THE IMPLEMENTATION OF MULTIDIMENSIONAL LEARNING MODELS IN ENGLISH LEARNING TO IMPROVE STUDENTS' CRITICAL THINKING SKILLS

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ABSTRACT

Based on the description of the background, the following problems are formulated in this study : (1) How is the implementation of the multidimensional learning model in English language learning; (2) How does the implementation of a multidimensional learning model improve students' English language learning; and (3) How do students respond to the implementation of multidimensional models in English language learning. Research subject in this study is all grade X students of SMA Negeri 1 Wiradesa for the 2022/2023 semester 1 school year as many as 32 students. The background of the population is not based on student rank and achievement so there is no superior class. (1) The results of observations on the implementation test of the multidimensional learning model showed that the application of the multidimensional learning model in learning the subject of pressure physics in solids and liquids which was carried out for 3 consecutive meetings was carried out very well with an average score from meetings 1 to 3 of 3.8; 3.7 and 3.65 of the highest score of 4; (2) There was an increase in students' science process skills after the application of a multidimensional learning model in physics learning, the subject of pressure in liquids and gases with a gain value of 0.7 was included in the criteria for high improvement. There is a significant difference between students' PPP pretest and posttest scores with t-test results obtained tcount value = 76.497 > ttable = 1.696 at a significance level of 5%; (3) Student response to the application of multidimensional learning models in physics learning on the subject of pressure in solids and liquids is high with an average percentage of student responses obtained of 78.05% including in the high category.

Keywords : Multidimensional learning, Improvement, Cirtical Thingking Skills

INTRODUCTION

The 21st century learning is an effort to facilitate students in the 21st century to experience the best learning experience so that they can achieve learning goals effectively. In achieving ideal learning conditions, teaching quality is always related to the use of optimal learning models, this means that to achieve good teaching and learning quality each subject must be organized with the right organizing model and then delivered to students with the right model as well (Sugiarti, 2018: 440).

One of the foreign languages that students must master and become an international language throughout the world is English. On the other hand, in the implementation of English language learning, generally still use the lecture method with teacher centered and provide learning concepts in rote form so that English learning is less meaningful. Many students think that English lessons are boring. This is because teachers are less all out in teaching English. In the school sphere, especially in the aspect of learning, students can be more interested

in following the learning process if teachers can use methods that they have an interest in it.

Nurhaeni (2011: 78) reveals that the decline in learning enthusiasm is not only caused by methodological inaccuracy but also rooted in conventional educational paradigms that always use classical teaching methods such as lectures, without interspersed with various methods that encourage students to learn more actively, including the gap between teachers and students.

The results of observations made by researchers at SMA Negeri 1 Wiradesa, the role of teachers in the English learning process is still more dominant than students. This is shown by the lack of practicum activities in each subject, the lack of opportunities for students to be more active in class and the lack of discussion activities that can support students to find concepts by themselves. Learning is mostly done by giving complete concepts without going through the processing of potential that exists in students and those around them, rote memorization so that learning is less meaningful for students. On the other hand, students' response to physics subjects was low. Most students do not like English lessons on the grounds that they are difficult to understand, many formulas, boring, and the lessons are not so interesting.

Based on fact, the problems that arise in physics learning can be concluded including reduced scientific attitudes, scientific processes and reduced empowerment of students' potential to be able to play an active role in learning or make students carry out critical thinking processes. Thus, it can be said that English learning that is carried out is still oriented to learning outcomes. For this reason, an empowerment of thinking process skills is needed.

According to Hinduan (2011), learning using a multidimensional learning model is learning that involves active students that allows students to be able to think critically, think rationally, and think analytically.

This multidimensional approach is not a learning model that has a certain systematics, but a learning model that uses various methods applied in one

lesson that is adapted to the teaching material, student conditions and students' daily lives. Effective learning is a multidimensional construction by presenting a new strategy in the implementation of learning.

Seeing these problems, the idea arose to make new innovations in the English learning process. The new innovation is the application of a multidimensional learning model. The multidimensional learning model is a learning model using several approaches in an integrated manner, which involves students' activeness in the learning process so that it can improve and improve the mindset and performance of students individually and in groups in improving student process skills.

