Improve Students' Cognitive Ability: The Influence of Two Stay Two Stray Learning Model Assisted by Google Sites

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Keyword	Abstract
cognitive ability, two stay two stray learning model, google sites	*Evaluation is the final step in determining the success of the learning process. One of them is to evaluate students' cognitive ability after the learning process. This paper will outline students' cognitive ability in Geography classroom employing Two Stay Two Stray learning model assisted by google sites as learning process. In order to improve students' cognitive ability, this research administered classroom action research approach with using test. Interesting me, students showed high difference average value in the last cycle that is 84,82. This increase can be seen from the results of student tests, students are more active and enthusiastic than before also. This improvement caused by Two Stay Two Stray learning model assisted by google sites. They feel difference atmosphere of learning. The Google site as a teaching media also supports students in utilizing technology in an appropriate manner. So, the next researcher must be utilizing technology and modifying learning models so it can be enhance motivation because students' willingness to learn is very influence students' cognitive ability.*

INTRODUCTION

Classroom learning is said to be effective if the learning objectives are achieved through learning activities in accordance with the activity design. The activity plan is used by the teacher as signs and references in carrying out learning activities. The function of having a Learning Implementation Plan as a reference for teachers to carry out teaching and learning activities so that the learning given to students will be more directed and efficient (1). Therefore, planning needs to be carefully prepared according to characteristics of students. The indicators that show effective classroom learning are achieved learning mastery, effective student activity, teacher's ability to manage learning, and positive responses of students in learning (2). However, learning in class cannot be separated from a problem. Problems in the classroom can occur for many reasons. Problems in class can be seen when observing in class. Observations made must be intensive and take a long time to identify problems in class. In addition, problems in the classroom are reviewed from various perspectives to find the main problem.

The characteristics of students in schools have a variety of backgrounds, ethnicity, religion and culture, as well as the diversity of student learning styles (3). The learning styles of students in class X specializing in social studies in particular are divided into three categories of learning styles, namely visual, audio-visual and kinesthetic. In class X Social 1 observation activities it was found that the majority of students had the majority audio-visual learning type. Audio-visual learning using both sight and sound (4). Not only that, through observation activities a problem was found in the class that the learning outcomes of students were still in the low category. This

was shown during the pre-action from the results of students' grades in the even mid semester 2022/2023 academic year.

The first observation was carried out on March 13 to 27 2023. Observation activities included observing teaching and learning activities, teaching assistance, and observing student learning styles. The second observation was carried out on March 28, 2023. The results of the observations made by the researchers showed that the learning outcomes of class X Social 1 students were still relatively low. The results of the even-numbered midterm exams show an average score of 56.18, which is low and does not meet the Minimum Completeness Criteria. This is supported by interviews with subject teachers as well as tutors that the daily test scores in class X Social 1, other material sub-chapters are also in the still lacking category. The selection of learning models needs to be considered by the teacher as an effort to improve students' cognitive abilities. Learning models that are appropriate to the conditions and easily accessible to students will improve cognitive abilities and increase the activity of students in participating in the learning process. One of the learning models that can be used is the cooperative learning model of the Two Stay Two Stray type which involves students becoming more active in discussing solving problems and sharing information with other friends. The application of the Two Stay Two Stray learning model is appropriate when assisted by Google sites to improve students' cognitive abilities.

Learning type Two Stay Two Stray is learning that emphasizes cooperation and positive interdependence among fellow members in the group to achieve the goals of the learning process. The advantages of Two Stay Two Stray are as follows: 1) All students read the material, which will make the concepts that have been put together easier to understand. 2) Students feel they are consistently liked by their classmates. 3) Can foster students' motivation to master the material well in each group. 4) Can be applied to every level of education (5). While the shortcomings of the Two Stay Two Stray learning model are as follows: 1) In Two Stay Two Stray learning, it grows a lot of time. 2) Each part of the material must be written so that it can be understood by itself. 3) Books can rarely be neatly divided into coherent sections without other sections (5). Google Sites, a new website publishing service, an easy-to-edit service for organizations and individuals to set up and edit websites. Google Sites allows non-technical users to organize and share digital information such as web links, photos, videos, presentations, attachments and other documents on one easy-to-manage website (6,7). So, the researcher want to use Two Stay Two Stray learning model assisted by google sites to improve students' cognitive ability in Geography classroom. Then, this paper will out lines students' cognitive ability in Geography classroom employing Two Stay Two Stray learning model assisted by google sites as learning process

