Use of ladder snake media in improving student learning outcomes in mathematics learning in elementary school

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Abstract: This research is motivated by the low student learning outcomes in mathematics learning. This study aims to improve student learning outcomes in class V Kancana State Elementary School by using Snake Ladder learning media. The research method used by the researcher was a classroom action research which collaborated with the fifth-grade teachers of Kancana Elementary School, with a total of 21 students in class V consisting of 6 male students and 15 female students. This research takes place in 3 cycles, each cycle consists of 3 actions. The techniques used in data collection are observation, tests, interviews, documentation, and field notes. The results showed that the use of snakes and ladder learning media could improve student learning outcomes in mathematics learning in class V of Kancana Elementary School.

1. Introduction

Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and the skills needed by themselves, society, nation and State [1]. Education as a place to shape the character of students and develop all the potential contained in students so that they can develop through teaching and learning activities carried out in formal, informal and non-formal institutions for their future life. The age of elementary school children, which is around 6-12 years old, often plays and is easier to understand concrete concepts, therefore education should be well designed so that students gain understanding and can improve student learning outcomes [2].

The 21st century is a century where the advancement of information and communication technology is developing rapidly which has an impact in various fields including the field of education, education in the 21st century emphasizes learning that allows students to develop their curiosity, teach skills that are useful for students’ lives in the future and allows students to work collaboratively in solving problems. Four skills that must be possessed by students are creativity and innovation (creativity and innovation), critical thinking and problem solving (critical thinking and problem solving), communication (communication) and collaboration (collaboration). Based on this, learning mathematics in the 21st century emphasizes these 4 abilities that must be trained in mathematics learning [3]. Mathematics is believed to be the basic science that holds an important role in the development of science and technology because mathematics is a means to develop reasoning, logical and systematic ways of thinking. In line with this, the purpose of learning mathematics in schools aims to have students
have the knowledge and skills of critical thinking in solving mathematical problems[4]–[6]. Strong mastery of mathematics early on as a provision for students to have an understanding of mathematics and understand the nature of mathematics as a process, product and attitude in order to have the provision of concept knowledge, critical thinking skills and problem-solving to be applied in everyday life [7].

Mathematics is the study of patterns and relationships in ways of thinking with organizational strategy, analysis, and synthesis, art, language, and tools to solve abstract and practical problems [8]. Mathematics is the science that studies abstract structures and the patterns of relationships that are in them [9]. Learning mathematics is essentially a concept learning, concept structure and looking for the relationship between the concept and its structure. The development of science and technology in the country of Indonesia is growing rapidly and can be used as a support in learning activities [10]. The existence of science and technology will greatly assist the teacher in choosing several new learning models and media, which facilitate students and teachers in their learning activities [6], [11]. Technological advances have also created a lot of new tools that make it easier for teachers to choose the media that will be used in learning activities, with the media making it easier for teachers to deliver learning material so that students are easier to understand the material presented [12].

The learning process in Indonesia is still teacher-centered which causes students to be passive in learning, of course, this affects student learning outcomes. In addition, there are still many teachers who use conventional learning models, especially in mathematics learning have not used instructional media that help students to understand the learning material, the reason teachers have not used learning media because of the lack of facilities in schools, if the facilities are not complete in school teachers are required to think creatively in choosing learning media that support the learning process of students [13]. These problems make students do not understand the material presented by the teacher in learning activities, lack of motivation of students in learning, students lack focus in learning activities that make student learning outcomes less than the minimum completeness criteria [14].

Based on the results of observations and direct interviews in learning Mathematics in class V Kancana Elementary School, Cikijing District, Majalengka District, the learning outcomes of students have not met the minimum completeness criteria. There are 8 students or 40% who succeed in achieving minimum completeness criteria and 13 students or 60% who have not reached the minimum completeness criteria where the Minimum Completeness Criteria for mathematics subjects is 70. Media is very important in learning activities, because Mathematics learning is considered a subject difficult and not easy to understand, with the media designed in such a way that the teacher can make it easier to deliver material that is difficult to convey and used to correct problems that occur including using learning media by design. Media by design is a medium that is deliberately designed and prepared in accordance with the demands of the competence of the learning objectives, researchers are trying to design snakes and ladders media that helps in understanding the material in space. Snakes and ladders media are deliberately designed, created and arranged to facilitate students learning mathematics, especially in building material.

Snake ladder games can be used as learning media that are fun for students. Students will tend to be interested in following the learning process. In this case, the teacher acts as a facilitator for students. Students who are active in snake and ladder games can find their own concepts of the material being studied because the method in playing snakes and ladders is combined with group discussion [15]. In addition, the snake ladder game media is an attractive medium for students because the presentation is not like the media which is usually possible only to be seen and heard but presented in the form of a game [16]. the game is adjusted to the characteristics of the elementary school students themselves who are still happy to play. With snake ladder games can help students to exercise numeracy skills and provide stimulation in developing intelligence without the pressures that can have negative consequences.

2. Method
This study uses classroom action research methods by having observing activity elements, actions that aim to correct problems in the learning process, and the same class receives lessons from a teacher [17].
Data collection is done through: observation, interviews, documentation, and student learning outcomes as many as 21 people. The data analysis technique was carried out through data reduction, tabulation of data from observations, data analysis and data exposure. The success criteria in this study is if the value of students' mathematics learning outcomes reaches a minimum of 76.19% or 16 people from the minimum completeness criteria. This research was conducted through four phases of cycles including: planning, implementing actions, observing and reflecting. The class action research model used was John Elliot's model

3. Results and Discussion
This study uses a classroom action research approach where the research will discuss the results of each cycle given action. The following diagram shows the results of this study:

![Figure 1. Percentage value for each cycle](image)

The results of this study indicate that there is an increase in each cycle. In the first cycle students who complete as much as 47% and the unfinished as much as 53% with an average grade reached 63.10. Cycle II experienced improvement, students who completed it became 67% and those who had not completed 33% with the average grade reached 70.71. While the third cycle of students who complete as much as 80% and the unfinished 20% with the average grade reaches 73.33. It can be understood that the snake ladder learning media is one of the learning media that is developed based on the type of traditional games with snake and ladder games. The game is matched with the characteristics of primary school age children with the aim of achieving the learning objectives themselves. It can be understood that snake ladder learning media has advantages such as: (1) students learn while playing, (2) students do not learn by themselves, but must group, (3) facilitate students to learn because it is assisted with images in the game snake and ladders, and ( 4) does not require expensive costs in making snake and ladder game learning media [18]. In addition, the characteristics of elementary school students tend to think of concrete operations, and at the age of children tend to integrate with play [15].

4. Conclusion
Based on the results of the research that has been described, it can be concluded that the snake ladder media can improve student learning outcomes in mathematics learning in the fifth grade of elementary school. Increasing the value of learning outcomes is influenced by the activities of students and teachers in the learning process in the classroom. Snake ladder learning media has a positive impact on students' enthusiasm for learning mathematics because formulating learning techniques is very pleasant so that students do not feel bored while learning the material.

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