

## THE EFFECTIVENESS OF OUTDOOR STUDY METHODS IN DEVELOPING STUDENTS' SPATIAL INTELLIGENCE IN GEOGRAPHIC LEARNING

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### ABSTRACT

The purpose of this study was to determine the effectiveness of using *outdoor study* in developing spatial intelligence at SMA Angkasa Husein Bandung. This research uses the *expose facto*, with a quantitative approach. Collecting data using a questionnaire with analytical techniques using linear regression test and correlation coefficient test. The variables in this study are the effectiveness of the *outdoor study* as the independent variable and spatial intelligence as the dependent variable. The sample in this study was 90 students. The results aims that the effectiveness of the *outdoor study* correlates with spatial intelligence with an R count of 0.824, meaning that value of the effectiveness of the *outdoor study* students' spatial intelligence has a very significant effect of 82.4% which shows that the outdoor study method is *effective* in developing spatial intelligence. The coefficient of determination Rsquare (R<sup>2</sup>) is 0.515 or 51.5%. This shows that the effectiveness of the *outdoor study* contributes to the spatial intelligence of students by 51.5%, the remaining 48.5% is influenced by other factors not mentioned in this study. In conclusion, the effectiveness of the *outdoor study* can develop students' spatial intelligence effectively in this study.

### KEYWORDS

Effectiveness  
*Outdoor Study Method*  
Spatial Intelligence

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### 1. Introduction

Effectiveness is the relationship between output and goals. In terms of effectiveness is a measure of how far the level of output, policies and procedures of the organization to achieve the goals set by Bungkaes (2013). Effectiveness is the most important part in the implementation of learning. implementation Outdoor Study will have advantages if: (1) The field presents objects that can be observed directly, for example the distribution forms of elements of the natural environment, various processes of natural change (2) Good preparation, availability of activity guidelines with specific tasks. clearly, participants will be able to learn more intensively and independently, both individually and in groups (Aris et al: 2019).

The Outdoor Study is learning that is carried out outside the classroom. Out-of-school activities that contain activities outside the classroom/school and in the wild, such as: playing in schools, parks, farming/fishing villages, camping, and adventurous activities, as well as developing relevant aspects of knowledge (Husamah 2013:19 ). One of the drawbacks of the outdoor study method is that teachers are busy organizing/managing learning when in the field, requiring travel costs, and teachers being less able to supervise students. in conducting field surveys (Harini, et al (2012). One of the concepts of geography, namely spatial relations is an indication of higher-order thinking. This indication can be measured through a person's thinking ability. Ideally the thinking ability of someone who is at the high school level Based on Maslow's triangle should have reached the stage of thinking C6 or evaluating. The concept of spatial thinking in the research that will be carried out wants to prove the learning method used has been effective in developing one's thinking ability.

This study will evaluate the effectiveness of the learning methods used in schools for their impact on students' thinking abilities. The ability to think spatially can be seen as an indication by making decisions about choosing options in thinking or looking for answers, solving problems, and the ability

to respond to something (Committee on Support for Thinking Spatially, National Research Council: 2006). Spatial intelligence at SMA Angkasa Lanud Husein Sastranegara Bandung shows a tendency that it has not been applied optimally in learning. The condition of low spatial intelligence in terms of knowledge and skills is an important problem in this research. Indications of the low results of spatial intelligence can be seen in geography learning, which in terms of value acquisition still needs development. The existence of this research is to measure the achievement of school programs associated with the ability in spatial intelligence of students, especially class XII. The results of the pre-study show that class XII students still have difficulty in making travel routes from home to school, and assignments to make school plans. Given the urgency of the function of spatial intelligence in learning, this research is the stage to evaluate activities that have an impact on spatial intelligence (Putra : 2021).

Based on a preliminary study that has been carried out by the authors using the outdoor study in the city of Bandung, it is rare for schools to use learning by taking students on field trips stay outside of school and or bringing students to new environments. The choice of research location at SMA Angkasa Husein Bandung because no one has researched it before, this program is the only one that is carried out at the high school level in Bandung City, especially for class XII. This is based on filling out the questionnaire questions that have been filled out by teachers at the Bandung City MGMP based on preliminary research. Therefore, the author will carry out this research as an evaluation material to what extent the effectiveness of learning with this method has been carried out at the research location. The selection of the research location was based on the distribution of the Google Form (Gform) that had been implemented.