High school students are considered to be suitable research objects because the multidimensional learning model is a learning model that prioritizes logic and critical thinking. High school students are considered very appropriate because at the age of high school classes students experience a transition period from adolescence to adulthood with the development of a more critical mindset and are better able to use reason and logic than when they were in elementary school (SD) and junior high school (SMP). Based on the latest curriculum in the world of education, namely the K13 Curriculum which emphasizes student activeness and teaches students to make decisions with their own thoughts, the multidimensional method is very suitable to be applied in current research because the method also prioritizes critical thinking skills, rational thinking, and analytical thinking.

Based on the description of the background, the following problems are formulated in this study : (1) How is the implementation of the multidimensional learning model in English language learning; (2) How does the implementation of a multidimensional learning model improve students' English language learning; (3) How do students respond to the implementation of multidimensional models in English language learning.

Based on the formulation of the problem above, the objectives of this study are : (1) To describe the implementation of multidimensional learning models in English language learning; (2) To describe the improvement of students' English skills by applying multidimensional learning models to English language learning; (3) To describe students' responses to the

implementation of multidimensional learning models in English language learning.

The process of critical thinking is a collection of knowledge and as a process is the steps that must be taken to acquire knowledge or seek an explanation of meaning in language (Yulianti &; Wiyanto, 2009: 45). Based on the Big Dictionary Indonesian (2011), skill means the ability to complete a task. Process means the series of actions, manufactures, or processes that produce products, while science means systematic knowledge of the physical world, including natural sciences. According to Deden (2013), critical thinking process skills are skills obtained from the exercise of fundamental mental, physical and social abilities as drivers of higher abilities. Hassard and Dias (2009), process skills as a way of thinking and acting both deductively and inductively and in an effort to make something more meaningful. There are various skills in process skills. These skills consist of basic skills and integrated skills. Basic skills consist of six skills, namely: observing, classifying, predicting, measuring, inferring, and communicating. While integrated skills consist of: identifying variables, tabulating data, presenting data in graphic form, describing between variables, collecting data, analyzing research, compiling hypotheses, defining variables operationally, designing research and conducting experiments (Dimyati &; Mujdiono, 2013: 148).

Dahar (2011) states that a multidimensional approach is better than using only one approach. By using several integrated, problem-solving and cooperative approaches, it is hoped that students can be more motivated to be actively involved in the learning process so that they can improve and improve the mindset and performance of students individually and in groups, besides that students will feel happy learning physics which is the basic capital to improve the quality and learning outcomes of students in the physics learning process at school.

This research is more focused on discussing multidimensional learning methods in language learning. According to Erlinda (2020:1) language is a method of communication. Language has components that build it, language is divided into regional languages, national languages and international languages. Fauzan (2019:22) mentions that language is a communication tool that has an important role to express an intention to others. Language, communication and life cannot be separated. Language is used in various fields such as education, communicating with the community and many others. According to Ahmadi in Grabe and Stoller (2018:116) language is one of the important elements that influence international communication activities. Students utilize various parts of English language skills such as listening, speaking, reading and writing for proficiency and communication.

Armasita (2017: 25) mentions that English is a foreign language and has become an international language. English is also a subject from elementary school to college. English has a stronger influence in modern times, learning English from an early age is important for students. According to Hariyanti (2019:1) English is an international language in the world. English is important to learn for students, it is hoped that by learning English students can follow the development of science and technology. So, it is important for people to learn it. In Indonesia, English is a foreign language. It is a foreign language that is taught from kindergarten to university level. Febrianti (2021:1) adds that English is increasingly becoming a medium for every field of communication in this era of globalization. As a result, there is a demand in every country for speakers who can speak English effectively. It makes English recognized as a Universal Language, and as a second language in many countries around the world. So that English is a language that must be learned.

The basic guidelines of this multidimensional learning model are: (1) the teacher acts as a facilitator, (2) the teacher checks the level of understanding of students by giving students the opportunity to express their thoughts about the physical phenomena they find, before the introduction of material concepts is delivered, (3) emphasizes students on the inquiry process in physics learning, (4) develops learning conditions for students to be able to distinguish meaning between concepts, principles, and physical theories and the relationship between the three, and (5) create learning conditions that are able to improve students' thinking skills (critical, rational, analytical) (Pramayanti, 2011).

