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**LEARNING PHYSICS OF MOTION AND FORCE USING THE OUTDOOR STUDY METHOD: AN EFFORT TO INCREASE STUDENTS' INTEREST AND LEARNING OUTCOMES AT SECONDARY SCHOOL**

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**ABSTRACT**

This study aims to determine the increase in interest and learning outcomes of science students in class VIII SMP Negeri 1 Watampone, Bone Regency Indonesia, using the Outdoor Study method. This research includes Classroom Action Research, which consists of two learning cycles which include the planning phase, the implementation phase of the action, the observation phase, and the reflection phase. The data collected includes data about the science learning outcomes prior to the implementation of the action, data about the students' interest in learning science, the data about the learning outcomes of the science cycle I and cycle II, and data on the observations/notes of the teacher in each research cycle. The data was obtained through a questionnaire about the students' interest in learning science, the science learning outcomes test before the implementation of the action, the science learning outcomes test cycle I and cycle II, and the student learning observation sheet. The data is then analyzed using quantitative and qualitative descriptive analysis techniques. The results showed that there was an increase in science learning outcomes of students at SMP Negeri 1 Watampone, both in cycle I and in cycle II, the average level of mastery of science learning materials was in the high category, and the readiness, sincerity and activeness of students following the learning process more increasing. The analysis shows that there is an increase in the interest and learning outcomes of science students of SMP Negeri 1 Watampone after managing learning using the Outdoor Study method.

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Keywords:Outdoor Study Method, Science Learning Interest, Science Learning Outcomes

**INTRODUCTION**

Basically, the purpose of development in the field of education is to improve the quality of human life in its entirety and comprehensively. Besides that education also aims to realize Indonesian people who have faith and are devoted to God Almighty, qualified and independent so that they are able to build themselves and be responsible for national development.

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Various efforts have been made to improve the quality of education, one of which is through the

change from the Education Unit Level Curriculum (KTSP) to the 2013 National Curriculum (K13). Not only that, so far K13 has experienced some funda-mental developments and improvements since it was rolled out in 2013. The curriculum improve-ment is based on the policy foundation of the Minister of Education and Culture set forth in the Minister of Education and Culture Regulation No. 160 of 2014 concerning the Implementation of the 2006 Curriculum and the 2013 Curriculum. Based on the results of monitoring and evaluation as well as public input, there are a number of inputs regar-ding the existence of inaccurate understanding by the community caused by the presentation format and nomenclature in K13: (1) Basic Competence (KD) in Core Competencies 1 (KI-1) and KD in KI-2 which was considered less logical was related to the characteristics of the subjects; (2) there are indications of inconsistencies between BC in the syllabus and textbook (both the scope of the material and the order); (3) there has not been an explicit statement in the curriculum document about the need for more technological literate students; (4) the evaluation format is considered too complicated and needs to be simplified; (5) reaffirming the notion of scientific learning that is not the only approach in the learning process in the classroom; (6) hardening and technical improvement of textbooks so that they are easy to learn by students (Kemdikbud, 2016).

In general, the improvement in K13 aims to be in harmony between ideas, designs, documents, and their implementation. Specifically, improvement of K13 aims to harmonize SKL, KI-KD, learning, as-sessment, and textbooks. These improvements in 2017 are adjusted to Presidential Regulation Num-ber 87 of 2017 concerning Strengthening of Charac-ter Education (PPK). PPK is an educational move-ment under the responsibility of the education unit to strengthen the character of students through the harmonization of the process of heart, taste, tho-ught, and sports by involving and cooperation bet-ween education units, families, and communities as a national movement of mental revolution (Pasal 1 ayat [1]). PPK emphasizes five main values of cha-racter that is religiosity, nationalism, independence and integrity of mutual cooperation (Kemdikbud, 2016). Strengthening the five character values will be able to encourage students to have 21st Century skills needed in pursuing life, such as critical thin-king and problem solving skills, collaboration skills, creativities skills, and communication skills (Hidayah et al., 2017; Asliati at al., 2018; Redhana, 2019).

Actually, understanding K13 for science teac-hers aims to: (1). develop professional competencies and teacher pedagogical competencies in learning science; (2). Develop teacher skills in preparing learning tools; and (3). improve the ability and skills of science learning practices in the classroom (Sari, 2013; Hapwiyah et al., 2015; Nevida, 2016).