The purpose of this information search is closely related to the selection of research locations using only one school location. Based on the results of the form ,from 27 public high schools and 13 samples of private schools that conducted outdoor studies formal of an outdoor study by bringing class XII students to live was carried out in two locations in West Java. The location is in the Banceuy Traditional Village, Sanca Village, Subang Regency, and other locations are held in Baeud Village, Samida Village, Selaawi District, Garut CityAs for the content in the introduction, it must contain: First, the presentation of the main research topic. Second, contain the latest literature related to citing the latest research literature related to the article being studied. Third, it must point out the gaps that have not been filled by research/literature, inconsistencies and controversies that have arisen among the existing literature. Fourth, it contains problems, study objectives, study context, and the unit of analysis used, and Fifth, displays what is discussed in the structure of the article.

## 2. Method

This research is a research using the expose facto with a quantitative description approach, with the aim of evaluating the learning program in one school in Bandung on the spatial intelligence of students. Measurement of the effectiveness of a learning method that has been implemented in school institutions to develop students' spatial intelligence uses correlation (Cresswell: 2009). This study uses a survey method with a quantitative approach to find out the effectiveness of a learning method that has been applied by students at the stage of geographical thinking skills, namely measuring students' spatial intelligence. According to Purwanto (2012, p. 16) states that "research with a quantitative approach uses the quality of numerical scores in data collection and analysis by eliminating subjectivity so as to measure behavioral responses that are influenced by the incoming stimulus". Meanwhile, taking the data in the form of numbers in measuring the affected thinking ability can use the evaluation method.

Population is a group of individuals who have similar or relatively the same characteristics (Creswell: 2008). Determination of a clear population will describe the total number of objects from the number of research itself. According to Gay, (2009: 133) for correlation research, a sample of 30 percent of the total population is required. Sampling of the population will be comprehensive for each respondent per class with a total allocation of 30%. Based on the results of the initial validity

and reliability test with the selection of purposive random sampling. The use of this sampling was carried out randomly but aimed at categorizing classes and groups of students based on certain classes. The sample of students for the final data collection was 90 data. Variables refer to the characteristics or attributes of an individual or an organization that can be measured or observed (Creswell, 2013; 76). Research variables are closely related to test indicators in finding the truth in a research that will be carried out. In this study, the authors classify the effectiveness of the outdoor study method as the x and the students' spatial intelligence as the y variable.

The following are the research steps to be carried out:

1. The selected school has gone through a survey and selection process in accordance with the variables for measurement, namely schools that have organized learning using outdoor study methods.
2. The sample group must represent the entire population level in the same batch of batches.
3. Prepare a preliminary research draft based on research data and preliminary studies.
4. Develop research instruments to measure the effectiveness of the outdoor study learning method in its influence on the development of students' spatial intelligence.
5. Distribute the instrument in the form of a questionnaire to the population in accordance with the number of samples.
6. Compile the results of the questionnaire and process the data in accordance with the results of the questionnaires.
7. Processing data to analyze its effectiveness in learning geography.

After the research instrument is completed, the next step is to disseminate the instrument to be disseminated to the informants. The distribution of the questionnaire chosen by the researcher will load on the gform link or the bit.ly platform to facilitate online data retrieval. Quantitative Procedures Quantitative data analysis procedures aim at the process of extracting meaning, describing, explaining and placing data in their respective contexts. The description of this type of data is in the form of sentences, not numbers or tables. For this reason, the data obtained must be organized in a structure that is easy to understand and decipher.

The test instrument for the sample at the time of pre-test and post-test must pass the process of testing the validity, reliability, level of difficulty, as well as questions that have distinguishing power. The following data processing uses special statistical software (IBM SPSS V.20) with the provisions of the applicable formula in accordance with the rules of social statistics, especially education. Assessment of effectiveness in learning can use a check list in its measurement. In assessing the effectiveness of this research, it refers to the stages of outdoor study which are arranged based on their achievements in the implementation of the study area. Presentation assessment in the form of performance can be done using a checklist.

The data analysis technique in this study used descriptive statistics and inferential statistics with regression tests. Simple linear regression test aims to determine the effect between the independent variable and the dependent variable, the regression test can also predict the value of the dependent variable based on the independent variable. To test the relationship between the outdoor study method (X) and spatial intelligence (Y), the test was conducted by correlating the scores of the outdoor study method with spatial intelligence through the Pearson product moment correlation. This analytical technique was carried out to test the magnitude of the relationship between the outdoor study variable (X) and the spatial intelligence variable (Y). Pearson product moment correlation is denoted (r) with the provisions of  $-1 < r < 1$ . If the value of  $r = -1$  means the correlation is perfectly negative,  $r = 0$  means there is no correlation and  $r = 1$  means the correlation is strong.