The novelty in this studies based on the previuos researches done by Anjani et.all (2020) above is that this study uses multidimensional methods to improve students' critical thinking skills. Based on the data obtained in the results and discussions that have been described, it can be concluded that the guided inquiry learning model accompanied by multidimensional thinking diagrams can improve students' scientific reasoning skills, especially in the proportional and conservation reasoning domains. This is evidenced by the acquisition of the most students' answers in each pattern of scientific reasoning.

RESEARCH METHODS

The form of this research is an action research. Badrun (1998) explains Action Research (AR) is research that conducted collaboratively by participants in the social sciences and education to improve understanding and implementation of work alone, and also bring an impact on the surrounding environment. In this case, AR can be used in the world of education, like inside as well as outside the classroom. In this study, the writer provided a questionnaire about learning English to improve students'critical thinking skills. This questionnaire was given as a booster data from the results of observations on the problem of learning difficulties in English at SMA 1 Wiradesa.

This research is conduct at SMA Negeri 1 Wiradesa which is located at Wiradesa Sub-district of Pekalongan City on 6th November 2023 to 10th November 2023. The reason for taking the place is with consideration that the school is a favorite high school in Wiradesa District with the characteristics of friendly, polite, and outstanding students, and is affordable from the place of researcher.

Research subject in this study is all grade X students of SMA Negeri 1 Wiradesa for the 2022/2023 semester 1 school year as many as 32 students. The background of the population is not based on student rank and achievement so there is no superior class.

The research design used in this study is one group pretest - posttest design. In this research design is a pretest and posttest design, where research samples

are treated for a certain time. Pretest is done before treatment to find out the student's initial ability, and posttest is done after treatment to find out the student's final ability. The treatment in this study is the application of a multidimensional learning model. The instrument used as a pretest and posttest is an instrument to measure students' science process skills that have been judged and tested first. The design of one group pretest – posttest. First, students are given questions about passive voice and told to do it within a certain time. The process of working on the questions is carried out directly and without prior preparation. This series of activities is called the pretest. This pretest is done to measure how far students know about a problem. Then, give an assessment of the pretest results. After the assessment on the pretest questions, students are given a complete understanding of the subject of passive income within a few days. Then, reassess the students by being given the same questions as the pretest questions and assess them. Compare the values of the pretest and posttest using the chi square statistic, whether there is a significant difference between the prestest and posttest values. If the average score of the postest increases compared to the pretest, it can be stated that the multidimensional learning model is successful. Conversely, if the average score of the posttest is equal to or less than the pretest it can be stated that the multidimensional learning model has not been successful.

The instrument was tested in class X.1 of SMA Negeri 1 Wiradesa because it had received passive voice material. The analysis steps carried out for test questions include: test validity, test reliability, test differentiation, and test difficulty.

Observation data contains data on the implementation of the use of multidimensional learning models in physics learning. The implementation of the learning model is obtained from the activities of students and teachers. The activities of students and teachers carried out are scored according to the quality of implementation.

Data on student test results are obtained from students' answers to science process skill test devices that have

been tested for validity and reliability. Then an assessment was carried out by giving a score of 4 on the correct answer for the right reason, score 3 correct answers for incomplete reasons, score 2 correct answers for false reasons or vice versa, score 1 wrong answer for wrong reasons, and score 0 for not answering. The assessment results are carried out by summing the scores divided by the maximum number of scores. To determine whether there is an improvement in students' science process skills after applying a multidimensional learning model, a comparison of normalized average gain values is used. Normalized gain is the ratio of the class's pretest-posttest gain score to the maximum gain possible to obtain. For the calculation of normalized gain values, the Hake factor is used as quoted by Subagyo, et al (2009).

$$\{g\} = \frac{\{S_{post}\} - \{S_{pre}\}}{100\% - \{S_{pre}\}}$$

Notes :

$\{S_{pre}\}$ = average from pretest (%)

$\{S_{post}\}$ = average from postest (%)

The interpretation of Normalized Gain Value $\{g\}$ obtained is shown in the following table :

Table 1. Normalized Gain Interpretation

Normalized Gain Value $\{g\}$	Category
$\{g\} < 0.3$	Low
$0.3 \leq \{g\} \leq 0.7$	Middle
$\{g\} \geq 0.7$	High

The normality test was performed on the average data of pretest and posttest scores. Testing is used to determine whether the data is normally distributed or not and is carried out to determine the statistical test used next. The normality test used uses the Chi Square fit test. Test criteria if $\chi^2_{count} < \chi^2_{table}$ with degree of freedom (df = n-1), significant level 5%, then it is normally distributed.

