The Effect of the Orientation, Analysis, Synthesis, Investigation, Synergy (OASIS) Model on Students' Cognitive Learning Outcomes in Kinetic Gas Theory

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Abstract *- Based on the results of a preliminary study at State Senior High School (SMAN) 1 Cihaurbeuti, it is known that students' cognitive learning outcomes are still classified as poor, one of which is the kinetic gas theory material which still has not reached the minimum completeness criteria, namely 70, because the learning method still uses the lecture method. Apart from that, the lack of innovation in the use of models in physics learning causes physics learning to become less interesting for students so that cognitive learning outcomes need to be improved. One of the solutions taken by researchers to overcome this problem is to apply the Orientation, Analysis, Synthesis, Investigation, Synergy (OASIS) learning model. The aim of this research is to analyze the influence of the OASIS learning model on students' cognitive learning outcomes in class XI gas kinetic theory material at SMAN 1 Cihaurbeuti. The research method used is quasi experimental design because this research is educational research with the object used being humans. The research design applied is nonequivalent control group design, where the two classes of research samples will undergo tests before and after being given treatment. The population in this research is all 7 classes of class To measure cognitive learning outcomes (C1, C2, C3), students were tested before treatment (pretest) and after being given treatment (posttest) in the form of a description of 6 questions on the main material of the kinetic theory of gases. The data analysis technique that will be used is the prerequisite test including the normality test and homogeneity test, as well as hypothesis testing using the t test with a significance level* ($\alpha = 0{,}05$) *showing that* $t_{count} > t_{table}$ *(4.06>1.67) which means* H_a *is accepted and* H_0 *is rejected, so it can be concluded that the OASIS learning model has an effect on students' cognitive learning outcomes in gas kinetic theory material.*

Keywords*: Cognitive Learning Outcomes, OASIS Model, Gas Kinetic Theory*

INTRODUCTION

Education is very important for every individual because it can help build and improve the quality of human resources in this era of globalization which is full of challenges. Education not only includes the transfer of knowledge from educators to students, but also develops cognitive abilities which is an important aspect. in learning. According to (Hamalik, 2006), education is a process that influences students to adapt to the environment they live in. This shows that education also functions to develop students' cognitive learning outcomes.

Cognitive learning outcomes are students' ability to recognize, understand, analyze, disseminate and create information. Cognitive learning outcomes are closely related to students' thinking abilities. After carrying out the learning process, students should gain abilities in the form of learning outcomes (Hasanah, 2022). Cognitive learning outcomes refer to six aspects in Bloom's taxonomy, namely remembering (C1), understanding (C2), applying (C3), analyzing (C4), evaluating (C5), and creating (C6) (Anwar et al., 2024). These aspects cover intellectual skills from low to high levels. Effective learning must pay attention to students' cognitive learning outcomes and use appropriate learning methods to improve students' ability to master concepts and principles, especially in physics subjects.

Physics is a science that studies abstract natural phenomena (Musliman & Kasman, 2022). Physics subjects are often less liked by students because they are always related to mathematical formulas and difficult calculations (Mariko & Andri, 2018). These difficulties can affect students' cognitive understanding, which ultimately causes low cognitive learning outcomes. The results of a preliminary study at SMAN 1 Cihaurbeuti show that the learning method used is still dominant using lectures, which results in students' boredom and low cognitive learning outcomes.

Data from the preliminary study shows that only 30% of students achieved the minimum completeness criteria (KKM) 70. Based on Arikunto's interpretation table, the percentage of students who had adequate cognitive learning outcomes was only 47.94%. These cognitive learning outcomes are included in the sufficient category, with details on the indicators remembering (C1) at 73.70%, understanding (C2) at 34.12%, and applying (C3) at 35.99%. These low cognitive learning outcomes indicate the need to use more effective and interesting learning models. The use of appropriate learning models is an important factor in achieving learning goals. One model that can be used is the OASIS model, which can increase students' understanding of physics concepts. The OASIS model has characteristics that can help students understand learning material better. This model includes orientation, analysis, synthesis, investigation and synergy stages, all of which focus on developing students' cognitive skills (Handhika, 2018).