### 3. Results and Discussion

#### 3.1. Results

The total population of students in class X, XI, and XII are 999 students in the school. The population was narrowed down to 9 research classes with 90 samples of class XII students. The initial stage in outdoor study is a process that requires careful, thorough and planned preparation. From a scale of 5, the average score for this planning stage is 4.28. Respondents proved that the planning stages had been well prepared during the planning process for the outdoor study. The assessments that were asked to respondents were: a) preparation of tools/materials, b) stationery prepared during program implementation, c) individual and group equipment, d) equipment used for practice and e) instruments for recording data and work instructions.

The use of individual and group report questionnaires is in the form of an assessment of the process of making practical reports in the field. Aspects that are assessed in this implementation phase are related to one of the results of making a map of the research location carried out by students. Another aspect that is assessed is the preparation of soil pH measurement reports, drinking water pH, and daily temperature measurement reports. This implementation stage is a process of measuring the results of the reporting process that must be completed during the activity. Based on the 4 aspects of the assessment asked by the research respondents, it is known from the scale of the scoring range that the score is 1-3 with a total score of 12 giving an average score of 10.4.

The implementation phase by filling out questionnaires conducted by respondents is intended to assess the overall learning progress results. Based on the data above, there is an average number of 10.31 out of 12 based on 90 respondents who have been used as sources of data processing. Based on these criteria, it has been included in the good category in the implementation of making reports. This improvement stage will later become physical evidence of field and practical activities carried out by students at the research location. In the Measurement Stage, 54 respondents or 90% gave a score for a good presentation process, seen from (3) good gestures/body language, (4) interactive and communicative in the process of conveying information during presentations, and (5) showing a powerpoint good is a must in the process.

**Table 1.** Model Regression Test Results

| Summary   |                   |                 |                          |                                   |
|---|-------------------|-----------------|--------------------------|-----------------------------------|
| <i>Model</i>  | <i>R</i>          | <i>R Square</i> | <i>Adjusted R Square</i> | <i>Std. Error of the Estimate</i> |
| 1   | .824 <sup>a</sup> | 0.515           | 0.743                    | 0.863                             |
| <b>a. Predictors: (Constant), Effectiveness of <i>Outdoor Study</i> (X)</b> |                   |                 |                          |                                   |
| <b>b. Dependent Variable: Spatial Intelligence (Y)</b>                      |                   |                 |                          |                                   |

Based on the table, R correlation value calculated of 0.824 means that the percentage value of the effectiveness of the outdoor study in developing students' spatial intelligence has a very significant influence of 82.4%. Then besides that, the coefficient of determination Rsquare (R<sup>2</sup>) is 0.515 or 51.5%. It shows that the effectiveness of the outdoor study contributes to the spatial intelligence of students by 51.5% while the remaining 48.5% is influenced by other factors not mentioned in this study. The statistical test calculations were carried out with the help of SPSS 25, using the Kolmogorov Smirnov test. To determine normality, the applicable criteria are as follows: (1) If the significance obtained is > 0.05, the sample comes from a normally distributed population (Ghasemi : 2012). (2) If the significance obtained is <0.05, then the sample does not come from a population that is not normally distributed. Testing the correlation between the variables x and y was carried out to find statistical information about the relationship between the effectiveness of the outdoor study learning method and the correlation between students' spatial intelligence.

Table 2. ANOVA Results

|   |              | ANOVA <sup>a</sup>    |           |                    |          |                   |
|---|--------------|-----------------------|-----------|--------------------|----------|-------------------|
|   | <i>Model</i> | <i>Sum of Squares</i> | <i>df</i> | <i>Mean Square</i> | <i>F</i> | <i>Sig.</i>       |
| 1   | Regression   | 8888,028              | 1         | 8888,028           | 73,382   | .001 <sup>b</sup> |
|   | Residual     | 1065.472              | 88        | 0.744              |          |                   |
|   | Total        | 9953,500              | 89        |                    |          |                   |
| <b>a. Dependent Variable: Spatial Intelligence (Y)</b>                      |              |                       |           |                    |          |                   |
| <b>b. Predictors: (Constant), Effectiveness of Outdoor Study Method (X)</b> |              |                       |           |                    |          |                   |

Based on the table above, the calculation results show the results of the F test for the X variable against Y, the calculated 73,382 and the F table is 3.95. Because F count > from F table, it can be said that the effect of X is significant on Y. Then if the n criterion uses a significance value (Sig) the significance value from the calculation is 0.01 while the criteria to be declared significant is <0.05. Thus, based on the calculation results, X has a significant effect on Y.

