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JUCO (Jump Counting) learning strategies resolve student learning in integer materials

Isti Winarni[1)*], Lakna Tulas'un[2)]
[1)]SD PTQ ANNIDA, Salatiga, Indonesia
[2)]Program Studi Ilmu Komunikasi, Institut Karya Mulia Bangsa, Ungaran, Indonesia.
*istiwinarni07@gmail.com

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Abstract

The impact of curriculum changes requires teachers to think creatively and innovatively in delivering learning materials. The new curriculum, The Independent Curriculum, encourages the packaging of learning by paying attention to student learning styles, aiming that all learners are facilitated in their learning. Students in the sixth grade of PTQ Annida Salatiga Elementary School still have difficulties understanding the concept of integer operations, impacting learning outcomes that are still much below the standard value or KKM that has been determined. For this reason, teachers innovate learning using JUCO (Jump Counting). The purpose of using this media is to facilitate and improve students' learning outcomes with more fun and meaningful learning. The method used in this study is descriptive quantitative, with research instruments used as pre-test and post-test, where the results will be analyzed. The study was conducted on 21 Elementary School students in Grade IV. The result of using JUCO (Jump Counting) is an increase in learning outcomes by 18.98%. JUCO makes it easier for teachers to convey material and learners in learning, making it easier to accept the concept of the material presented. The impact of the use of JUCO (Jump Counting) from affective and psychomotor aspects, including collaborative.

Keywords: JUCO; Jump counting; Integers and learning outcomes.

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INTRODUCTION

The development of the Times and the curriculum that often changes require us to constantly adjust to these changes. In addition to educators, students also experience the impact of these changes. One of them is the teacher, they need a little long time to understand the new curriculum so in early learning changes have not been maximized (Benedicta Dwi Adventyana, 2024). Another impact of this change is related to the substance and target achievement of learning in learners, so teachers are also required to think innovatively in learning.

Curriculum changes have some impact on teachers and students. A teacher must be able to adapt quickly and must be able to carry out following the provisions of the new curriculum. One of them is that teachers must be able to carry out differentiated learning. Differentiated learning is a learning and teaching process in which students can learn the material presented

in following accordance with their abilities and ways of learning so teachers in the learning process must be able to combine several methods and strategies. This has a purpose for students to better understand the material that is conveyed through the things they like (Kristiani et al., 2021).

According to (Damayanti, 2014) saying that jumping originated from the basic word 'jump' is an elementary game that is classified as part of gross motor development. The game implements the ability of physical movement by 90% of the body to perform motion with the strength of the energy obtained from large muscles. Furthermore, the level of maturity of the child can affect the gross motor development. For example, the ability of children who can jump and walk (Hanifah & Hasanah, 2019). Gardon said that large motor development is a skill from partial to full body motion (Zuhriyyah, 2019). Stages of development of children's motor learning skills there are three kinds of stages in the development of motor learning skills for early childhood, namely: First, the cognitive verbal stage is the initial stage in practicing to move, where the effort in early childhood by learning to understand the form of movement, verbal and visual form. Because it is only the initial stage of learning, then the mastery of the movement is not perfect as they see it. Second, the associative stage is the middle stage where the level of mastery is quite fluent in the practice of movement (Zuhriyyah, 2019). This can be found when the child can perform the movement repeatedly, and smoothly as in the example he saw with fewer mistakes made when imitating the movement. Third, the automation stage is the final stage of motion learning, where children can practice Motion Skills automatically without being affected by other movements even though in practice they see different movements.

Counting is an activity related to calculation, such as something related to multiplication, division, addition, and subtraction. Counting needs to be learned early because it can be used for work and human life in everyday life, so every human needs to master mathematics. In addition, counting is not only voicing the written language and the teacher's speech that is imitated precisely and quickly, but counting is an activity that requires the cooperation of individual skills between observation, mention, understanding, and writing definite numerical symbols such as the information obtained (Ismiyati, 2013). Counting according to (Karim & Batubara, 2011). Said that the ability to count every child in order to train his ability in terms of developmental characteristics starting from the immediate vicinity of the child in line with the development that can improve to the stage of addition and subtraction (Ismiyati, 2013).

