating or determining by reasoning the implied meaning of the image so that the suggestion for further research is to use the other six mathematical aspects and also possibly analyze the learning outcomes with various other numeracy contexts. Because the study lesson is just the beginning, as in the article, so it only reaches plan-doo-see-redesign the stage of the learning process for numeracy when they plan, plans what to do with numeracy, and when it is done, how the process is done and see, see from the results and for the results of the review, it has not been completed yet. given the simulation stage so that later the next research will be given a review of the results of the learning. For the next follow-up, it can be implemented again in development research.

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