However, reality shows that the application of K13 in science teaching in the classroom can not provide the desired results (Anwar, 2014; Loko, 2016; Makaborang, 2019). Based on the results of the descriptive analysis of the mastery of science learning for students of SMP Negeri 1 Watampone, class VIII-G on the first daily test, it can be conclu-ded that it is in the low category. The average score of student mastery is 76.09 from an ideal score that might be achieved by 100 with a standard deviation of 10.90. There are around 17 students (53.13%) in the incomplete category and there are 15 (46.88%) students in the complete category. One of the factors causing the low average daily test scores of grade VIII-G students is because the strategies and meth-ods applied by the teacher in learning are more oriented to teacher centered, so that the motivation and learning interest of students towards science lessons is very low. Although actually learning with interest will be better than learning without interest (Lee et al., 2011; Rusmiati, 2017; Wibowo et al., 2018).

Therefore, based on the problems that have been stated above and from various analyzes that the author has done, namely by analyzing the attendan-ce list of students, analyzing the list of student values, analyzing the tasks given to students as well as the subject matter used, analyzing feedback given by the teacher to the work of students, as well as reflecting on the teaching behavior of the teacher, so many problems that are urgent to be addressed. The low science learning outcomes of students in SMP Negeri 1 Watampone indicates that science learning is less attractive, and makes the interest and learning outcomes of science students very low. From this fact, it can be assumed that the reason why students' interest and learning outcomes are low at each sci-ence teaching and learning process because students do not understand the science learning concepts. Students are less motivated to complete assignments at home. Students' reading interest in science books is low. Students are lazy to ask questions and tend not to ask questions when the learning process is taking place. Basic knowledge of mathematics lear-ners are low, and others.

Based on the various problems above, there is actually one main problem that needs attention, which is related to students' interest in science lessons. Most students are less interested in learning science because teachers still use conventional me-thods so that the material taught tends to be verbal or just memorize (Purwanti, 2012; Kadir, 2016; Prihatini, 2017; Oktalia et al., 2018). Meanwhile, student-centered learning is most influential in utili-zing specific interventions including the following: making a curriculum that stimulates, interacts with students, is available and approached, uses different instructions, handles relevant material, becomes aware of the depth and breadth of the material, offers responses culture, and develop structured learning that allows teachers to facilitate informa-tion and empower students (Paolini, 2015). The au-thor realizes that one of the weaknesses of the con-ventional method when applied purely is that it does not actively involve students in the learning process, resulting in the material being less attractive (Nasution, 2012). All learning is carried out in the classroom, which is supposed to be able to arouse motivation and interest in learning, the learning pro-cess must be well managed with a variety of learning methods and strategies such as conducting labora-tory experiments, demonstrations in the classroom and others. In addition, teachers need to find solu-tions or other alternatives in managing student lear-ning processes to find out natural events around them, without having to bring them into the labora-tory room (Carrier, 2009; Yaman, 2016).

One effort that is expected to increase the interest and learning outcomes of science students is to implement an Outdoor Study (OdS) learning met-hod or an outdoor classroom method by assigning assignments to students (Ayotte-Beaudet et al., 2017; Mackenzie et al., 2018). Through the OdS method the environment outside the classroom can be used as a learning resource (Aisah, 2015). The role of the teacher here is as a motivator, meaning the teacher as a guide so students learn actively, creatively, innovatively, effectively and intimately with the environment (Djajadi, 2019; Lantz, 2010; Mart, 2013). The ODS on science teaching methods into a means of fostering creativity, initiative, inde-pendence, cooperation or mutual assistance in incre-asing interest and learning outcomes of science (Eick, 2012; Kurniawati, 2015; Ting & Siew, 2014; Widowati, 2015). Therefore, it is desirable that the OdS method can increase student interest and lear-ning outcomes. The choice of environment outside the classroom as a learning resource should be adjus-ted to the subject matter. In this case the material in accordance with the method is class VIII teaching material that describes the motion and force and simple machine. Through the OdS method, the form of the assignment is adjusted to the ability of stu-dents to the specified limits, but still excites them so that it is expected not to cause boredom.

Finally, based on the description above, resear-chers feel interested in investigating how motion and force learning and simple machine use the OdS met-hod? Which is an effort in increasing interest and learning outcomes of science students in class VIII of SMP Negeri 1 Watampone-Bone Regency, in the academic year 2018/2019.