METHOD
Context and Participation
This type of research is a type of collaborative classroom action research. Classroom action research is carried out with the aim of improving the learning process in the classroom, so that students' cognitive ability can be increased through the Two Stay Two Stray cooperative learning model assisted by google sites. The research subjects were students of class X Social 1 at Senior High School. The number of students in the class was 34, consisting of 18 male students and 16 female students.
Classroom Action Research Flow
This research was carried out in the even semester 2022/2023 academic year. The material used in research in learning is the dynamics of the hydrosphere and its impact on life. The data collected in this study were (1) the implementation of the Two Stay Two Stray learning model assisted by Google sites in class X Social 1 students in **TABLE 1** and (2) an increase in students' cognitive abilities. Sources of research are teachers and students. Data from the implementation of the model were obtained by teachers and students through learning activities, while data on

improving learning outcomes was obtained from assessments on students. The technique used in collecting data using tests, in the form of giving 5 essay questions. The steps used by researchers in data collection are through the following **FIGURE 1**.

TABLE 1. Adapted Two Stay Two Stray Cooperative Learning Model Syntax (Arianti, Akib, & Saleh, 2017).

Learning Model Syntax	Learning Activities
Preparation	a. Preparation of teaching media, division of groups and student worksheet.
Teacher Presentation	a. Students observe the subject matter displayed by the teacher.
	b. *Observing* - Students listen to the teacher's explanation accompanied by pictures shown via teaching media.
	c. *Communicating* - Students are given guidance to see, observe, read, and communicate back about the media displayed by the teacher.
	d. After giving brief material, students are directed to group work.
Group Activities	a. Students are divided into 8 study groups according to a predetermined division.
	b. Students join the group members.
	c. Each group gets an student worksheet according to the theme as a guide for learning.
	d. Students carry out discussions and divide tasks to find data/information on theme 1 for groups 1, 2, 3, and 4 while theme 2 is for groups 5, 6, 7, and 8 (*Collaboration and Communication*).
	e. Students look for data from relevant sources and discuss with the group. Students can use the teaching modules that they already have, video links that have been provided by the teacher, or utilize other relevant learning resources to study (*Collaboration and Communication*).
	f. Students are monitored by the teacher regarding their involvement in collecting data during the information search process.
	g. *Reasoning* – Learners actively discuss and ask and answer questions with their respective groups regarding the themes obtained. (*Collaboration and Communication*) (*Self Confidence*).
	h. Students ask the teacher if there are things that are unclear.
	i. *Implementation Sharing* – information to other group members with Two Stay Two Stray.
	j. Each group discusses the results obtained from other groups (*Cooperation*).
	k. Each group makes a simple report as a task.

| Group formalization | a. | Students are given the opportunity to convey the results of the discussion by presenting it. Representative groups of 2 themes. |
	b.	Students from other groups are welcome to submit questions, additions from the group presentation presentation.
	c.	*Communicating* – students are guided by the teacher to make conclusions from the results of group discussions.
	d.	Students get reinforcement from the teacher regarding the results of discussions in learning.
	e.	Provide opportunities for students to ask questions about material they have not understood.
Evaluation	a.	Students are given quizzes containing questions from learning outcomes.
	b.	Giving awards to the group that gets the highest average score.
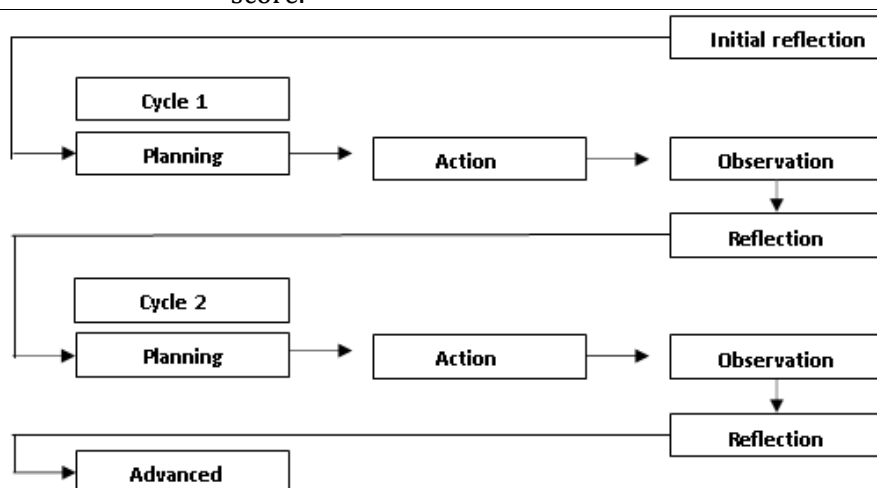
FIGURE 1. Adapted Classroom Action Research Flow (Suharsimi, 2013).

