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## **Applying Learning Equipment of Games Method with Snakes-And-Ladders's Aid Media in Lines and Angles Study**

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### **Abstract**

Learning equipment is one of the most prominent things in learning process. One component that should be paid attention in developing learning equipment is selecting the best learning media. However based on analysis found that there is not yet exist learning equipment of games method with snakes-and-ladders's aid media. This study aims to develop and to bring learning equipment of games method with snakes-and-ladders more valid, practical and effective. This type of research is development research and using the development model of ADDIE (analysis, design, development, implementation and evaluation). The subject of research trial is student of grade VII Junior high school Kemala Bhayangkari. Based on validator's comment, the research found that learning equipment of games method with snakes-and-ladders's aid is meet the valid criteria and also supported by analyzes carried out in this development research. This learning tool also fulfills practical and effective criteria based on the validator's recommendation that the game learning method with the help of snakes-and-ladders can be used with a slight revision, the tendency to increase formative scores, observers and students to respond positively to the use of learning equipment with the game of snakes-and-ladders, the average activity of students and the implementation of learning process are in good category. Based on the results of this development study as the whole learning equipment with the game method and the help of snakes-and-ladders can already be used in lines and angles learning.

**Keywords:** Learning Equipment; Games Method; Snakes-and-Ladders media.

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## **1. Introduction**

Learning tools are one form of preparations carried out by the teacher before they do the learning process. Furthermore according [8] learning devices are a number of materials, tools, medias, instructions and guidelines that used in learning process. Based on that statement, learning device is one of the supporting factors for success in teaching and learning process, however activity of compiling learning tools is not an easy thing for some teachers.

States that learning design activities in accordance with the curriculum require a variety of skills that differ from teaching skills in the classroom [9]. Also stated that the preparation of learning devices requires sufficient understanding of student's characteristics and environments [4]. Regarding the study, a development activity needs to be carried out regarding to the preparation of learning devices that are based on the process standards.

Besides, it was found in the field of reality that there were many teachers who had not performed the learning tools while teaching. [5] Suggests several factors that cause teachers not to develop and develop learning tools, including: (1) teachers assume that learning planning is only a requirement. As a result, learning planning and all learning devices are only limited to administrative completeness and they do not know that the reason for the preparation is a standard procedure of the work pattern of an academic; (2) teachers are confused about making learning devices that based on the expectations of the curriculum. This fact is also in accordance with the Ministry of Education statement [3] based on the results of monitoring and evaluation of the implementation of K13 carried out by the PSMP Directorate in 2015, the main problem faced by teachers in implementing K13 is in preparing lesson plans, designing assessment instruments, carrying out learning, evaluating, and processing and reporting the results of the assessment. As a result, the learning tools produced by the teachers are far from the expectations of the curriculum.

The results's observation during this researcher in SMP Kemala Bhayangkari, there are many students learn passively when following the mathematics learning process in class, especially in the lines and angles material. When the learning process about lines and angles are running, students are generally not actively involved in learning, among the many causes, one of the factors is teacher preparation in teaching learning materials such as incompatibility of learning tools used. Teachers should always innovate to create learning devices that are able to grow activism in learning mathematics Based on the needs analysis conducted by researchers at SMP Kemala Bhayangkari, learning devices are not yet available in games method which requires students to be more active in participating teaching and learning process.

In choosing the right method, one important component that needs to be considered in developing learning device is selecting the right learning media. The accuracy of media learning selection will have impacts on success of students learning and the achievements of learning objectives. According to Oers [6] to support students in learning process, tools can be used, for example games method learning, as said by Sadiman[7] learning media is a variety tools used by teachers to deliver messages of teaching to students through vision and hearing. Through the game it is expected that students can be pleasure of learning without pressure. This is consistent with Sadiman's statement [7] which stated that learning media in the form of games have several

advantages, including: games can be something fun and allow students to actively participate and develop self-students, games can also improve students' interest in learning, especially learning mathematics requires highly interest so that the results may be obtained.