**METHODOLOGY**

This research is a classroom action research (CAR). The action given is the implementation of teaching and learning process by applying and deve-loping OdS learning methods. The study was condu-cted in the Sports Field and around the grounds of SMP Negeri 1 Watampone, with the subjects of class VIII-G students with 32 students consisting of 11 male students and 21 female students. The things that want to be collected as a source of basic data which are subsequently analyzed are: (1) Student factors: namely by looking at students' interest and learning outcomes through learning opportunities

outside the classroom (OdS). (2) Factors of the learning process, namely by seeing whether the lear-ning process takes place meaningfully, actively, in-novative, creative, and fun with the application of learning with the OdS method.

This CAR procedure consists of two cycles. Each cycle is carried out in accordance with the cha-nges to be achieved as designed in the factors being investigated. The instruments used in this study are as follows: (1) Questionnaire about students' interest in learning science. (2) Student learning observation sheet to record or see the seriousness and activeness of students outside the classroom when the OdS method is applied. And (3) Daily Test Questions for Cycles 1 and 2.

The data collection techniques in this study are as follows: (1) Data about students 'interest in lear-ning science taken using a questionnaire of students' interest in learning science. (2) Data about students' science learning outcomes is taken using a science learning achievement test at the end of each cycle. And (3) Data on the activeness and seriousness of students in participating in the OdS teaching and learning process were taken using a 32 subject observation sheet. The collected data is then analy-zed using quantitative and qualitative analysis. Re-searchers used descriptive analysis techniques in quantitative analysis, namely the average score and percentage. As for the purposes of qualitative analy-sis, the technique used is a category of student mas-tery level that refers to the Minimum Learning Mastery (KBM) score of 80, namely the level of mastery of students 90%-100% categorized very good, 80%-89% categorized good, 70%-79% catego-rized as moderate, 60%-69% categorized as low, 0%-59% categorized as very low. The next data proces-sing process researchers used a computer with Mic-rosoft Office Excel and the Statistical Package for Social Sceince (SPSS). An indicator of the success of this research is the achievement of more than 80% of students who scored above the KBM. In addition, if there is an increase in the interest in learning science in the implementation of Cycle I to Cycle II, the learning of science of motion and style materials and simple aircraft using the Outdoor Study method can increase the interest and learning outcomes of science students in class VIII of SMP Negeri 1 Watampone, Bone Regency.

**RESULTS AND DISCUSSION**

**Preliminary observations**

To determine the state of interest in learning science students have done data collection through a questionnaire. These data are analyzed quantita-tively and the results are as in the following Table 1:

**Table 1.** Average scores of students' interest in learning science

|  |  |  |
| --- | --- | --- |
| **No** | **Student Questions** | **Percentage of Student Responses (%)** |
| **Strongly Agree** | **Agree** | **uncertain** | **Disagree** | **Strongly Disagree** |
| 1 | I am very happy to study science because I feel I have the basic abilities/talents in that field. | 3,13 | 34,38 | 59,38 | 3,13 | - |
| 2 | I am not happy to study science because the material is too complicated. | 18,75 | 62,50 | 15,63 | 3,13 | - |
| 3 | I am happy to study science because it is one of the lessons that is very supportive of other subjects, especially those related to Science and Technology. | 9,38 | 50,00 | 21,88 | 18,75 | - |
| 4 | I always try to take science lessons because I am indeed interested in learning them. | 9,38 | 9,38 | 31,25 | 37,50 | 12,50 |
| 5 | I enjoy studying science because it can help me in knowing and understanding about the intricacies of nature, natural phenomena, as well as phenomena that occur in the universe. | 28,13 | 37,50 | 28,13 | 6,25 | - |
| 6 | I am not happy to study science because of too many mathematical calculations. | 3,13 | 25,00 | 21,88 | 46,88 | 3,13 |
| 7 | I always try to read books about science. | 12,50 | 34,38 | 34,38 | 18,75 | - |
| 8 | I rarely make science assignments because of inadequate home study facilities. | - | 6,25 | 15,63 | 65,63 | 12,50 |
| 9 | The lack of basic knowledge that I obtained from elementary school caused me less pleasure in studying science. | 9,38 | 6,25 | 34,38 | 40,63 | 9,38 |
| 10 | I do not have books about science because they are less useful to me than other books. | 3,13 | 9,38 | 9,38 | 62,50 | 15,63 |
| 11 | The tools and materials and learning equipment provided by the school were very limited causing me to be unhappy about studying science. | 3,13 | 18,75 | 12,50 | 46,88 | 18,75 |
| 12 | I enjoy studying science because the costs are relatively small. | 12,50 | 34,38 | 37,50 | 12,50 | 3,13 |
| 13 | I am not happy to study science because in general the learning is done in class with conventional methods. | 3,13 | 12,50 | 31,25 | 46,88 | 6,25 |
| 14 | I am not happy to study science because the methods applied are not satisfactory to me. | 3,13 | 6,25 | 34,38 | 43,75 | 12,50 |
| 15 | I am not happy to study science because too many assignments are given, while the material is not fully understood. | 6,25 | 9,38 | 21,88 | 50,00 | 12,50 |
| 16 | The unavailability of the Sciences Laboratory room with adequate facilities makes me less happy to study sciences. | 3,13 | 18,75 | 21,88 | 43,75 | 12,50 |
| 17 | The method applied by the teacher makes me happy to study Science. | 25,00 | 62,50 | 6,25 | 6,25 | - |
| 18 | When using teaching aids or media in learning, it can arouse my interest in learning science. | 18,75 | 50,00 | 25,00 | 6,25 | - |
| 19 | The way to give teacher material makes me happy to study Science. | 40,63 | 46,88 | 6,25 | 6,25 | - |
| 20 | I always try to get as much guidance from the teacher as possible. | 28,13 | 50,00 | 15,63 | 6,25 | - |

*Indicator of science subject matter*. Based on the results of the analysis conducted, it can be concluded that students' interest in learning science based on subject matter indicators, is largely determined by:

1. The basic ability or talent of students towards scien-ce, where there are 11 students (34.38%) agree.
2. The science material is very complicated, where the-re are 20 students (62.50%) agree.
3. Science as a lesson that can support other lessons, where there are 16 students (50.00%) agree.
4. Motivation of students to study sciences, where the-re are 12 students (37.50%) are not interested becau-se of this factor.
5. Science can help us to know and understand the ins and outs, symptoms, and phenomena that occur in nature, where there are 12 students (37.50%) agree.
6. Too many mathematical calculations, where there are 15 students (46.88%) not interested because of this factor.
7. Trying to read science books, where there are 11 students (34.38%) agree.
8. Inadequate home learning facilities, where there are 21 students (65.63%) are not interested in comple-ting assignments because of this factor.
9. Lack of basic knowledge obtained from elementary schools where there are 2 students (6.25%) agree.
10. Do not have a book about science because it is consi-dered less useful, where there are 3 students (9.38%) agree on this.
11. Tools and materials prepared by schools are very limited, where there are 6 students (18.75%) agree.
12. A relatively small fee, where there are 11 students (34.38%) agree.

*Learning method indicators*. Based on the results of the analysis conducted, it can be concluded that students' interest in learning science based on indicators of learning methods, are as follows:

1. In general, science learning is done in the classroom with conventional methods, where there are 4 students (12.50%) agree.
2. Less satisfactory learning methods, where there are 2 students (6.25%) agree.
3. Too many assignments are given to students, where there are 3 students (9.38%) who are not interested because of this factor.
4. Science laboratory with adequate facilities, where there are 6 students (18.75%) who are not interested because of the unavailability of laboratory space with adequate facilities.
5. The teaching method applied by the teacher is fun, where there are 20 students (62.50%) agree.
6. The use of teaching aids or media in learning can arouse the interest of students, where there are 16 students (50.00%) agree.

*Teacher teaching style indicator*. Based on the res-ults of the analysis conducted, it can be concluded that the interest in learning science students based on indicators of teacher teaching style, is determined by:

1. The way the teacher presents the learning material, where there are 15 students (46.88%) agree.
2. Guidance given by the teacher, where there are 16 students (50.00%) trying to get as much guidance.