Seeing the characteristics of today's students who have a lot of access to information from various parts of the world, resulting in children having rapid cognitive development, but for skills such as learning mathematics, they still need more assistance (Evitasari, 2024). This can be seen when students learn integer materials, especially integer operations, students still have difficulties. Based on ten pre-test questions, it was shown that from 21 students of Grade VI, PTQ Annida Salatiga elementary school students working on integer counting operations still had difficulties. total of 38% have difficulty understanding, 42% have to with instruction, and 19% of students understand, but still do not have a deep understanding.

Based on the case, the expected learning outcomes have not been fully achieved. Because there are still many students who have not mastered the material and concept. The learning. The target is that students can master and understand integer material by showing that they can work on existing problems and understand concepts in story problems, to get good and maximum learning outcomes with a target of 21 students able to master and understand the concept of integers.

Looking at the data in the field and the expected targets, teachers must provide innovative and fun learning strategies. This is as conveyed by Jean Piaget who argued that children use the concept of thinking to understand (Novita et al., 2023). The concept does not come from birth but is obtained through their experiences, and information from the surrounding environment and is not obtained naturally, but is processed following the structure of children's thinking following the stage of development so that the concepts built will continue to develop into a broader understanding and be able to relate to their experiences (Suryana et al., 2022).

Referring to the theory, learning is carried out using one of the innovative strategies that involve the active role of each individual. Collaborative play and counting are key concepts in learning strategies. It aims to improve the ability of students in terms of cognitive, psychomotor, and affective, so it is expected to provide a potential impact for learners who have difficulty understanding integers. Curriculum demands in Indonesia require students to have many skills from all subjects that have been determined. One way to realize the curriculum goal is that students can solve problems in integer operations.

Based on this background, the authors conducted research to improve learning outcomes by combining games and learning to understand a concept of integer operation material. The Media used is a game of JUCO (Jump Counting) to improve student learning outcomes. Research has similarities with research from (Isnawati, 2014) Entitle efforts to improve the learning outcomes using the quantum teaching learning model, with results able to increase

from 55.56% to 74.07%. While another study entitled analysis of learning strategies used by teachers in learning Negative Integers Class VI at SDN 28 Cakranegara got the results that learning by using strategies presented by teachers went well (Sudewi et al., 2023). Finally, another study of (Mucholladum, 2022). The relationship between previous research has similarities in delivering integer material using creative methods, media, or strategies so as to improve student learning outcomes. Based on the previous research, the researchers used the same media in improving learning outcomes, while the novelty is the use of JUCO (Jump Counting).

RESEARCH METHODS

The research method used in this study is descriptive qualitative research methods (Feny Rita Fiantika et all, 2022). This research was conducted at PTQ Annida Salatiga Elementary School, Argomulyo District, Salatiga City. The subjects of the study were students of Class VI Al Kindi with a total of 21 children consisting of eleven students male and nine students female. Selection of research subjects based on the characteristics of students who have difficulty in learning mathematics meteri integer operations, which still get the value below the KKM.

This study used data collection techniques, namely tests, interviews, documentation, and observation (Moleong, 2020). First, the test technique is used to collect data on learning outcomes from pre-test to post-test. The pre-test problem consists of ten questions with simple integer operation material towards difficult. While the post-test, there are ten questions for each group. Second, the interview is used as a reflection on learning before and after applying JUCO. Interviews were conducted by students who took part in the study, totaling 21 students selected 2 students (Suta & Mahagangga, 2018). Third, documentation is done by documenting all activities during learning (Mawara, 2023). Fourth, observation is a technique used to monitor the implementation of learning in the classroom (Sugiyono, 2016).