Table 3. Coefficient Results of Outdoor Study Effectiveness in Developing Spatial Intelligence

|  |                                  | Coefficients <sup>a</sup>          |                   |          |             |
|--|----------------------------------|------------------------------------|-------------------|----------|-------------|
| <i>Model</i>                                       |                                  | <i>Unstandardized Coefficients</i> |                   | <i>t</i> | <i>Sig.</i> |
|  |                                  | <i>B</i>                           | <i>Std. Error</i> |          |             |
| 1  | (Constant)                       | 4.136                              | 3.429             | 14.329   | 0.00        |
|  | Efektivitas Metode Outdoor Study | 0.359                              | 0.090             | 0.664    | 19.175      |
| <b>a. Dependent Variable: Spatial Intelligence</b> |                                  |                                    |                   |          |             |

Based on the table above, the resulting linear regression equation is  $Y = 4.136 + 0.359 X$ . Based on the regression equation, it can be concluded that the effectiveness of the outdoor study method has a positive effect on the spatial intelligence of class XII students at SMA Angkasa Husein Bandung. The hypotheses to be tested in this study are as follows:

H0 : There is no contribution to the effectiveness of the outdoor study method on the spatial intelligence of class XII students at SMA Angkasa Husein Bandung.

H1 : There is a contribution of the effectiveness of the outdoor study method on the spatial intelligence of class XII students at SMA Angkasa Husein Bandung.

Based on the results of hypothesis testing, it can be concluded that H1 is accepted and H0 is rejected. This is based on the results of the F test showing that the effectiveness of the outdoor study method (X) has an effect on the spatial intelligence (Y) of students at the research location. The correlation analysis test in this study aims to see the close relationship between two or more variables. To get the correlation coefficient value in this study using the SPSS 25 application. The results of the correlation test values can be seen in table below :

Table 4. Correlations Results of Outdoor Study Effectiveness in Developing Spatial Intelligence

| Correlations |  |
|--------------|--|
|              |  |

| <i>Table of Effectiveness Correlation Test</i> |                     | <i>Effectiveness of Outdoor Study Method</i> | <i>Spatial Intelligence</i> |
|--|---------------------|--|-----------------------------|
| Effectiveness of Outdoor Study                 | Pearson Correlation | 1  | .824"                       |
|  | Sig. (2-tailed)     |  | 0.02                        |
|  | N                   | 90   | 90                          |
| Spatial Intelligence                           | Pearson Correlation | .824"  | 1                           |
|  | Sig. (2-tailed)     | 0.02   |                             |
|  | N                   | 90   | 90                          |

Based on the table above, it can be explained that the correlation coefficient value is 0.824, with a significance level of 0.02. Based on these data by comparing the value of the significance level (p-value) with the error. If the significance  $> 0.05$  then  $H_0$  is accepted. If the significance is  $< 0.05$  then  $H_0$  is rejected. This means that there is a significant relationship between the effectiveness of the outdoor study method on the spatial intelligence of students at SMA Angkasa Husein Bandung. With a confidence level of 0.05 (5%), it can be obtained that the value of r table is 0.125, it turns out that the calculated r value is greater than (r) table ( $0.824 > 0.125$ ), so  $H_0$  and  $H_1$  are accepted, meaning that there is a relationship the significance between the variables X (effectiveness of the outdoor method) and Y (spatial intelligence). Based on the results of the correlation coefficient, it can also be understood that the correlation is positive, meaning that the higher the effectiveness of the outdoor study method, the better the spatial intelligence of students. By paying attention to the correlation coefficient value of 0.824, it means that the correlation is between the two variables.

### 3.2. Discussion

#### 3.2.1 Planning of the Outdoor Study Method

The planning stage in *outdoor study* has important points as a basis for starting activities and strengthening all parties in its implementation later. The planning process starts from determining the location of the *outdoor study*, the process of surveying the location, the urgency of the theme of the study which will be the topic of data search by students, supporting infrastructure, road networks that can be reached by minimally loaded vehicles, elf cars, and preparation of equipment. as well as materials that must support the process of *outdoor study activities*.