The application of learning media in the form of games is expected to increase students' interest in participating mathematics learning so that their mathematical understanding will be better. In addition, using the help of games media, students, are expected not to feel bored in learning. students learn actively and interact directly in building their knowledge and understanding from their experiences. This thing is in accordance with Piaget's learning theory [2], which focuses on the process of students thinking, not on the end of result. This is very relevant to the games learning media, because using the help of games will also focus on the process of students thinking, not on the end result. By using games help, students prioritize the role of students in taking the initiative to find answers to the problems given by the teacher in their own way and students are encouraged to be actively involved in learning activities.

Games that will be applied in this study is games that developed in everyday's society, such as snakes-and-ladders games that have been modified for lines and angles study. The modified snakes-and-ladders game on learning is called mathematical circuits, the game is carried out based on the rules of the snakes-and-ladders game as said by Abdillah [1], with snakes-and-ladders games can provide new innovations in the implementation of learning which can improve student's understanding.

## **2. Method**

This study aims to describe the application of the learning methods of games with the help of snakes-and-ladders media to lines and angles study. This research has previously been developed and produced in the form of learning devices with games methods with the help of snakes-and-ladders media which are valid, practical and effective. It said Valid, it can be seen from the results of the validator's comments showing the learning device with the game method with the help of snakes-and-ladders media meets valid criteria, fulfills the practical and effective criteria. Learning outcomes Tests is over the minimum completeness criteria, observers and students give positive responses to the use of learning devices with game methods with snakes-and-ladders media, the average student activity and the feasibility of lectures are in the good category. This research was conducted at SMP Kemala Bhayangkari Banda Aceh and the trial subjects of this study were students of class VII SMP Kemala Bhayangkari 2018/2019 academic year. Data collection in this study has taken the development model obtained through lecture implementation sheet, student activity observation sheet, observer and student response questionnaire and learning outcomes test.

## **3. Result and discussion**

Observation of the implementation of lectures conducted by the observer. This observation aims to find out how the implementation of learning with the application of games method learning devices with the help of snake-and-ladders media in lines and angles material is developed. A Analysis of data observation through looking at the comments of observers in accordance with the implementation of learning at each meeting. The following is

observation recap of the learning implementation from the first meeting to the fourth meeting.

**Table 1:** Recap of Implementation Implementation Learning

Meeting	Aspect	Rating	
		Per-aspect	Per-meeting
I	Activity Pre-KBM	4,5	4,41
	Ability to open lessons	4,5	
	The teacher's attitude in learning process	4	
	Mastering teaching materials	4,5	
	Learning Process	4,5	
	Follow-up capabilities using game method	4,5	
II	Activity Pre-KBM	4,5	4,33
	Ability to open lessons	4,5	
	The teacher's attitude in learning process	4,5	
	Mastering teaching materials	4	
	Learning Process	4	
	Follow-up capabilities using game method	4,5	
III	Activity Pre-KBM	4,5	4,41
	Ability to open lessons	4,5	
	The teacher's attitude in learning process	4,5	
	Mastering teaching materials	5	
	Learning Process	4	
	Follow-up capabilities using game method	4	
IV	Activity Pre-KBM	4,5	4,5
	Ability to open lessons	4,5	
	The teacher's attitude in learning process	4,5	
	Mastering teaching materials	4,5	
	Learning Process	4,5	
	Follow-up capabilities using game method	4,5	
Total average			4,4

Based on the results of the observation analysis of the implementation learning from four meetings, it was obtained a total average value of 4.4 which showed very good criteria. Means that teachers activities by applying games method as learning devices with the help of snakes-and-ladders media in lines and angles material is developed very well. Observation of student activities was carried out in order to determine the activity of students in learning games method with the help of snakes-and-ladders media that had been developed. Observations are implemented by two observers who assess student's activity in learning process. Observers' assessment data were analyzed by using percentage descriptive analysis.

