

## Eclips Props to Probe Motivation of Visual Impairment Students in Learning Science

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### Abstract

The purpose of this research was to describe the Special Needs School (SNS) students' learning motivation improvement by using props. The research design used is *one group pretest-posttest design*. Data collecting techniques used are questionnaires and interview. The research subjects were four students with visual impairment in SNS ABC Swadaya Kendal. Two students suffer from low vision and two others suffer from total blindness. The data analysis used is percentage descriptive. This research was conducted for three meetings. The learning model used was inquiry model with eclipse as the material. The result of students' motivation improvement was up to 25%. The motivation of SNS students can be improved with the help of eclipse props especially in science lesson.

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## INTRODUCTION

Education is very important for Children with Special Needs (CSN). Through the Special Needs School (SNS), the children with special needs can experience the equal education like the normal children in general (Sholihah, 2017). One of the lessons that must be studied by them is physics. The physics learning is one of the science branches which requires more understanding than memorizing (Saputro, 2013). Therefore, every learning given to the children must give a meaningful learning experience for them, so their learning motivation can improve. The improvement of children's learning motivation is comparable to their understanding about subject material (concepts) that they received (Patonah, 2017; Puspitorini, 2014).

Basically, motivation is a strong desire or passion inside of someone which encourages him or her to try or to succeed in doing something. Motivation is a key factor in maintaining children in their learning process, and it is the most influential factor to determine the academic success. Self motivation is very important to gain excellent potency, spirit, and desire to be successful (Saleh, 2014). The low motivation of SNS students due to the unavailability of teaching visual props that help students to learn and also the students' disinterest in the learning process with lecture method that makes them drowsy.

Rahman (2014) stated that children with visual impairment can be noticed from their less visual acuity condition. Blind is a visual impairment which is including total blindness or

partially blinded (Wulandari, 2013). During the learning process, students have trouble to describe what they are learning. The cognitive structure may change according to individual ability and effort. A good motivation triggers students' success.

Teaching props are tools to help the learning process. The props used in the learning activity are very important to create an effective learning process (Sudjana, 2014:99). The teaching props in the learning activity can improve the students' motivation. Guidelines in supporting the development of knowledge, skills, and basic needs for the delivery of material, concepts, and physical information by educators are developed by the use of teaching props in the learning process at school (Azis, 2006; Oktafiani, 2017; Maretasari, 2012; Alvian, 2017).

## METHODS

The subjects of this research were four visual impairment students in Special Needs School (SNS) ABC Swadaya Kendal. Two of them suffer low vision and the other are totally blind. Increased student motivation is the variable measured in this study. Descriptive percentages are used to analyse the research data. Inquiry learning model and solar eclipse props are used in the learning teaching process.

This research was conducted for three times of meeting. The collecting data methods used are questionnaires and interview. The questionnaires were given before and after the learning process. Motivation aspects to be developed are presented in the Table 1.

**Table 1.** Motivation Aspects to Develop

Dimensions	Indicators
Desire and willingness to be successful	Needs to learn Interest in challenge
Encouragement and needs in learning	Willingness to succeed Discipline
Hope and future aspiration	Good achievement on learning outcomes Fulfilling aspirations
Hope and future aspiration	Gaining maximum grades Excellence
Interesting activity in learning	Eager to study because of the interesting learning activity Feeling happy when taught using the props
Conducive learning circumstance	Conducive circumstance to study Socializing with friends at school

(Rusilowati, et al. 2016; Uno, 2017)

The answer choices in the questionnaires are yes or no. The yes answer gains score of 1 and the no answer gains score of 0. The motivation dimensions consists of six aspects which were including two indicators for every aspect. The percentage of indicators obtained from the learning outcomes were analyzed using the percentage formula as proposed by Sudijono (2014).

$$P = \frac{f}{N} \times 100\%$$

Note:

$P$  = percentage of assessment       $f$  = Obtained scores  
 $N$  = Total scores

Table 2 describes the motivation improvement criteria.

**Table 2.** Motivation Enhancement Criteria

Percentage	Note
85% < grade ≤ 100%	very good
70% < grade ≤ 85%	good
50% < grade ≤ 70%	good enough
01% < grade ≤ 50%	not good

(Akbar, 2013)

## RESULTS AND DISCUSSION

The purpose of this study was to describe special needs students' motivation improvement. The percentage of motivation scores can be seen on Table 3.