Data analysis is used in this study there are three steps, namely data reduction, data presentation, and drawing conclusions in a descriptive manner from the data that has been processed from the results of the study. Assessment through cognitive assessment is derived from the questions given in the pre-test and post-test, in contrast, affective assessment is assessed through the observation of the teacher in the value of character that is highlighted in the value of responsibility, confidence, and cooperation between groups.

RESULTS AND DISCUSSION

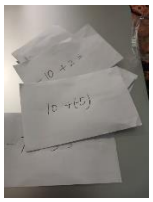
Learning students in the sixth grade of SD PTQ Annida Salatiga have learning outcomes that are still low in terms of cognitive and counting skills, especially in the material of integer operations in mathematics. This is evident from the pre-test results, which showed an average score of 69.28. As for the results of the class observation, several causal factors were shown. This is caused by several things, among others: 1) students have not understood the concept of the material presented. 2) students ' ability to count is still low. 3) teachers lack the use of innovative learning. 4) teachers pay less attention to student learning styles. 5) less teachers can create learning that is fun and not boring. Based on these five things, the teacher provides an innovative strategy in learning using media that can cover all learning styles in the classroom, namely with JUCO (Jump Counting) to further improve the learning outcomes of students. In addition to playing students can also learn to cause meaning and meaning in learning, to provide a good understanding of the concept, and can be used to complete the operation count integers.

JUCO (Jump Counting) is a combination of games and learning that is done by jumping and counting. This Media concept concretized number lines in a game so that learning will be more fun. Learners who have visual, audio and kinesthetic learning styles can be covered through this game. How to play JUCO (Jump Counting) is very easy and does not require expensive materials. As for the materials and equipment needed in the game, they are as follows: First, make a line to form a number line on the floor (can use black solation or rope) and prepare a card of numbers from positive numbers to negative numbers to 100. Cards about counting operations used to practice in the number line. Second, how to play JUCO (Jump Counting) is by step the teacher provides introductory material to equip knowledge before playing, then the teacher divides the students into groups, one group there are 4 s/d 5 students. The teacher gives the name of the group using the name of the animal that has a funny sound.

After the group is divided, the teacher gives the rules on how to play JUCO (Jump Counting). The rules of the game are that each student will perform a ‘hompimpa’ to determine who performs first. The teacher gives an explanation related to positive numbers, and then the movement jumps forward, while if the number shows negative, then jumps back. All members of the group have their respective roles among which A is in charge of being a JUCO player who is in neutral numbers. Player B takes the problem cards at the teacher's place which are then communicated to be practiced through player A. Players C and D prepare the numbers on the number line. If there are five members of the group, then they are asked to record the results

of the answers or can be a giver of instructions to other friends. The teacher prepares cognitive and psychomotor assessment sheets to know objectively the assessment.


Cards Integer


Integer Operations


Explanation Of The Material.


Group Division


Game process.

Figure 1. The process of doing JUCO (Jump Counting) with research subjects.

The results obtained from the implementation of JUCO (Jump Counting) can be seen from several points of view of students and teachers, namely as follows: First, when viewed from the teacher's point of view, learning is very helpful in understanding learners about the material concept of integer operations. It becomes simpler learning but can ease the work in its assessment. Once done, it can take value from many aspects, namely affective aspects, cognitive aspects, and psychomotor aspects. This greatly simplifies the work of the teacher. On the other hand, the materials and tools used do not require expensive costs and can take advantage of existing materials. In addition, it can provide an interesting and fun impression in delivering learning.

Second, when viewed from the perspective of students, feel very happy in learning to improve learning outcomes as expected. After implementing JUCO (Jump Counting) get results above the Standard of minimum completeness that has been determined. This is as much as 97% of students have been able to calculate following the concept of integer operations that have been determined. Students feel that learning is not boring and become familiar with the concepts given by the teacher. As such an interview with students who play JUCO (Jump Counting) follows:

> *"It's easy, Miss, tomorrow we will study like this again, Miss. If this is the case, I'm not afraid of math. Learning while playing is good, Miss."*
> (Interview with AFB students on Tuesday, November 12, 2024 at 09.10 WIB).