The results of the observer students data analysis are as follows:

**Table 2:** Percentage of Results of Student Activity Observation Analysis

Meeting	Percentage Assessment
I	87,8
II	89,8
III	90,2
IV	92,6
Total average	90,1

The results of students observation activity analysis obtained that at the first meeting students' activities reached an average of 87.8%. At this meeting, there were students who did not want to express ideas on examples in everyday's life related to lines and angles. The average activity of students in the second meeting reached 89.8%. At this meeting, students began to dare to express ideas and active in group discussions. The average activity of the third meeting students was 90.2%. At this meeting students have not been active in game activities. While the average activity of the fourth meeting students reached 92.6%.

At the fourth meeting students are familiar in each game and students are active in asking questions and expressing their ideas. The percentage results show that student activity has increased from the first meeting to the second meeting as much as 2%, while the second meeting to the third meeting has decreased by 0.4% and student activities have increased also at the third meeting to the fourth meeting as much as 2.4%. Overall, the average activity of students from the four meetings is 90.1%.

Means that student activity towards learning devices with game method is actively developed. The learning outcomes test (THB) was conducted at the fifth meeting which was tested on 23 students SMP grade VII Kemala Bhayangkari. The test scores for student learning outcomes are as follows.

Students' understanding concepts can be said a good criterion if 85% of students reach the Minimum Completion Criteria (KKM) from learning outcomes test (Trianto, 2010). On the table above, it can be seen that out of 23 students who took test outcomes learning, there were 20 or 87% students who obtained total scores reaching completeness from the established KKM scores and 3 or 13% students who scored below the KKM score. From the percentage of completeness of students that is more than 85%, it can be concluded that students' understanding in lines and angles material are in the good category.

Student responses were obtained from the response questionnaire given to 23 students after learning activities process. So that the results of student questionnaire response analysis were obtained with the following details.

**Table 3:** Student learning outcomes test scores

No	Name	Total Score	Explanation
1	Siswa01	90	Complete
2	Siswa02	85	Complete
3	Siswa03	60	Not Complete
4	Siswa04	80	Complete
5	Siswa05	95	Complete
6	Siswa06	90	Complete
7	Siswa07	95	Complete
8	Siswa08	90	Complete
9	Siswa09	80	Complete
10	Siswa10	95	Complete
11	Siswa11	100	Complete
12	Siswa12	85	Complete
13	Siswa13	80	Complete
14	Siswa14	75	Complete
15	Siswa15	75	Complete
16	Siswa16	65	Not Complete
17	Siswa17	90	Complete
18	Siswa18	100	Complete
19	Siswa19	60	Not Complete
20	Siswa20	85	Complete
21	Siswa21	90	Complete
22	Siswa22	80	Complete
23	Siswa23	85	Complete
Avarage		84,1	Complete

**Table 4:** Students' Feeling Percentage of Learning Components

No.	Responding aspects	Frequency		Percentage	
		Pleased	No	Pleased	No
1.	Subject	22	1	96	4
2.	LKPD	21	2	91	9
3.	Learning Outcomes Test	20	3	87	13
4.	Learning situation in class	23	0	100	0
5.	The way the teacher teaches	22	1	96	4

Based on the table above, it can be seen that the percentage of students' enjoyment of the subject is 96%. Means that almost all students like lines and angles material. besides, there were also 91% of students enjoying the student activity sheet, 87% of students enjoyed test learning outcomes, 100% of students enjoyed the learning atmosphere in the classroom, and 96% of students enjoyed the way teachers' teaching.

Furthermore, there also is the percentage of students' opinions on the learning component. the percentage value can be seen in the table below.

**Table 5:** Percentage of Student Opinions on Learning Components

No	Responding aspects	Frequency		Percentage	
		New	No	New	No
1.	Subject	20	3	87	13
2.	LKPD	20	3	87	13
3.	Learning Outcomes Test	21	2	91	9
4.	Learning situation in class	23	0	100	0
5.	The way the teacher teaches	22	1	96	4

In the percentage table of students' opinions on this learning component, there were 87% of students who stated that they had just obtained lines and angles learning material, 87% of students stated newly know to the developed LKPD, 91% of students stated new learning outcomes tests, 100% stated new to the learning atmosphere in class, and 96% of students stated new to the way teachers' teaching. There is also the percentage of students regarding to the interest in taking further learning through the game method. As stated in the table below:

**Table 6:** Percentage of Student Opinions about Interest in Following Further Learning with the game method

Responding aspects	Frequency		Percentage	
	Interest	No	Interest	No
Students' Opinions about Interest in following the next learning using game method.	22	1	96	4

Based on the table above, it found that there were 22 students from 23 students who expressed interest. So that there were 1 student from 23 students who stated they were not interested in learning using the game method.