According to (Khoerunnisa & Aqwal, 2020) a learning model is a learning activity that teachers and students must carry out so that learning objectives can be achieved effectively and efficiently. The OASIS learning model allows students to interact with various sources of knowledge, be they books, journals, discussions, online experts, or the web. The stages of the OASIS model include orientation, analysis, synthesis, investigation and synergy (Qadry et al., 2022). The OASIS learning model has objectives including identifying, uncovering, testing, and constructing concepts possessed by students (Handhika, 2018). In this way, students can develop critical and selective thinking skills in acquiring knowledge. The steps in the OASIS model have the potential to improve students' cognitive learning outcomes, especially in abstract material such as the kinetic theory of gases.

The kinetic theory of gases is one of the most difficult materials to study because it is abstract and cannot be observed directly (Khoiriyah et al., 2023). The kinetic theory of gases is a theory that studies the properties of gases based on the behavior of the atoms that form the gas and move randomly (Kanti et al., 2022). This fact was obtained based on the results of an interview with a physics teacher, who stated that the test value for the kinetic theory of gases was the lowest compared to other physics materials. The OASIS model, especially at the orientation stage by displaying learning videos, can help students understand these abstract concepts better. Based on this background, this research aims to analyze the influence of the OASIS learning model on students' cognitive learning outcomes in gas kinetic theory material in class XI MIPA SMAN 1 Cihaurbeuti academic year 2023/2024.

RESEARCH METHODS

This study used a quasi-experimental method with a Non-equivalent Control

Group design, involving two groups: class XI MIPA 2 as the experimental group and class XI MIPA 3 as the control group. This method was chosen because it is in accordance with field conditions where subject randomization cannot be done randomly, considering that the class division has been determined by the school. This design involves giving a pretest to measure the initial abilities of both groups before the intervention, followed by a posttest after the intervention to see the changes that occur. Thus, this design allows researchers to evaluate the effect of the intervention on the experimental group by comparing it with the control group, although without full randomization. The data analysis technique in this study includes several stages, including a normality test to ensure that the data obtained are normally distributed, a homogeneity test to check the equality of variance between groups, and a t-test to test the hypothesis and determine whether there is a significant difference between the pretest and posttest results in both groups. The use of this quasi-experimental method provides advantages because it can be applied in real educational situations without changing the existing class structure.

RESULTS AND DISCUSSION

Results

Pretest Data on Cognitive Learning Results for Experiment and Control Class

The research began by conducting a pretest in both classes, both the experimental class and the control class, to determine the initial conditions of the students' cognitive learning outcomes. In the experimental class, initial data regarding cognitive learning outcomes were collected before implementing learning by applying the OASIS model, while in the control class, initial data regarding cognitive learning outcomes were collected before implementing learning by applying the direct instruction model. After carrying out the pretest, the data shown in Table 1 was obtained.

Table 1. Pretest Statistical Data on Cognitive Learning Results

Data	Group	
	Experimental	**Control**
n	35	35
Max Score	100	100
Highest Score	37	41
Lowest Score	14	6
Average	24	20
Varians	56,5	74,5
Standard Deviation	7,5	8,6

Table 1 shows that the number of students in the experimental class and control class is the same, namely 35. The maximum score that students can get if they answer all the questions correctly is 100. The average score in the experimental class is higher than the control class by a difference. 4.0. This means that the experimental class was better able to answer cognitive learning outcomes tests than the control class. The variance values in the experimental class and control class are 56.5 and 74.5. The variance of the control class is greater than the experimental class, which means the control class has more varied data. Then for the standard deviation value, the experimental class has a smaller value than the control class, namely 7.5 and 8.6. This shows that the experimental class has a data distribution that is closer to the average value compared to the control class.