Questionnaire data is used to determine student responses to the applied learning model. Questionnaire data was obtained from student responses after the implementation of the multidimensional learning model. To determine the level of student response to the multidimensional learning model in English learning using the following equation :

$$R = \frac{f}{N} x 100\%$$

Keterangan :

R   = Percentage of Response

f   = Number of scores obtained

N   = maximum scores

ANALYSIS

Before the test is tested, material restrictions are carried out first. The subject matter used as test material is passive voice material. The type of questions used is a multiple-choice question type reasoned with HOTS (Higher Order Thinking Skill) questions. The number of questions tested consists of 15 multiple-choice questions. The analysis steps carried out for test questions include: test validity, test reliability, test differentiation, and test difficulty.

Validity test

The criteria to see whether or not the question item is valid can be known by comparing the calculated price with the r_{table} price in the product moment table with a significance level of 5%. A question item is said to be valid if the price of the calculated price > r_{tabel} (Arikunto, 2007: 75).

Table 2. Validity Test Result

No	Criteria	Quantity
1	Valid	15
2	Not Valid	0

The results of the validity test show that out of the 15 questions, there are 15 questions that are included in the valid criteria, so it can be stated that 100% of the test questions are included in the valid criteria.

Reliability test

The reliability testing criterion is that after obtaining the calculated price then the calculated price is consulted with the product moment price table in the table. If the calculation > r_{table}, the question items tested are declared reliable (Arikunto, 2006: 188).

From the results of the analysis conducted using the Alpha formula, $r_{calculate}$ = 0.869 and r_{table} = 0.600 with a significance level of 5%. Because the calculation > rtable, it can be stated that the test is reliable. The complete data and calculations can be seen in the appendix.

Differentiating Power test

The distinguishing power of the question is the ability of a question to distinguish between students with high abilities and students with less abilities. The criteria for good or bad differentiating power of a test are presented in the following table (Arikunto, 2007: 218) :

Table 3. Differentiating test Citeria

Differentiating Power Index	Criteria
0.00 ≤ DP ≤ 0.20	poor
0.20 ≤ DP ≤ 0.40	satisfactory
0.40 ≤ DP ≤ 0.70	good
0.70 ≤ DP ≤ 1.00	excellent
Negative	not good

The results of the differentiating test can be seen in the following table :

Table 4. Differentiating test Result

Criteria	Question's Numbers
Poor	-
Satisfactory	3,14
Good	1,2,4,5,6,7,8,10,11,12,13,15
Excellent	9
Not Good	-

Questions with the satisfactory category there are 2 questions, Good category has 12 questions and excellent there is 1 question. This study uses a minimum question category with a sufficient category satisfactory so that in the differentiating test no questions are eliminated.

Difficult Level test

The number that indicates the difficulty and simplicity of a problem is called the difficulty index. The magnitude of the difficulty index is between 0.00 to 1.0 (Arikunto, 2007: 207). A question with a difficulty index of 0.0 indicates that the problem is too difficult, while an index of 1.0 indicates that the question is too easy.

Table 5. Difficult Level Index Result

Criteria	Question Numbers
Easy	1,2,3,4,5,6,7,8,9,10,11,12,15
Rather Easy	13,14
Difficult	-

Based on the results of the difficulty level test, it was found that the questions with easy criteria were 12 points and rather easy criteria were 2 questions, while there were no difficult criteria.

Questionnaire Sheet

The questionnaire sheet is used to determine student responses to multidimensional learning models in English learning.