During the last 5 years, the priority of site selection is to find a rural atmosphere with certain characteristics (thematic). The area that is often selected and representative for the study of materials for both the science and social studies specialization program is the traditional village of Banceuy, Sanca Village, Subang Regency, West Java Province. The choice of location for this village, apart from the geographical element, is much different from the city, very much in accordance with the material discussed in the specialization group. The Social Studies group can explore physical geography studies such as geology, geomorphology, topography, meteorology, and mapping. Meanwhile, the science specialization group is concentrated on measurements related to physics, chemistry, biology, and mathematics. Another location that was selected for the past 5 years is Baeud Village, Samida Village, Selaawi District, Garut Regency, West Java Province. The selection of different locations shows that there are variations in the planning stage carried out by the school to develop knowledge for both supervising teachers and students. This certainly adds to the data collection in processing spatial information obtained during the study and field practicum.

In line describes that the planning process can be said to be effective if: (a) the study location has conformity with the teaching materials, (b) *assessment*, and (c) the suitability between activities and the needs of activity participants (Madaus : 1987). The planning process must be prepared carefully because it involves many things, including permits to enter and leave the area with the condition of bringing in not a few students.

### 3.2.2 Outdoor Study Method Implementation

The implementation phase is a form of implementation during the *outdoor study* implemented. The implementation of reporting in the form of a portfolio in the form of the results of making a practicum report on each major material at the respective programmers. In the IPS program, SMA Angkasa provides measurement instruments during the time the *outdoor study* carried out. Instruments that must be filled in to search for data on geographic material are: (a) results of conventional mapping with simple digitization in the form of finished maps (map results are included in the appendix). (b) Land measurement reports on 3 different land uses in the *outdoor study study*. (c) a report on measuring the pH level of the water at the *outdoor study*. (d) Report on the observation of the average temperature for 2x24 hours at the study location.

The implementation of fieldwork learning at the lecture level (KKL) at the State University of Malang explains that the difficulty of understanding physical geography materials such as geomorphology, geology which requires field checks at the implementation stage is able to answer confusion in lecture material (Arinta, et al: 2015). Reinforced by Rice and Bullman that the *outdoor study* able to strengthen students' interest in learning geography because the research subjects studied during evaluation *students* experience a bit of boredom when the implementation process and activity evaluation are implemented. The results also show that the implementation of the application of theory in geography learning material which requires a lot of proof is one of the steps in the process of developing *outdoor study* both theoretically and practically. This is corroborated by research on the "importance of direct experience" which describes that direct experience in the learning process will provide pleasure, increase understanding, and be able to develop more specific subject skills (Hope: 2010). Thus, the implementation of *outdoor studies* requires specifications and specialization in practice in line with the material, understanding and need for data analysis carried out by participants and supervisors.

### 3.2.3 The Outdoor Study Method Improvement

*Fieldtrip* in its development has significant academic achievement results compared to schools or learning that do not carry out learning through *outdoor* (Liben :2002). The author who acted as a researcher found that there was a significant change in the implementation of the *outdoor study* itself. In practice, SMA Angkasa Husein Bandung gives a challenge to class XII students in both science and social studies programs to complete progress reports in the form of scientific papers (KTI). *Improvements* that appear to be able to produce simple scientific writings that are based on scientific theories and principles. The implication is that alumnus of research sites are ready to face the assignment system at the next level, both diploma and strata. This indicates a school program that is run with the aim of being able to make changes to students' understanding of writing and research.

The process of writing KTI is a form *improvement* from reporting findings and discussing field studies. The preparation is assisted by the supervising teacher so that the content and context of the writing remain in accordance with the formulation of the problem raised. This scientific writing bill is one of the requirements if you want to get a certificate for having completed the learning stages at SMA Angkasa Husein Bandung for all students. In addition, the development of individual skills through field learning and *outdoor study* based on The University of Melbourne database shows that progress in students is very visible from the implementation of *outdoor study* (Cara: 2016). As a visualization of progress from the application of *outdoor* it has implications for good academic results in other subjects in developing geography skills (Cara: 2016).