After collecting data on pretest scores on cognitive learning outcomes in the experimental class and control class, both classes were then given treatment. The experimental class received treatment using the Orientation, Analysis, Synthesis, Investigation, Synergy (OASIS) model, while the control class received treatment using the direct instruction model. In the final activity, a posttest was carried out in the form of 6 item description questions which included indicators of cognitive learning outcomes C1, C2 and C3 in both classes, both experimental and control classes, to determine the value of students' cognitive learning outcomes after being given treatment. The research results of the posttest scores carried out can be seen in Table 2.

Table 2. Posttest statistical data on cognitive learning outcomes

Data	Group	
	Experimental	**Control**
n	35	35
Max Score	100	100
Highest Score	100	100
Lowest Score	71	65
Average	87	79
Varians	63,1	72,6
Standard Deviation	7,9	8,5

Table 2 shows that the number of students in the experimental class and control class is the same, namely 35. The maximum score that students can get if they answer all the questions correctly is 100. The average score in the experimental class is higher than the control class by a difference. 8.0. This means that the experimental class was better able to answer cognitive learning outcomes tests than the control class. The variance values in the experimental class and control class are 63.1 and 72.6. The variance of the control class is greater than the experimental class, which means the control class has more varied data. Then for the standard deviation value, the experimental class has a smaller value than the control class, namely 7.9 and 8.5. This shows that the experimental class has a data distribution that is closer to the average value compared to the control class. If the average value is added and subtracted from the standard deviation value, a range of average values is obtained. The average range of scores for the experimental class was 79-95, while in the control class the range of average scores was 70-87. The intersection of the average scores of the experimental class and the control class is in the range 79-87. Based on the average value obtained in Table 2, there is an intersection of experimental class and control class data. This means that there is the same treatment given to the control class using the direct instruction model and the experimental class using the OASIS model. This is in line with what was stated by (Christi et al., 2020). The intersection of data between the experimental class and the control class can indicate similarities in the treatment given to the two groups.

The results of the posttest data values for the cognitive learning outcomes of the experimental class and control class can be seen clearly and in detail by calculating the average percentage of posttest scores for each indicator studied. The percentage value is obtained from the posttest score which consists of 6 descriptive questions covering 3 aspects of learning outcomes in the cognitive domain. The results of calculating the average percentage of posttest scores for each indicator are interpreted using percentage criteria according to (Arikunto, 2013). The table of average posttest scores for each indicator of cognitive learning outcomes is presented in Table 3.

Table 3 shows that from the results of the research that has been carried out, it is known that the average score for the experimental class is in the very good category with a percentage of 87%, and the control class is in the good category with a percentage of 79%. Each indicator of cognitive learning outcomes in the experimental class has a higher percentage value than the control class.

Table 3. Average posttest scores for cognitive learning outcomes in the experimental class and control class

No	Indicators	Experiment		Control	
		Percentage (%)	**Category**	**Percentage (%)**	**Category**
1	Remembering (C1)	79,05	Good	76,48	Good
2	Understanding (C2)	83,23	Very Good	66,58	Good
3	Applying (C3)	93,68	Very Good	90,83	Very Good
Average		**87**	**Very Good**	**79**	**Good**

Based on the percentages explained in Table 3, it can be concluded that the cognitive learning outcomes in the experimental class are better than the control class.

The assessment of the cognitive learning outcomes of experimental class (EC) and control class (CC) students can be seen from the average value and standard deviation per indicator which is shown in Table 4.

Table 4. Average values and standard deviations per indicator for the experimental and control class

Data	Indicators					
	C1		**C2**		**C3**	
	EC	**CC**	**EC**	**CC**	**EC**	**CC**
Average Score	79,05	76,48	83,23	66,68	93,68	90,54
Standard Deviation	13,47	20,75	16,64	15,30	11,94	12,54

If the average value is added and subtracted by the standard deviation, we obtain a range of average values for the indicator considering C1, the average value range for the experimental class is 66-93, while the control class is 56-97. Thus, the range of average values for this indicator is 66-97, which is then compared in Table 3, showing that there is a wedge. This is an influence on the early stages of the syntax of the OASIS learning model and direct instruction. The orientation stage is the initial stage of the OASIS model, the teacher always provides a problem using learning videos. Meanwhile, in the initial stages of the direct instruction learning model, the teacher also provides problems in daily life so that students can more easily remember the material being studied.