Measurements

Data processing is carried out in order to determine whether there is an increase in student learning outcomes starting from pre-action, and implementing cycles. The activities carried out are students' cognitive ability value processing. How to give value can be obtained through the following formula (Purwanto & Noviastuti, 2014).

$$n = \frac{\sum B}{Smi} \times nMax$$

n   : the final value of students' cognitive ability
$\sum B$: the total score achieved by students in answering all questions
Smi   : Highest score when all questions are done correctly
nMax   : maximum value used

If each of the students has obtained the final value of the learning outcomes. The next step is to analyze the data obtained. Student scores can be collected and the average determined. The analysis used is through an increase in the average of each cycle.

Improvement of students' cognitive ability = average final - average initial

Then the next step is to find out the increase, then a comparison is made between the average cycle 1 and cycle 2, by calculating the percentage between the two. The following is the formula used in calculating the percentage of student learning outcomes.

$$\text{Percentage improvement} = \frac{\text{average final - average initial}}{\text{average initial}} \times 100\%$$

In the final stage, the data that has been calculated can be entered into a comparison **TABLE 2** between the formats for comparing the average students' cognitive ability of the following students.

TABLE 2. Format for Comparison of Average Students' Cognitive Ability Scores (Sugiyono, 2021)

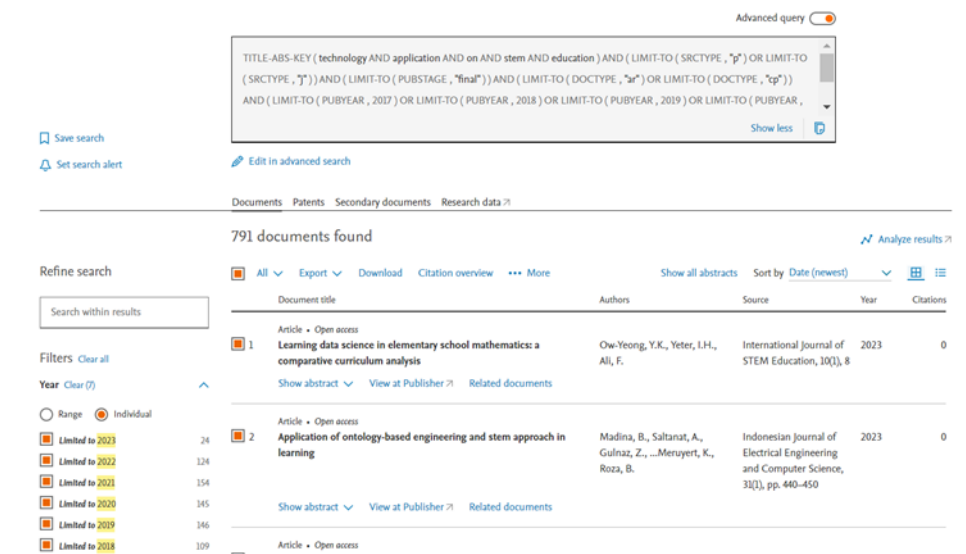| Action	Average value	Enhancement	Presentase Enhancement
Pratindakan			
Cycle 1			
Cycle 2			

Figure 1. screenshot of article browsing on Scopus

The search results for the data obtained from the Scopus database were then processed using the bibliometric package available in R software. The data processing stages consisted of the selection process and article validation. Both selection and validation are carried out in diagrams and data tables, which are categorized into several types. The data processing process in R software will produce two main pieces of information: research performance and science mapping. Research performance is an explanation related to Main Information, most relevant Source, most relevant Author, most relevant Affiliation, Country Scientific Production, and Document. Science mapping is the result of processed data relating to the Trend Topic, Co-Accurance Network, Thematic Map, Thematic Evaluation, Co-citation Network, Histograph, Collaboration Network, and Collaboration WorldMap.