Table 6. Student Response Attitude Scale Criteria

R (%)	Category
80 ≤ R ≤ 100	Very High
60 ≤ R < 80	High
40 ≤ R < 60	Middle
20 ≤ R < 40	Low
0 ≤ R < 20	Very Low

The results of the questionnaire data analysis obtained the average value of student response percentage from the number of 32 students of 78.05 (the calculation results can be seen in the appendix). The value is categorized on a high scale. Thus, it can be concluded that during the application of multidimensional learning methods, student response is high and interest in these learning methods.

Observation test of Multidimensional Learning

Observation data contains data on the implementation of the use of multidimensional learning models in physics learning. The implementation of the learning model is obtained from the activities of students and teachers. The activities of students and teachers carried out are scored according to the quality of implementation. The final results of the questionnaire of student responses to the learning model were compared with the attitude scale criteria :

Table 7. Learning Model Implementation Criteria

Average	Category
3.50 ≤ x ≤ 4.00	Excellent
3.00 ≤ x ≤ 3.49	Good
2.55 ≤ x ≤ 2.99	Good Enough
< 2.55	Not Good

Data from observations of the implementation of the English learning model on the subject of passive voice that has been carried out by researchers during 3 meetings can be seen in the following table :

Table 8. Multidimensional Learning Model Implementation Result

Meetings	Average Score	Value
1	3,8	Excellent
2	3,7	Excellent
3	3,65	Excellent

Based on the results of the analysis of the implementation of the multidimensional learning model that has been carried out for 3 meetings, it can be seen that the assessment results for 3 meetings took place excellent with a score of more than 3.5. So it can be concluded that the implementation of the multidimensional learning model is going excellent.

Normality test

Table 9. Normality test Result

Type of Question	χ^2_{hitung}	χ^2_{tabel}	Criteria
Pretest	0,960	7,693	Normal
Posttest	0,906	7,693	Normal

The normality test result shows the value of χ^2_{hitung} < χ^2_{tabel}. Each value of $\chi^2_{calculated}$ at pretest 0.960 and posttest is 0.906. This value is less than χ^2_{tabel} of 7.693. This shows that both pretest and posttest data are normally distributed.

Gain test

The results of the Hake factor calculation that had been analyzed previously obtained the average gain value of 32 students who took the pretest and posttest was 0.7 (the calculation results can be seen in the appendix). Based on the interpretation of normalized gain, the value is classified as high. Thus, the results of the gain test with the calculation of the Hake factor in this study are included in the high category.

Hypothesis test

The hypothesis test was conducted to test whether there was a significant difference between students' critical thinking skills test scores before and after the application of the multidimensional learning model in English lessons. The test criteria are H_0 is accepted and Ha is rejected if $t_{calculate}$ < t_{table} while H_0 is rejected and H_a is accepted if $t_{calculate}$ > t_{table}, with a significance level of 5%, degree of freedom dk = 32-1 = 31. The results of the hypothesis test obtained $t_{calculate}$ value = 76.497 and t_{table} = 1.696, $t_{calculate}$ > t_{table}. Thus, H_0 is rejected and H_a is accepted, meaning that there is a significant difference between students' critical thinking skills test scores before and after the application of the multidimensional learning model in English.

RESULT

The results of observations on the implementation test of the multidimensional learning model showed that the application of the multidimensional learning model which was carried out for 3 consecutive meetings was carried out very well with an average score from meetings 1 to 3 of 3.8; 3.7 and 3.65 of the highest score of 4. These results show that the multidimensional learning model is very well received by the students.

There was an increase in students' thinking process skills after the application of the multidimensional learning model in English learning, the subject of passive voice with a gain value of 0.7 was included in the criteria for high improvement. There is a significant difference between the pretest and posttest scores of students' critical thinking skills with the results of the t test obtained tcount value = 76.497 > ttable = 1.696 at a significance level of 5%.

Student response to the application of the multidimensional learning model is high with an average percentage of student responses obtained of 78.05% included in the high category.

CONCLUSION

Based on the research analysis discussed in the previous subject, the results of the research can be concluded : (1) the multidimensional learning model is very well received by the students; (2) There was an increase in students' thinking process skills after the application of the multidimensional learning model in English learning; (3) Student response to the application of the multidimensional learning model is high.

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