### 3.2.4.Evaluation Method Outdoor Study stage (Assessment)

Evaluation as an investigation to determine the value or benefit (*worth*) of a program, product, procedure or project (Kifer : 1995). The measurement/assessment carried out in this study assessed the success of a school program in carrying out variations in learning. In general, the program takes students to a wide class area identical to a *study tour* or better known as learning while

traveling. This is commonly done as a renewal in school activities. Implementation of this evaluation the author proves that the *outdoor study* can be said to be effective in its application at the high school level. In practice, after KTI is completed by class XII students, the next step is to communicate the findings during the *outdoor study*. The field activity supervisors assess the presentation process with an assessment rubric that refers to (a) voice intonation, (b) good and correct use of language, (c) having good gestures/body language, (d) interactive and communicative, and (e) the use of slides/*powerpoint* is made in an attractive and informative manner. The aspects assessed are the results of the final assessment step of the written accountability and findings during program implementation. The results prove that in the process of assessing the presentation of class XII students, both the science and social studies programs have carried out presentations well in line with making KTI.

Other studies describe that field trip visits . in *outdoor study* provide benefits in exploring the potential for visiting important areas/locations such as cultural heritage sites or even world heritage sites and participants' understanding of these cultural heritage sites (Tshepang: 2014) In a further explanation that learning outside the classroom is able to develop critical learning and improve critical thinking skills when applied through the *inquiry* (Putra: 2016). Overall, this study represents the results of the evaluation to see the correlation of the effectiveness of the learning method with the spatial intelligence of class XII students.

### 3.2.5 Spatial Intelligence

Spatial intelligence enables people to use space to model the world (real and theoretical) to structure problems, find answers, and express and communicate solutions. In this research , the writer wants to know the impact of finding spatial intelligence as one of the multiple skills seen through the *outdoor study*. Spatial intelligence can develop students' understanding of geography learning which is divided into eight concepts, namely; *location, distance, direction, relief, atlases and globes, aerial photographs, fieldwork, and orienteering* (Clausen-May and Smith,:1998). In this study , the use of these indicators is reduced to four concepts that are adapted to the application of the *outdoor study*. The first concept, namely location, is a concept that is addressed through the ability to relate the position of places and phenomena that occur on the earth's surface. The second concept is distance, in this study distance is assumed as a measure of connecting between two different objects. The third concept is direction, which is an ability to understand positions that affect space conditions. Fourth is *the relief*, used to estimate the high and low of the earth's surface in influencing the activities of living things, especially humans.

The location indicator gets a percentage of 99.7%, distance 95.9%, Direction 96.25%, and Relief 95.33%. The strongest indicator in this research is indicated by the location indicator. The weakest indicator of the other 3 indicators is Relief. The results show that the spatial thinking skills of class XII students who have applied the *outdoor study* have significantly changed for the better. Based on the 4 indicators tested, the location indicator shows the highest score is the result of the implementation of mapping at the location of the *outdoor study* , both in Subang and Garut. The description of the indicators in the question instrument tests the ability of students to analyze spatial phenomena within the scope of the study of the geosphere. This is in line with research (Arsa, et al: 2018) which describes that the cognitive domain provides 75% understanding of the meaning of students' spatial intelligence, compared to understanding the affective and psychomotor domains.

## 4. Conclusion

From a scale of 5, the average score for the planning stages of the outdoor study 4.28. respondents proved that the planning stages had been well prepared during the planning process for the outdoor study . The assessments that were asked to respondents were: a) preparation of tools/materials, b) stationery prepared during program implementation, c) individual and group equipment, d) equipment used for practice and e) instruments for recording data and work instructions. Based on the 4 aspects of the assessment asked by the research respondents, it is known from the scale of the scoring range that the score is 1-3 with a total score of 12 giving an average score of 10.4. This shows that the implementation stages in outdoor study can be said to be good. The main points of assessment



related to the implementation of learning materials such as making maps at the study site, measuring soil and water pH, as well as reports on temperature observations have been well implemented by class XII students at SMA Angkasa Husein Bandung.

Evaluation of the outdoor study in developing spatial intelligence found that there was an average number of 10.31 out of 12 based on 90 respondents who had filled in. Based on these criteria, it has been included in the good category in the implementation of making reports. The stages of improvement and the results for the presentation assessment get an average of 90% based on variable indicators. The effectiveness of the outdoor study in developing students' spatial intelligence obtained a correlation value 0.824 which means that the percentage value of the effectiveness of the outdoor study ' spatial intelligence has a very significant influence of 82.4%. Then besides that, the coefficient of determination  $R^2$  is 0.515 or 51.5%. This shows that the effectiveness of the outdoor study method contributes to the spatial intelligence of students by 51.5% while the remaining 48.5% is influenced by other factors not mentioned in this study. This other factor must then be developed in the next research. Example using spatial intelligence as variable determination proven that The application of SimCity game in geography learning helps students making decisions to overcome spatial problems (Putra : 2020).

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