RESULTS

Cycle 1

Observation Results of the Implementation of the Two Stay Two Stray Learning Model Assisted by Google Sites

From the implementation of cycle 1 class actions carried out by observers on behalf of Mrs. E, a student of the Teacher Professional Education Program. The observer recorded the course of the learning activities for 2 face-to-face meetings, with the first meeting being 2 x 45 minutes and the second meeting being 1 x 45 minutes. According to the observer's observations, there are still some students who have not focused on learning properly, some of them are also still playing gadgets and joking with their friends. In general, teaching and learning activities run smoothly.

Exposure to Data on Geographical Cognitive Ability Cycle 1

Based on the results of the posttest, the average value of the students' cognitive ability of the dynamics of the hydrosphere class X Social 1 was 74.18. The percentage of student completeness in cycle 1 is depicted in the following pie chart **FIGURE 2**.
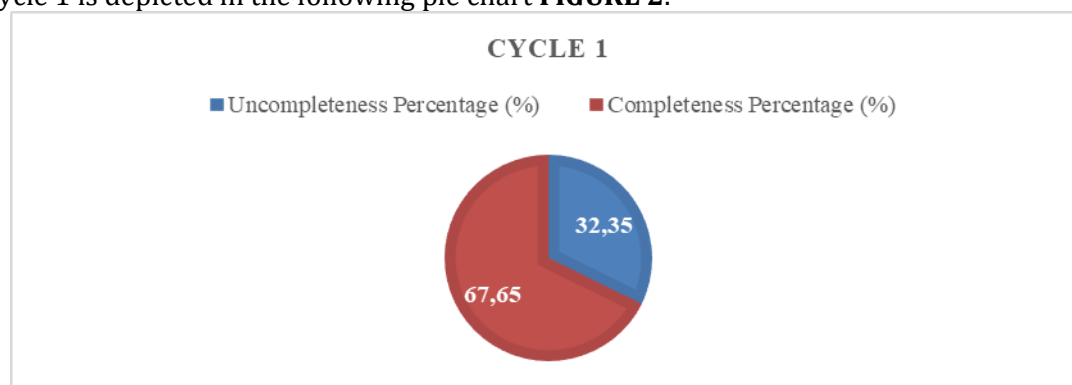

FIGURE 2. The Percentage of Student Completeness in Cycle 1

Based on the picture above, it shows that the percentage of complete cognitive abilities in class X Social 1 is 67.65%. While the percentage of students who did not complete was 32.35%. There were 34 students, of which 23 students reached Minimum Completeness Criteria or completed, while 11 students had not achieved completeness.

Reflection

Reflection is carried out to find out whether learning is carried out properly. Through the results of learning in cycle 1. It was found that there were still some students who had not focused on participating in learning activities, some of them also used gadgets outside of learning activities. The learning activities ran smoothly, with several obstacles at the beginning of the investigation activities.

Cycle 2

Observation Results of the Implementation of the Two Stay Two Stray Learning Model Assisted by Google Sites

The implementation of the second cycle of class action was observed by observers on behalf of Mr. D, S.Pd, who is one of the teachers of geography. In general, the observer observed the entire implementation of learning activities in class X Social 1. The observer filled out the learning implementation sheet that had been provided by the model teacher. Observations were carried out by observers by looking at the activities of students and model teachers in the implementation of learning activities. The results of the second cycle of observations by observers show that the implementation of the Two Stay Two Stray Learning Model Assisted by Google Sites increased from cycle 1.