Furthermore, the percentage of student opinions related to the language understanding used in the student activity sheet and learning outcomes test. The percentage of these students is presented in the table below.

**Table 7:** Percentage of Student Opinions About Understanding Languages Used

No.	Responding aspects	Frequency		Percentage	
		Clear	No	Clear	No
1.	LKPD	21	2	91	8
2.	Learning Outcomes Test	22	1	96	4

Based on the percentage table of students' opinions about understanding the language used in the LKPD, it was found that there were 21 students from 23 students who stated clearly and in THB there were 22 students from 23 students who said clearly.

In addition to the percentage of students' opinions regarding understanding the language used, there is also a percentage of students' opinions regarding appearance. The appearance here is more about writing images displayed from the student activity sheet and learning outcomes tests. The percentage is presented in the table below.

**Table 8:** Percentage of Student Opinions about Appearance (Writing and Drawing)

No.	Responding aspects	Frequency		Percentage	
		Clear	No	Clear	No
1.	LKPD	20	3	86	14
2.	Learning Outcomes Test	20	3	86	14

Based on the percentage table of students' opinions about the appearance of writing and images used in the LKPD, it was found that there were 20 students from 23 students who stated clearly and in THB were 20 students from 23 students who said clearly.

Based on the assessment of students' enjoyment of the components of learning, opinions about new learning, student interest, understanding of the language used, and appearance in terms of writing and images obtained percentage of more than 85%. So the results can be concluded that students' responses to the game method components is positive.



#### **4. Conclusion**

Learning with the application of games learning methods with the help of snake-and-ladders media in lines and angles material is very helpful for students in the learning process, it is seen from the results of observations of subject implementation, it showed very good results, then the average results of student observations activities from the four meetings were 90, 1%, as well as the learning outcomes are on good criteria.

#### **5. Recommendation**

Learning tools that have been developed in this study need to be tested in classes that have similarities / equivalents using experimental classes so that better learning devices can be obtained.

#### **References**

- [1] Abdillah, I. "Pengembangan Permainan Ular Tangga pada Pembelajaran Matematika untuk Meningkatkan Prestasi Belajar Siswa SDN Majalengka". *Jurnal ICT*, vol. 11, 87-96, 2014.
- [2] Hudojo, H. *Pengembangan Kurikulum dan Pembelajaran Matematika*. Malang: Universitas Negeri Malang Press. 2005, halaman.16-17
- [3] Kemendikbud. *Buku Guru Matematika SMP/MTs. Kelas VII*. Jakarta: Pusat Kurikulum dan Perbukuan, 2016, halaman. 34
- [4] Niken Wahyu, U., & Jailani, J. "Permasalahan Penyusunan Perangkat Pembelajaran Matematika". *Kontribusi Pendidikan Matematika dan Matematika dalam Membangun Karakter Guru dan Siswa*, vol.8, 1-10, 2012.
- [5] Nurjaya, I. *Pelatihan Penyusunan Perangkat Pembelajaran Bermuatan Pendidikan Karakter sesuai Amanat Kurikulum 2013 pada Guru-guru Sekolah Dasar*, Bali: Universitas Ganesha Singaraja, 2013, halaman. 12
- [6] Oers, B. V. "Emergent Mathematical Thinking in The Context of Play". *Educational Studies in Mathematics*. Vol. 74, 12-09, 2010.
- [7] Sadiman, A. *Media Pendidikan*. Jakarta: Raja Grafindo Persada. 2014, halaman. 20
- [8] Suhadi. *Petunjuk Perangkat Pembelajaran*, Surakarta: Universitas Muhammadiyah, 2007, halaman. 15
- [9] Sutherland, Rosamund. *Teaching for Learning Mathematics*, London: Open University Press, 2007, halaman. 67-68