The use of the OASIS learning model in this research is one of the supporting data for research results. To obtain data regarding the implementation of the OASIS model, this was done by filling in observation sheets by three observers while learning was taking place in the experimental class. The assessment given by observers aims to evaluate whether learning using the OASIS model runs smoothly or not. The results of data analysis regarding the implementation of the OASIS model are presented in Table 5.

Table 5. Summary of Data Processing for the Implementation of the OASIS Model

No.	Phases	Percentage (%)	Category
1	Introduction	100	Very Good
2	Orientation	100	Very Good
3	Analysis	100	Very Good
4	Syntesis	100	Very Good
5	Investigation	100	Very Good
6	Synergy	100	Very Good
7	Closing	77,8	Good
Average		**96,8**	**Very Good**

Based on data analysis from three observers during three meetings, it was discovered that each syntax of the OASIS learning model as well as the introductory and closing activities had been implemented very well. At the first meeting, each syntax of the OASIS learning model was implemented with a percentage of 100%. At the second and third meetings, each stage of the OASIS learning model and preliminary activities were implemented. However, at the closing stage, implementation was not optimal, only reaching a percentage of 67%. This is caused by limited time when changing lesson hours which causes researchers to be in a hurry so they do not provide information to students about the material that will be studied at the next meeting.

Before conducting a hypothesis test, a prerequisite test is first carried out. Prerequisite tests carried out include homogeneity tests and normality tests. The normality test aims to determine whether the research data is normally distributed or not, using the chi-square test. The data tested included pretest and posttest scores from the experimental class and control class. The results of the normality test calculations are shown in Table 6.

Table 6. Posttest Data Normality Test Results for Experimental Class and Control Class

No.	*Post-test* Data	χ^2_{count}	χ^2_{table}	Decision
1.	Experimental Class	3,84	12,8	Distributed Normal
2.	Control Class	4,40	12,8	Distributed Normal

Table 6 is the results of the posttest data normality test for the experimental class and control class. The values obtained by χ^2_{hitung} for the experimental class and control class were 3.84 and 4.40. Based on the analysis results, it is known that the value of χ^2_{tabel} is 12.8. Decision making data is normally distributed, that is, if $\chi^2_{hitung} < \chi^2_{tabel}$, and each class has a value of χ^2_{tabel} that is smaller than χ^2_{tabel}. Thus, it can be concluded that all data groups have been taken from a normally distributed population.

Table 7. Post-test Score Homogeneity Test for Experimental Class and Control Class

α	F_{count}	F_{table}	Decision	Conclusion
0,05	1,15	1,77	H_0 *accepted* H_a *rejected*	Homogeneous

Based on Table 7, it can be concluded that the posttest scores on cognitive learning outcomes have the same or homogeneous variance. This happens because $F_{hitung} < F_{tabel}$ $(1{,}15 < 1{,}77)$ at the significance level α=0.05 then H_0 is accepted and H_a is rejected.

Table 8 shows that the posttest data from the experimental class and control class has a value of $t_{hitung} = 4{,}06$ with a level of $\alpha = 0{,}05$, $db = 68$ namely 1.67 at a confidence level of 95%.

Table 8. Hypothesis Test Results Using the t-test

Data	*Post-test* HBK EC	*Post-test* HBK CC	α	t_{count}	t_{table}	Decision
N	35	35	0,05	4,06	1,67	H_0 rejected & H_a accepted
Average Score	87	79				
Standard Deviation	7,9	8,5				
Varians	63,1	72,6				

Based on the Table 8, it can be concluded that there is an influence of the Orientation, Analysis, Synthesis, Investigation, Synergy (OASIS) learning model on students' cognitive learning outcomes in gas kinetic theory material in class XI MIPA SMAN 1 Cihaurbeuti academic year 2023/2024.