Exposure to Data on Geographical Cognitive Ability Cycle 2

Based on cycle 2 test, the average value of the cognitive abilities of class X Social 1 students was 91.18. The percentage of completeness increased from 67.65% to 91.18%. The percentage of completeness of class XI IPS 1 students in cycle 2 can be seen in the following pie chart **FIGURE 3**
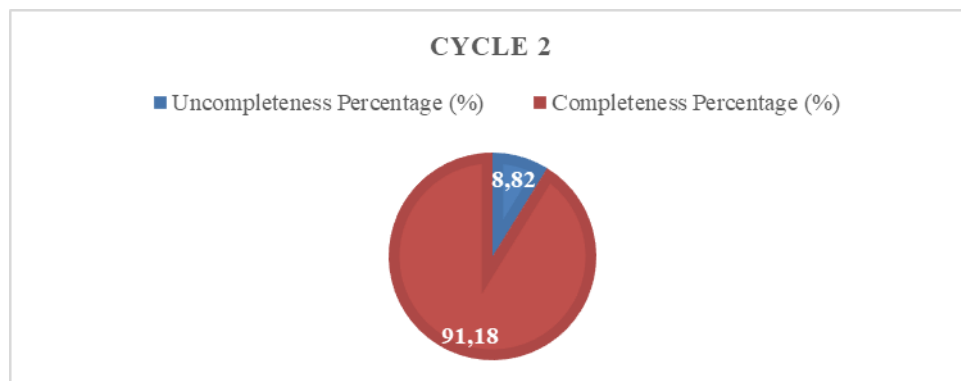

FIGURE 3. The Percentage of Student Completeness in Cycle 2.

From the results of the percentage of complete cognitive abilities of class X Social 1 students in cycle 2, it was found that the percentage increase was 23.53%. Almost all students in the class meet the Minimum Completeness Criteria.

Reflection

In cycle 2 the class condition is more conducive. According to the observer's observations, the material is conveyed well through learning syntax. The use of google sites makes it easier for students to understand the material and the process of solving problems. Through teaching materials provided according to learning styles to facilitate differentiated learning so that it can affect the enthusiasm of students when participating in learning activities which can then improve students' cognitive abilities.

Data Analysis

Implementation of research activities starting from pre-action, cycle 1, to cycle 2 shows that the average results of students' cognitive abilities have increased. The comparison average value of students can be seen in the following **FIGURE 4.**
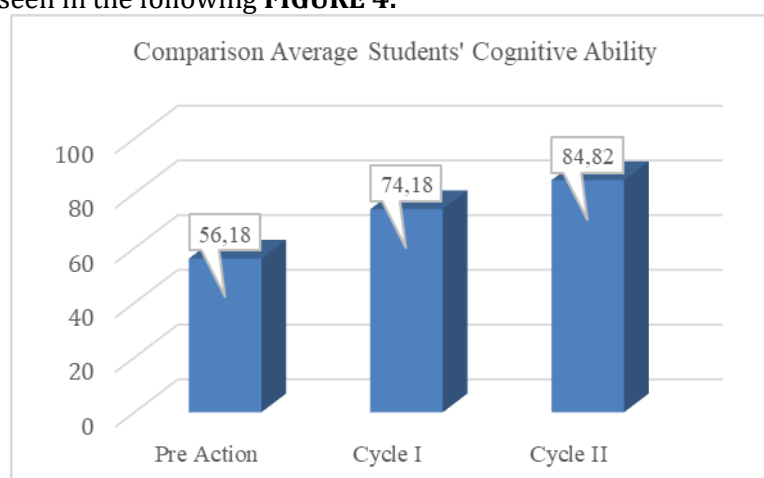

FIGURE 4. The Comparison Average Students' Cognitive Ability from Pre-action Until Cycle 2.

Based on these data it is known that the implementation of the Google Sites Assisted Two Stay Two Stray Learning Model improve students' cognitive abilities. From these results, the researcher compared the completeness and success of each cycle through the following TABLE 3.

TABLE 3. Comparison the Completeness and Success of Each Cycle

	Cycle 1	**Cycle 2**
Amount	2522	2884
Class Average	74,18	84,82
complete	23 students	31 students
Not Completed	11 students	3 students
The highest score	92	96
Lowest Value	48	56
Percentage % completion	67,65	91,18
Percentage Not Completed %	32,35	8,82

Through a comparison of students' cognitive ability results in cycle 1 and 2, it is known that students who completed cycle 1 were 23 students, increasing to 31 students. As for students who did not complete, it decreased from 11 students to 3 students. The increase in the completeness percentage can be seen in the following **TABLE 4**.

TABLE 4. Comparison the Completeness Percentage from Pre-action Until Cycle 2.

Action	**Average value**	**Enhancement**	**Percentage**
Pre-action	56,18	-	-
Cycle 1	74,18	18	32,03
Cycle 2	84,82	10,64	14,34

Based on the table above, it can be seen that in the learning treatment in cycle 1, the average student score has gone up, but still has not reached the minimum completeness score. So it is necessary to carry out improvements in the next cycle. In cycle 2, the average increase in students obtained a percentage of 14.34% with an average final grade of 84.82.