The same thing was also expressed by NAR students who said that learning mathematics through the game JUCO (Jump Counting) is not boring. He wanted to use the same method of learning as the subject of mathematics.

> *"Honey, I'm not tired of this cake. "I'm going to make this cake tomorrow, so it's going to be fun."* (Interview with NAR students on Tuesday, November 12, 2024 at 09.10 WIB).

The JUCO (Jump Counting) game has a significant impact on student results which can be seen from the learning outcomes obtained by students. These results are in the form of

student scores before using JUCO (Jump Counting) and after carrying out the JUCO (Jump Counting) game. This can be seen from the results before the implementation of the JUCO (Jump Counting) method from 21 students, there were only 8 people who got grades above the Standard of minimum completeness. The value of the Standard of minimum completeness in SD PTQ Annida is at a standard value of 70. While the other students still get scores below 70, as many as 13 people. With an average grade of 69.28, after evaluating, it turns out that many students are still confused about learning. JUCO (Jump Counting) was carried out for a week three times in delivering integer operations material, then students were post-tested and from 21 students all had an increase in grades and above all the Standard of minimum completeness with an average grade of 85.52. This shows a significant increase. The results of these data can be seen in the following diagram:

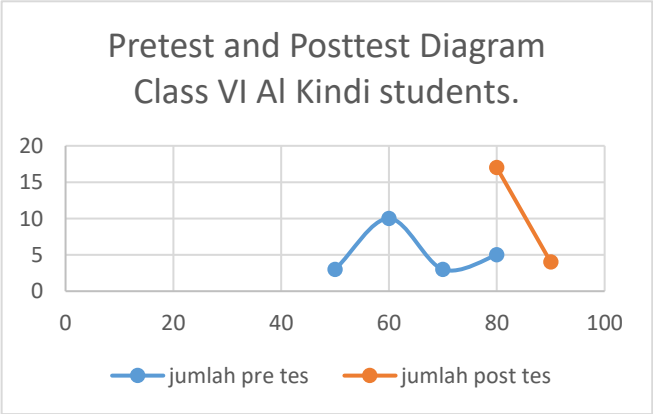


Figure 2. Presentation of pretest and posttest scores on students Class VI Al Kindi, SD PTQ Annida, Salatiga City, Central Java as a research subject.

Based on these data, it can be seen from three aspects, which are as follows: First, the cognitive aspect. This aspect can be seen when students can discuss and strategize and take integer number cards following those in the problem, then sorted according to the number line. One of the representatives of friends makes a forward or backward movement following the problem obtained. Cognitive in solving the problem is needed so as not to get the wrong concept. Second, is the Affective Aspect. This aspect can be seen when students become more mingled with classmates, who were previously quite able to become willing to be active in this game. Because in the game JUCO (Jump Counting) learning is required to collaborate with one group. This activity is seen from the cooperation when getting the problem and arranging the number line according to the problem obtained Third, The Psychomotor Aspect. This aspect can be seen when students are very visible to the skills possessed in groups, establish good communication, and Exchange concepts of thought put forward by friends in a team. So that

the psychomotor aspect of the ability to apply the problem and practice it after the discussion to solve and be able to sort the number cards.

CONCLUSION

Teachers must be able to quickly adapt so that learning becomes more conceptual. Creativity and innovation are required in the Independent curriculum. The conclusion of the learning strategy in overcoming learning outcomes using JUCO (Jump Counting), which is as follows: Based on the cognitive aspects of the use of JUCO (Jump Counting), there was an increase in the value of 18.98%. JUCO makes it easy for teachers to convey the material and learners in learning so that it is easier to accept the concept of the material presented.

Affective aspects increase collaborative fellow learners in solving the problem cards obtained. While the psychomotor aspect is to provide problem-solving skills in answering and practicing the number line, the required cohesiveness between members. It can be concluded that the use of JUCO (Jump Counting) provides effectiveness in improving student learning outcomes.

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