Discussion

This research was conducted in two classes, namely the experimental class and the control class. The learning process in the experimental class was carried out using the OASIS model, while in the control class it was carried out using the direct instruction model. The OASIS learning model influences students' cognitive learning outcomes in the kinetic theory of gases. This influence exists because the OASIS learning model is able to develop students' initial understanding, besides that students are able to understand the concepts or material taught by the teacher. This is obtained by linking the material to students' learning experiences. The material that students understand is obtained from the process of conducting literature reviews and discussions with other students. Apart from that, learning using the OASIS model is able to overcome students' passivity in the learning process, can improve students' ability to work together so that students are more active in the learning process. Students' increased understanding of the material has a positive impact on cognitive learning outcomes. This is in line with research conducted by (Handhika, 2018) that in learning using the OASIS model, activities are implemented in the form of presentations, discussions and each group responds to each other's problems being studied between students and the teacher so that the process of student learning outcomes is smooth. using the OASIS model to improve students' understanding of concepts and misconceptions.

Cognitive learning outcomes in the experimental class and control class both increased. This can be seen in the average percentage of cognitive learning outcomes for the experimental class, namely 87% in the very good category and the control class, namely 79% in the good category. Both learning models used in the experimental and control classes actually influence students' cognitive learning outcomes, however, cognitive learning outcomes using the OASIS model are higher than those using the direct instruction model. The difference in scores is caused by the involvement or activeness of students during the learning process. This is in line with what was stated by (Wicaksono et al., 2022) that students' interest in learning, students' involvement in the learning process can influence students' cognitive learning outcomes. In the experimental class, the learning process is student centered so that it helps students transform new information meaningfully, whereas in the control class it is teacher centered so that learning is more dependent on the teacher's communication style. This is in accordance with the opinion of (Shoimin, 2021) that the direct instruction learning model emphasizes listening activities through lectures and teachers can better control the content of the material and the sequence of information received by students. In the direct instruction model, the teacher is considered a trusted source of information to convey material so that students tend to receive information through listening and taking notes. Apart from that, the experimental class showed higher learning outcomes because in the OASIS model, students were directed first to remember the learning material from the previous meeting and relate it to the material to be studied. Apart from that, students are also asked to carry out literature reviews from various sources related to the material to be studied. After that, to avoid misconceptions, the teacher will verify the findings or understanding gathered by the students.

In this research, the learning process was carried out in 3 meetings. The first meeting for the experimental class (XI MIPA 2) was held on February 6 2024, while for the control class (XI MIPA 3) it was held on February 5 2024 with the main discussion of ideal gas quantities and ideal gas laws. The second meeting for the experimental class (XI MIPA 2) was held on February 13 2024, while for the control class (XI MIPA 3) it was held on February 12 2024 with the main discussion being the general ideal gas equation. The third meeting for the experimental class (XI MIPA 2) was held on February 20 2024, while for the control class (XI MIPA 3) it was held on February 19 2024 with the main discussion being on ideal gas quantities. Each lesson begins with preliminary activities, namely the teacher opens with an opening greeting, prays before starting the lesson, checks the presence of students, prepares the students physically and psychologically before starting the learning activity, provides apperception regarding the material to be studied, provides motivation to the students. Next are the core learning activities that refer to the RPP that has been created. For the experimental class, it refers to the lesson plan using the OASIS model syntax, while for the control class it refers to the direct instruction learning model syntax. In the initial stage the teacher opens the lesson by saying hello, praying before learning, preparing the students physically and psychologically to start learning. After that the teacher gives an apperception regarding the material that has been studied and will be studied by asking a simple question "what types of substances do you know?", "then what types of substances will we study in this material?", "So why is this substance being studied? Can anyone explain?" There are students who answer correctly and there are also students who answer incorrectly. Then the teacher provides confirmation regarding the correct answer, so that students are expected to have an idea regarding the material to be studied.