Meanwhile, the results of the descriptive analy-sis of daily tests before the implementation of the OdS method showed that the average score of mas-tery of students before the action was 76.09 of the ideal score that might be achieved is 100 with a stan-dard deviation of 10.90 which is below the KBM value of 80. If the students' mastery scores above are grouped into the five scale category, then the frequ-ency distribution of scores is obtained as shown in Table 2 below:

**Table 2.** Frequency distribution and percentage of daily test scores before the OdS method.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Score** | **Category** | **Frequency** | **Percentage (%)** |
| 1. | 0 - 59 | Very low | 3 | 9,38 |
| 2. | 60 – 69 | Low | 7 | 21,88 |
| 3. | 70 – 79 | Moderate | 7 | 21,88 |
| 4. | 80 – 89 | High | 11 | 34,38 |
| 5. | 90 – 100 | Very high | 4 | 12,50 |

After using the categorization, it can be seen that from 32 students of class VIII-G who were the subjects of the study, three people (9.38%) were categorized as very low mastery levels, seven people (21.88%) were categorized as low mastery levels, seven people (21.88%) are in the moderate level of mastery, 11 people (34.38%) are in a high level of mastery, and four people (12.50%) are in a very high level of mastery.

Furthermore, the results of the descriptive ana-lysis of the completeness of science learning for stu-dents of SMP Negeri 1 Watampone on daily tests be-fore the implementation of the OdS method can be concluded to be in the medium category (average 76.09) based on the frequency distribution table above (Table 2). Meanwhile, there were 17 students (53.12%) who were in the incomplete category and there were 15 students (46.88%) in the completeness category. Overall, the percentage of completeness for daily tests before the implementation of ODS learning was 46.88%.

**Research Implementation Process**

**a. Descriptive analysis of final test results first cycle**

In this cycle the results of learning tests are carried out in the form of daily tests. The descriptive analysis of students' acquisition scores after applying the OdS method during Cycle I shows that the ave-rage score of mastery of students in Cycle I is 81.25 of the ideal score that might be achieved that is 100 with a standard deviation of 8.21. If the students' mastery scores above are grouped into a five scale category (see Table 3), the frequency distribution of scores obtained from 32 class VIII-G students who are the research subjects turns out that there are three people (9.38%) categorized in the level of mastery low, six people (18.75%) are categorized in the medium level, 15 people (46.88%) are in a high level of mastery, and eight people (25.00%) are in a very high level of mastery.

Based on the average score of mastery of stu-dents after categorized, it is known that the level of mastery of Class VIII-G students of SMP Negeri 1 Watampone after applying the OdS method for Cycle I is equal to 81.25 in the high mastery level category.

Furthermore, based on the results of the des-criptive analysis of the completeness of science lear-ning for students of SMP Negeri 1 Watampone in the first cycle learning outcomes test is in the high category. There were nine students (28.13%) who were in the incomplete category and there were 23 students (71.88%) in the completeness category. The indicator of the success of this research is the achievement of more than 80% of students who get scores above the KBM, while the results obtained have not reached the desired target of 71.88%, so that this research continues to the next cycle, with the hope that the results obtained can meet desired standards or performance indicators.

**b. Descriptive analysis of the results of the final cycle II test**

In this cycle the results of learning tests are carried out in the form of daily tests. The descriptive analysis of students' acquisition scores after applying the OdS method shows that the average score of mastery of students in Cycle II is 85.70 of the ideal score that might be achieved that is 100 with a standard deviation of 7.11. If the students' mastery scores above are grouped into a five-scale category (see Table 3), the frequency distribution of scores obtained from 32 Class VIII-G students who are the research subjects turns out that there are no students who are at low and very low mastery levels, four people (12.50%) were in a moderate level of maste-ry, 17 people (53.13%) were in a high level of maste-ry, and 11 people (34.38%) were in a very high level of authority.

Furthermore, based on the results of the avera-ge score of mastery of students after being categori-zed, it is known that the level of mastery of Class VIII-G students after applying the OdS method for Cycle II that is 85.70 is in the category of high mas-tery levels. While mastery learning science students SMP Negeri 1 Watampone on the implementation of the OdS method cycle II is in the high category. There were four students (12.50%) who were in the incomplete category and there were 28 students (87.50%) in the completeness category. Because the indicator of the success of this research is the achie-vement of more than 80% of students who get grades above the KBM, it turns out the results obtained have reached the desired target of 87.50%, so there is no need to continue this study to the next cycle, because the results obtained are already meet desired standards or performance indicators.