The first motivation aspect which is desire and willingness to be successful, with two indicators including needs to learn and interest in challenge. The result of filled questionnaires by all of the students indicated a better changing.

The questionnaires that were given at the initial and final meeting showed the students' willingness to learn and the happiness towards challenge. The second motivation aspect which is encouragement and needs in learning, with two indicators of success including willingness to succeed and discipline.

All of the respondents at the initial meeting when the questionnaires were given, showed that they were not motivated and undisciplined. It was different at the final meeting that every respondent filled the questionnaires with "yes" answer and they were motivated to always study.

**Table 3.** The Percentage of Students' Motivation Scores

Aspects	A-03		A-04		A-05		A-06	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Desire and willingness to be successful	8.3	16.6	8.3	16.6	8.3	16.6	8.3	16.6
Encouragement and needs in learning	8.3	16.6	8.3	8.3	8.3	16.6	8.3	16.6
Hope and future aspiration	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6
Learning achievement	8.3	16.6	0	16.6	0	8.3	8.3	8.3
Interesting activity in learning	16.6	16.6	8.3	16.6	16.6	16.6	16.6	16.6
Conducive learning circumstance	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6
Scores Percentage	74.7	100	58.1	91.3	66.4	91.3	74.7	91.3
Gain	25.3		33.2		24.9		16.6	

The third motivation aspect that is hope and future aspiration with two indicators including good achievement on learning outcomes and fulfilling aspirations. Two respondents A-04 and A-06 filled the questionnaires with the same answers, that they had no willingness to get maximum score in the learning process and so did the respondents A-01 and A-03. However all of the students filled "yes" answer at the final questionnaires meaning they were more motivated to get maximum score in science lesson.

The fourth aspect that is learning achievement with the indicators getting the

maximum score and excellence. From the information obtained that the respondents stated same choice of answers, both before and after learning. Respondent A-04 was the only one who were not motivated to get good grades at the initial time of filling the questionnaires, but finally A-04 were motivated to get good grades at the last time filling the questionnaires.

The fifth aspect that is interesting activity in learning has two indicators including eager to study because of the interesting learning activity and feeling happy when taught by using props. The respondents filled "yes" and they were motivated since the first time of learning. It is

interpreted that interesting learning makes respondents more passionate and motivated to learn. Accordance Lintang (2017), and Wuli (2017) it is also necessary to use learning media to deliver abstract concept in the learning process.

The conducive learning circumstance has two indicators including conducive circumstance to study and socializing with friends at school. Accordance Arini (2007) learning circumstance affects students' learning activity both physically and mentally. The existence of science lesson (physics) with teaching visual props provides the respondents to be able to socialize with friends and respect the teacher who is teaching. The proof is in every choice chosen by the respondents showed the consistent similar choice from the initial to the final questionnaires.

Among all of the researched motivation aspects, the learning achievement aspect has the lowest scores. The factors that affect the low learning achievement aspect are the use of conventional method during science learning activity. In line with Sudarsana (2017) explained, conventional learning makes students are not active and feel bored.

Initially A-04 and A-05 were not interested in science lesson, because according to their opinion science lesson was full with memorizing and there was nothing new to learn. The existence of inquiry learning using solar eclipse and moon eclipse props can improve children's learning motivation. After studying until the last meeting, the motivation of A-04 and A-05 increased and they became more diligent to study science.

A-06 is a slow learner who is slightly below the normal intellectual potential, but not mentally disabled (Desiningrum, 2016). The study motivation of A-06 is stagnant from the initial to the final meeting. This situation is compounded by the circumstance outside the school where there is no friend who supports A-06 to learn science so it is difficult for A-06 to learn.

It is different when using the props during the lesson at school, A-06 became more passionate and motivated to study hard. So it can be concluded that using eclipse props during the

science learning activity can increase the motivation of students with visual impairment.

The interview with the children was held in Special Needs School (SNS) A Dria Adi Semarang and Special Needs School (SNS) ABC Swadaya Kendal. The interview with A-01 showed the motivation improvement to do the tasks on time, because by using the method and the props had made A-01 more understand about both solar and lunar eclipse.