The second stage is orientation, at this stage it is proven to influence students' cognitive learning outcomes. The learning process at the orientation stage is that the teacher randomly groups students into six groups. Each group consists of 5-6 students consisting of men and women. After that, the teacher invites students to sit with their groups and distributes student worksheets (LKPD) to each student to fill in through discussion with their group members. The teacher provides orientation via video regarding problems and questions related to the video, which are then answered by students in the LKPD. The cognitive learning outcome indicator C1 in the control class and experimental class is included in the good category. In the experimental class, this indicator is related to synchronic orientation. However, the scores obtained from the experimental class posttest results were higher compared to the control with a percentage of 79.05% and 76.48%. This is because the experimental class starts with the orientation stage. At the orientation stage, students are given a stimulus in the form of a video that displays problems regarding the characteristics of particles in closed spaces, as well as questions related to the video in order to stimulate students' initial memory and understanding. Next, students are given examples of applications in real life which are then linked to the material to be studied, so that this stage can provide initial knowledge to students. This is in line with PURWANTI's opinion that using videos makes it easier for students to remember and understand lessons because they do not use one type of sensory device. The results of his research prove that visual learning can increase memory from 14% to 38%. Below is presented one of the students' answers at the orientation stage, which can be seen in Figure 1:

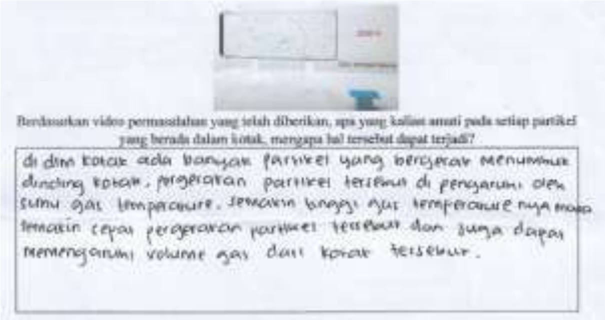

Figure 1. Student Answers at the Orientation Stage

The third stage is Analysis, at this stage students begin to have discussions to fill in the questions contained in the LKPD related to the problem being studied. In the experimental class, syntax analysis is related to the understanding indicator (C2). The cognitive understanding learning outcome indicators (C2) in the control class and experimental class are included in the good and very good categories with percentages of 83.23% and 66.58%. This is caused by the learning stages in the experimental class which are carried out with the analysis stage. At the analysis stage, students begin to fill in the student worksheet (LKPD) which contains a problem that needs to be solved by answering questions related to the problem by discussing and conducting literature reviews from various sources. As stated by (Anwar et al., 2024) learning resources play a very important role in learning because learning resources are tools used to channel messages for learning objectives. Apart from that, students are also required to make temporary conclusions from each problem presented in the LKPD. Activities in syntax analysis in the experimental class are presented in Figure 2.

Figure 2. Syntactic analysis activities in the OASIS learning model

After each group has finished carrying out the orientation and analysis stages, students are directed to the synthesis stage. Apart from the analysis stage, the synthesis stage also influences the cognitive understanding learning outcome indicators (C2). This is because at the synthesis stage where each group presents the results of discussions and literature studies that have been carried out on Student Worksheets (LKPD). From this presentation, students will gain additional understanding through the exchange of information conveyed by each group. Student presentation activities in front of the class and mutually understanding the material are the most effective ways to gain knowledge (Hertz-Lazarowitz et al., 1992). At this stage, cognitive conflict occurs due to differences in understanding obtained by each group. Differences in opinion and answers will be reduced at the next stage. Activities on syntax synthesis in the experimental class are presented in Figure 3.