Furthermore, the following Table 3 will show an increase in science learning outcomes for stu-dents after the Outdoor Study method was applied in Cycle I and Cycle II.

**Table 3.** Frequency distribution and percentage of science learning outcomes scores of students after applying the OdS method in Cycle I and Cycle II

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Score** | **Category** | **Frequency** | **Percentage (%)** |
| **Cycle I** | **Cycle II** | **Cycle I** | **Cycle II** |
| 1. | 0 – 59 | Very low | - | - | - | - |
| 2. | 60 - 69 | Low | 3 | - | 9,38 | - |
| 3. | 70 - 79 | Moderate | 6 | 4 | 18,75 | 12,50 |
| 4. | 80 - 89 | High | 15 | 17 | 46,88 | 53,13 |
| 5. | 90 - 100 | Very high | 8 | 11 | 25,00 | 34,38 |

Based on the descriptive analysis above shows that the learning outcomes of science students both in Cycle I and Cycle II, are at a high level of mastery. After investigating the researchers, it was found that: (1) Students in the low category were due to lack of basic skills, shame in asking friends, inadequate ho-me learning facilities, lack of attention and parti-cipation in the teaching and learning process. Stu-dents who are in the very high category are caused by, among other things, high learning enthu-siasm in attending lessons attentively. Based on the avera-ge score of students after applying the OdS method from Cycle I and Cycle II it appears that the level of mastery of students has increased. This increase was seen in Cycle I where the average score of mastery level of students was 81.25 in the high category, whi-le in Cycle II the average score of mastery level of students by 85.70 was in the high category. Mean-while, the percentage of students doing remedial activities is also decreasing (Figure 1). This shows that there is an increase in learning outcomes of Class VIII-G students of SMP Negeri 1 Watam-pone through the OdS method by 5.19%.

 **Figure 1.** Graph of overall student value acquisition

**Changes in Students' Readiness, Sincerity, and Activeness**

Besides the increase in science learning out-comes during research in Cycle I and Cycle II, a number of changes were recorded during the teac-hing and learning process. These changes are sour-ced from qualitative data obtained from the obser-vation sheet at each meeting that is recorded in each cycle and the teacher's notes to determine changes in readiness, sincerity, and activeness of students du-ring the teaching and learning process taking place in class. These changes are as follows:

1. The attendance of students at each meeting increases even though there are one or two students who are sick or licensed.
2. The seriousness of students in carrying out OdS acti-vities is increasing, this is indicated by the increasing number of students who carry out activities and do LKPD correctly.
3. The enthusiasm of students in learning science from Cycle I to Cycle II shows improvement, this is indi-cated by the increasing number of students who pay attention to the teacher's explanation and take notes and are active when group discussions take place.
4. The number of students who asked questions, res-ponses, and comments also showed an increase, this was marked by the increasing number of students who asked questions about subject matter or work procedures that were not understood at the time the OdS took place.
5. Learners' self-confidence also increases as more groups appear to carry out OdS activities well. This means that students are able to interact or socialize with their friends even if only in one class. In additi-on, students' confidence in giving correct answers, including helping their friends when discussions in class take place also increases.
6. The number of students doing homework is increas-ing, while the number of students asking researchers when experiencing difficulties when activities take place decreases this is due to peers, reluctance, inferi-ority, shame, and so on to ask questions or ask for help.
7. Courage and sense of responsibility of students has increased, this is indicated a number of students ha-ve been able to report correctly the results of OdS activities, in addition to that the number of students who expressed opinions about the work of other groups also increased.

In general, the results achieved both in terms of readiness, sincerity, and activeness of the partici-pants in participating in the OdS learning process are increasing.

**Discussion**

OdS method is one of the methods in the teaching and learning process of science where the teacher invites students to learn outside the class-room to see events directly in the field with the aim to familiarize students with their environment and not solely fixated on the implementation of learning in the classroom or experiments in the Laboratory. Through the OdS method the environment outside the classroom can be used as a learning resource. The teacher's role is as a motivator, meaning the teacher as a guide so that students learn actively, cre-atively and familiar with the environment. The OdS method becomes a means of stimulating creativity, initiative, independence, collaboration or mutual co-operation in increasing students' interest in learning in science lessons. So as such, it is expected that the OdS method in the science learning process can in-crease the interest and learning outcomes of stu-dents.