The interview with A-02 showed that physics lesson which used solar eclipse and lunar eclipse props had made A-02 always tried to understand the material. The developed props could motivate A-02 to study harder and to get good outcomes in physics lesson. A-02 admitted that the learning using props was a new thing that made A-02 more eager to study both at home or school using laptop or internet to dig information.

A-03 liked to learn using solar and lunar eclipse props because they made A-03 more understand about eclipse phenomenon. When using the props, A-03 realized that discussing activity made A-03 easier to exchange ideas with friends, because according to A-03 the lecture method made him bored. A-03 learning spirit continued to grow and it made A-03 always tried to get good grades, especially with the learning activity using props made A-03 more eager to learn. A-03 has a high curiosity, so that he always tries to search the materials or new things via internet. On internet media usage, she used mobile phones and laptop computers to found an information. The JAWS program and google assistant, facilitate the operation of these tools. A-03 can manage both playing and studying time well. Besides, A-03 always does the tasks on time. This child has the best achievement among the others, so that A-03 wants to be a teacher someday.

A-04 is a normal child who suffers from blindness. A-04 became more passionate to study harder so that A-04 can move to the higher class. Besides that, there was a change of A-04's behaviour who was initially often doing the task late, finally became on time after the learning activity using the props. A-04 also claimed to prefer to discuss in group, because it made A-04

think faster and provided A-04 a chance to share ideas with other friends. On the other hand, because A-04 wanted to get good results during the learning activity, A-04 always did the science task even the tasks were difficult. Learning activity with the props was a new thing for A-04, because the usual learning was always done using lecture method.

A-05 suffers from low vision. Initially, A-05 could not determine the dream in the future when A-05 was asked about the future aspiration. According to A-05, his aim of going to school was only to study, but because of the easiness to understand the lesson when it was done, finally A-05 could decide the future aspiration to become a handphone counter owner. Since then A-05 had a high motivation to study for the sake of future days.

A-06 suffers from total blindness, but the willingness to study hard to move to the higher class makes A-06 always motivated. A-06 has different way to study which is to summarize the material at home based on what A-06 heard at school. A-06 was ever late to do the tasks, but when taught with inquiry model A-06 became more on time to do the tasks eventhough sometimes the tasks were difficult. A-06 always tries to understand the lesson, because A-06's future aspiration is become an artist.

All of the students stated the similar opinions about the physics lesson using the solar eclipse and lunar eclipse props. During the learning process, they feel happy, more understand, and enrich their knowledge. The use of props in learning is a new thing for children to investigate the characteristics of the sun, earth and moon and eclipse the current position of the sun and moon. The props are in accordance with the condition of the child, which is to adjust the condition of children with visual impairments that still function like the sense of touch and the listener.

The sense of touch in children used to explore the characteristics of the shape in miniature sun, earth and moon. In addition, the child can use the sense of touch to feel the Braille information shown on any part of the props. Hearing the child was used to capture the audio

information that comes from the props. The information contains the characteristics of each miniature tools, as well as provided knowledge about the occurrence of solar and lunar eclipses.

The use of props hto increase students' learning motivation has a positive impact. There is a difference between the students' learning motivation improvement before and after using the learning media. In line with Adnyani (2015) explain, steadily students' learning motivation increases so do the students' chievement and concept understanding.

There is quite a lot of differences of this results compared to the previous researches, such as the research conducted by Dirgayusa (2015), and Dariyati (2015), which stated that the students' motivation improvement was affected by the learning media used, but in the process, the students were not directly involved in extracting information independently. The existence of audio voice assistance makes students become more understanding of the material provided, compared to the use of tools in previous research. Meanwhile, in this research the students were directly involved, so the students experienced new things in every process.

The direct involvement of students in the learning activity makes their motor skills also increase. In addition, the use of learning media help building the intensity of interaction between teacher and students thus establishing a good learning circumstance (Widyastuti, 2016; Badiah, 2016).

## CONCLUSION

Based on the research results and discussion, the conclusion is eclipse props can enhance the motivation of special needs students.

Overall aspects of motivation studied, aspect of the award in the study had the lowest value. The factors that affecting the low aspect of learning awards in science learning activities is still use the conventional method, and its make them bored. Aspect of a conducive learning environment have the highest value. The learning science (physics) uses props make the respondents can socialize each others.

In a subsequent study, to improve impairment student motivation can use other learning model combined with the props, to provide new experience to students.

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