Figure 3. Synthesis activities in the OASIS learning model

Next, in the investigation stage, each group conducts a discussion regarding differences in opinion and the answers they find. In the experimental class, the investigation syntax is related to the understanding indicator (C2). The cognitive understanding learning outcome indicator (C2) in the control class and experimental class is included in the good and very good categories, however, the percentage of the experimental class is higher than the control class. This is because in the experimental class the investigation syntax influences the understanding indicator (C2). In the learning stage of investigative syntax, students carry out discussions between groups to equate thoughts regarding differences in answers or understanding that have been obtained so as to produce the same conclusion. (Pratiwi et al., 2020) in their research results stated that learning by generating cognitive conflict can significantly improve students' cognitive learning outcomes. Apart from that, learning through discussions can influence students' cognitive learning outcomes. This is in line with what was stated by (Suryanti, 2019). The results of his research prove that learning by implementing discussions in the learning process can improve students' cognitive learning outcomes. This is in accordance with the results of a meta-analysis of learning methods conducted by (Christi et al., 2020) which states that the learning methods applied by a teacher influence their cognitive learning abilities.

The next stage is the synergy stage, where at this stage students align the information, they get with the help of explanations related to the learning material provided by the teacher. In the experimental class, the investigation syntax is related to the applying indicator (C3). The applied cognitive learning outcome indicator (C3) in the control class and experimental class is included in the very good category, however the percentage of the experimental class is higher than the control class. This is because at the synergy stage the teacher verifies or explains again the material being studied, so that students can better understand the material being studied. After that, the teacher gives evaluation questions to measure the extent of students' understanding regarding the material they have studied. Activities on syntax syntax in the experimental class are presented in Figure 4.

Figure 4. Synergy activities in the OASIS model focus on aligning information and understanding

In the final stage of learning, the teacher concludes regarding the material that has been studied. After that, convey the learning topic for the next meeting and end the learning process with prayer and greetings.

Based on table 2, the posttest score for applied cognitive learning results (C3) for the experimental class got the highest score compared to the remembering (C1) and understanding (C2) indicators. This is because in the synergy syntax students are given a re-explanation of the material they have studied in the previous stage. The explanation process carried out by the teacher can directly influence, develop and improve students' intelligence and skills (Murtini, 2021). Apart from that, in the learning process using synergy syntax, students are required to understand and apply the concepts they already know by doing exercises questions given by the teacher to measure the extent of knowledge obtained by students. The learning process in synergy syntax also plays a role in applying knowledge rather than just understanding or remembering it.

For the remembering indicator (C1), the experimental class got the lowest score compared to the understanding (C2) and applying (C3) indicators. This is because students have difficulty in strategies for remembering information, compared to understanding or applying concepts. Apart from that, students are more accustomed to learning methods that require understanding and application, so that when learning uses new models or methods students are still not used to it and it can affect students' cognitive learning outcomes. Adaptation to new teaching methods requires time and practice, unfamiliarity with new methods can cause less than optimal learning results (Slavin, 2014). Another factor that can influence the value of cognitive learning outcomes is the type of questions used. on the remembering indicator (C1) the answer to the question must be more specific compared to the questions on understanding (C2) and applying (C3).

Based on the description in Table 3, a significant influence between the control class and the experimental class is seen in the understanding indicator (C2) which is the highest, while the application indicator (C3) is the lowest. This is analyzed by looking for data slices through subtracting and adding the standard deviation with the average value of each research indicator. In the understanding indicator (C2), no data intersection was found, which means there was no equal treatment between the experimental class and the control class. Based on this, it can be said that the syntax of analysis, synthesis and investigation has a very significant influence on the understanding indicator (C2). As stated by Handika (2018), each syntax of the OASIS model has the potential to improve students' cognitive learning outcomes. On the other hand, in the applying indicator (C3) there is a significant data intersection, which means there is the same treatment between the experimental class and the control class. So, it can be said that synergy syntax does not have a significant effect on the applying indicator (C3) when compared to the control class which uses the direct instruction model.