Research Findings

Implementation of learning in class X Social 1 using the Two Stay Two Stray Learning Model Assisted by Google Sites is effective in increasing students' cognitive abilities: (1) Application of the model makes students more enthusiastic through collaborative activities and group collaboration 2) Application of the model is able to improve cognitive abilities students, (3) students can understand the material and analyze a problem as well as identification and data collection through google sites. Other research findings are the results of cognitive abilities in the second cycle stage which have an average score higher than the pre-action and first cycle scores. In the process of learning activities take place. Students are more active and dominate the activity *(student centered).*

DISCUSSION

The Two Stay Two Stray Learning Model Assisted by Google Sites is able to encourage students to gain knowledge more quickly from understanding the material and experience solving problems. This combination of learning strategies begins through activities to understand the material (Shi, 2017), thus requiring students to acquire knowledge through independent study and problem solving skills. Showing the video lighter at the beginning of learning is used by the model teacher as an effort to introduce the material to be learned by students. In this study

students were given problems according to the material and related to problems in real life (contextual problem). This problem can be used as a problem task. Contextual problem give real-world classroom situations and encourage students to connect their knowledge with their own lives (Satriawan et al., 2020).

Each group consists of 4 people. each active learning group finds solutions to problems related to the dynamics of the hydrosphere. Material topics and problems analyzed by students are obtained through scanning barcodes on the monitor screen to go to the Google web sites, then students understand the material first through the material provided by the model teacher on the web the according to their learning style tendencies. The use of the Google Sites Assisted Two Stay Two Stray Learning model influences classroom learning patterns. Two Stay Two Stray Learning Assisted by Google Sites is able to increase student activity during learning activities (Ramadhani, Yetri, & Irwandani, 2021), enhances student comprehension and motivation also (Sasmito, Wahyuni, Zahro, & Info, 2023). In the process of solving problems, it shows that there is a dominance of activities carried out by students through teacher guidance. With this data students have a basis in learning activities. At the stage of solving problems and finding solutions to problems. Students carry out independent discussions with their respective groups. Initial information gathering in the problem-solving process is obtained by gathering information from various relevant literacy sources (Wardiah & Ardiansyah, 2021).

Based on the data obtained by the students, the group answered questions from the activity sheet and described them in the form of descriptive descriptions. Students can answer the questions that have been provided based on problem which has been presented using an explanation of the data obtained. This indirectly shows that students are able to make and create their own ideas from the findings of the phenomena that have been analyzed. So that students get answers to solving problems from combine data and information from the results of literacy studies from various sources. In the next stage, 2 group members stayed in place and 2 others visited other groups. From these results information sharing occurs between groups. The learning activities this time are truly student-centered. Then there is a group presentation to convey the results of their discussion. In this case the evaluation activity shows that students are able to solve problems by making alternative solutions by associating the data findings with actual environmental conditions. From that, it can be said that Two Stay Two Stray learning model assisted by learning media powered by Google Sites can be more effective of the use mixed by offline learning media. (Triana, 2023). The benefits of that combination is for teachers relate to ease of creating and managing websites using Google Sites, and benefits for students can increase students' cognitive ability (Anggraini et al., 2021). Students will get new information easily from any sources such as from the book, internet, and from their friends' idea and argument. Its combination also can relate to the ease of accessing the website, allowing students to use the website, to access learning content and submit online assessments (Sulasmianti, 2021), to facilitate collaborative learning (Andrew, 2019; Roodt & Villiers, 2012), help to understanding material and practical skills (Metha Dwi Pebriyanti & Karomah Dwidayanti, 2018; Puspita, Nazar, & Fitriana, 2021; Triana, 2023), increase their learning motivation (Sasmito et al., 2023; Triana, 2023), and increase metacognitive abilities (Anggraini et al., 2021).

CONCLUSIONS

Based on the presentation of the research findings and discussion, it can be concluded that the application of the Two Stay Two Stray learning model with the help of Google sites can improve the cognitive abilities students in class X Social 1 in the material on hydrosphere dynamics. In its application, the use of the Two Stay Two Stray learning model with the help of Google sites makes it easier for students to receive new information. Students can learn according to their individual learning styles through the material provided on Google sites that can facilitate students' learning needs. The investigation process is more enjoyable and efficient using this model. So that the material presented is also more meaningful.

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