The choice of environment outside the class-room as a learning resource should be adjusted to the subject matter. In this case the material chosen was Class VIII science teaching material namely in the first cycle the material about motion and force and in the second cycle the material about simple machine. The form of assignments given is adjusted to the ability of students at the frequency limits that keep them excited so it does not cause boredom. The OdS method also functions to provide entertainment to students and recreation. This is because, through this method can be used to develop students' skills to observe, count, measure, classify, search for space and time relationships, plan research, and make a model.

At the beginning of the first cycle students are still confused, do not understand how to do OdS activities, students are still confused in the process of procurement of tools and materials available at OdS LKPD which are all available outside the classroom. The tools used are quite simple, almost all of them are outside the classroom. Researchers feel busy, because they have to control the activities of stu-dents outside the classroom with a total of 32 stu-dents. From 32 students in one class, it is divided into eight groups with four students in one group. Based on this large number of students, teachers must immediately find strategies to overcome this. In addition, the available time is very limited so that the use of time is felt to be very short. As a result, students rush to complete their assignments outside the classroom. To overcome this, teachers with the approval of students take time in the afternoon, to continue OdS activities with expectations, results and indicators of success that are expected to be achieved with maximum results.

At the end of the first cycle, it was seen that there was a change marked by the presence of stu-dents who better understood how to do OdS acti-vities, so that students felt more excited and had started to be interested in learning sciences. This is evidenced by the active participation of students in completing reports on the results of ODS activities, as well as given home assignments, especially the completion of practice questions related to regular straight motion material. Another activity that was reviewed was the number of students who asked before the implementation of OdS activities in cycle I. This is done because students are still confused in doing OdS activities so that most of them are afraid to make mistakes. Likewise, their activities in doing their assignments or homework are reviewed, in the first cycle they have been said to be very active. At the end of cycle I was given a daily test with results that already showed encouraging numbers because they were in the high category. However, these results have not yet reached the expected success indicator where the percentage of completeness learning cycle I only reached 71.88%.

Furthermore, in cycle II the students have actively conducted OdS activities. This can be seen from the seriousness of students in completing the activities that exist in the OdS LKPD that has been provided. Cooperation of students in their groups has been carried out with their sincerity to complete the report on the results of the second cycle of OdS activities. At the end of the second cycle many posi-tive changes have been obtained, namely students are accustomed to doing activities in accordance with work procedures that exist in the OdS LKPD, make their own conclusions, as well as the interac-tion between students with one another in the class when class discussion is carried out. Although some-times there is a misperception about answers or conclusions made based on the results of activities between one group and another. To anticipate this misunderstanding, the researcher gives students the opportunity to open the literature, so that the purpo-se of what is being debated is obtained. This is where the interaction between students is seen.

The results of daily tests have shown encoura-ging numbers because they are in the high category. This result has reached the expected success indica-tor where the percentage of mastery learning cycle II reaches 87.51%. Finally, the results obtained prove that the OdS method in the teaching and learning process can increase the interest and learning out-comes of science students in class VIII-G of SMP Negeri 1 Watampone. This result is supported by so-me research that also found that the OdS method can increase student interest and learning outcomes (Eick, 2012; Ting & Siew, 2014; Aisah, 2015; Kurniawati, 2015; Widowati, 2015; Kadir, 2016; Mackenzie et al., 2018).

**CONCLUSION**

Based on the results of data analysis and discussion shows that the OdS method in the science teaching and learning process can increase the interest and learning outcomes of students in class VIII-G of SMP Negeri 1 Watampone. This state-ment is proven by the achievement of more than 80% of students who scored above the KBM, where the percentage of completeness in the first cycle 71.88% increased to 87.51% in the second cycle. In addition, the increase in interest and learning outcomes of science students in class VIII-G of SMP Negeri 1 Watampone after applying the OdS met-hod is proven by the following indications: (1) The average value of mastery of science material in first cycle and second cycle is in the high category, where in the first cycle was 81.25 and in the second cycle was 85.70. (2) The implementation of the OdS met-hod in the teaching and learning process can awaken the seriousness, activeness and confidence of stu-dents to further improve their science learning out-comes. (3) The implementation of learning through the OdS method runs according to the learning implementation plan and the student worksheet both in first Cycle and second Cycle.

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