Based on the description above and referring to Table 2, the intersection of the average value of cognitive learning outcomes for the experimental class and control class is 79-87. The scores obtained by the experimental class and control class were caused by research variables and some were caused by extraneous variables. Variables in this research that influence the occurrence of data intersections include orientation and synergy indicators. According to (Pratiwi et al., 2020) extraneous variables are variables which, if not controlled, will affect the dependent variable. It has been previously known that the experimental class and control class have a number of students and abilities that can be said to be homogeneous. According to (Musliman & Kasman, 2022), the threats in experimental research are maturity, testing procedures, instruments and mortality. Maturity can occur through the process of growth and development, both physically and mentally. When someone experiences maturity, this can influence the results or variables measured in research. Therefore, changes that occur in the variables being measured are not only caused by the experimental intervention but are also influenced by the natural process of growth or development in the subjects who are part of the research. The test procedure can occur if the research subject can recall wrong answers during the pretest, and then at the posttest the students can know the answers. Instrumentation can occur because measuring instruments or data collection tools (instruments) in the pretest are usually used again in the posttest. This will certainly affect the results of the posttest. In other words, changes that occur in the dependent variable are not caused by the treatment or experiment alone, but also due to the influence of the instrument. Mortality can occur because during the process of conducting experiments, or during the time between the pretest and posttest, subjects often "drop out" either due to moving, illness or death. This will also affect the experimental results. So, the intersection occurred because there were extra variables (extraneous variables) that appeared in the control class and experimental class during learning activities so that the results of the cognitive learning tests were tainted by extra variables (extraneous variables) which the researchers were unable to consider.

The obstacles experienced by researchers lie in the presentation process, where there are students who are not serious enough in carrying out the task and lack of attention from students towards the group that is making the presentation. Therefore, the researcher gave instructions to students to pay more serious attention to the presentation process, and also appealed to students who were not making presentations to pay sufficient attention to the group that was making presentations. Apart from that, the researcher also advised each group that was not making a presentation to prepare at least 2 questions as discussion material at the next stage. In this way, the situation in the classroom can be well controlled.

The OASIS model facilitates students to learn through hands-on experience, discussion, and independent exploration of concepts, which is in line with constructivist theories by Piaget and Vygotsky. Active student engagement allows them to construct new knowledge based on meaningful learning experiences. While direct learning methods focus more on one-way information delivery, the OASIS model allows interaction between students, which strengthens understanding through discussion and collaboration. The results of this study are also in line with previous studies that show that project-based learning and collaboration increase student motivation and critical thinking skills. In direct learning, students may tend to be passive, only receiving information without engaging in reflective or problem-solving processes, which are key in the OASIS model. The results of this study provide several important implications for teachers and educational policymakers. First, teachers need to consider adopting the OASIS model in their teaching, especially in an effort to increase student engagement and their cognitive learning outcomes. Teachers also need to be trained in the implementation of this model in order to maximize its potential for success in the classroom. For educational policymakers, these results indicate the need for institutional support in the form of teacher training, curriculum development, and provision of resources that support the implementation of the OASIS model in schools. In addition, policies that encourage the use of active learning approaches need to be strengthened so that this model can be applied on a wider scale.

CONCLUSION

Based on data analysis and hypothesis testing using the t test with a significance level (α=0.05), it shows that $t_{count}>t_{tabel}$ is (4.06>1.67) which means H_a is accepted and H_0 is rejected, so it can be concluded that the Orientation learning model, Analysis, Synthesis, Investigation, Synergy (OASIS) influences students' cognitive learning outcomes in gas kinetic theory material for class XI MIPA SMAN 1 Cihaurbeuti for the 2023/2024 academic year.

This study confirms that the OASIS learning model has a positive influence on students' cognitive learning outcomes. For further research, it is recommended that further exploration be carried out on the effectiveness of this model at various levels of education and different subjects, as well as an in-depth analysis of students' affective and psychomotor aspects. In addition, research with a longer period of time is needed to evaluate the sustainable impact of the OASIS model. Practically, this model can be adapted to be applied in a wider educational environment, including in areas with limited resources, by utilizing appropriate technology and strategies to increase student engagement and interaction in the learning process.

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