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The Effect of Integrated Scientific Approach and Brain Exercise to the Result, Interests, and Motivation to Learn Indonesian Language of the Students Class XI of Sman 1 Bone-Bone

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***Abstract*–The purpose of this study were to (1) describe the results, interest, and motivation to learn Indonesian of class XI students of SMAN 1 Bone-Bone before and after the application of the integrated scientific approach and brain exercise, (2) know the effect of integrated scientific approach and brain exercise to result, interest, and motivation to learn Indonesian of students class XI of SMAN 1 Bone-Bone. The study is experimental research with one group pretest-posttest design. The population of this study was class XI students of SMAN 1 Bone-Bone. The samples were the students of class XI IPS1 totalling 32 people. However, the final sample totaling 28 people that qualified. The process of collecting data used achievement test, questionnaire of interest and motivation to learn, observation, interviews, and documentation. The data analysis used descriptive and inferential statistical techniques. The results showed that the average of Indonesian students learning outcomes has increased which is at 31., 4286. And the average of interest in learning of Indonesian students before treatment, and the average interest in learning Indonesian students after treatment increased by 1.0715. The average of Indonesian students' learning motivation before and after treatment increased by 1.1072. The Hypothesis test results are known that the application of an integrated scientific approach to brain exercisenastics positive and significant impact on the results, interest, and motivation to learn of Indonesian students. Asymp.Sig value. (2-tailed) of 0.000 is known under the probability value of 0.05 then H0 is refused. Meanwhile, there is an integrated scientific approach influences brain exercisenastics positive and significant impact on students' learning Indonesian outcomes. Asymp.Sig value. (2-tailed) of 0.001 is known under the probability value of 0.05 then H0 is refused. Then, there is an influence of an integrated scientific approach to brain exercise a positive and significant impact on students' interest in learning Indonesian.**

***Keywords*–scientific approach, brain exercise, learning outcomes, interest, and motivation**

I. INTRODUCTION

Learning is a process of working the body and brain. As in learning Indonesian, understand the concept or lesson material is thought to be done by the brain. Reading, writing, speaking, and listening is the brain work processes that involves the performance of the human body. Therefore, learning requires enough energy to optimize the performance of the human brain and body. If the students learn in a weakened state, it will create laziness, drowsiness, loss of concentration, and poor understanding of students to the material being taught. The worst thing that will happen is that the expected learning objectives will not be achieved. In senior high school 1 Bone-Bone, the average the students learn seven hours each day, which starts at 7:00 pm to 14:00 pm with some subjects, plus extracurricular activities and personal development after the learning process, from 15:00 until 16:30 pm as English village, sports, art, tutoring preparation for the Olympics, and some other activities. Then, the students were treated at home with learning activities and tasks provided by schools or tasks in their social environment. The cycle of activities must be followed by the students every day (except holidays). The whole series of these activities will require extra power. However, it is not uncommon that their students are tired, bored, or even health problems (diseases).

Of the many problems faced by learners, low yields, interest, and motivation to learn, especially in learning Indonesian are often found to be a major problem in various pieces of research thesis or dissertation. Curiously, according to the results of the study found that the cause of this problem continues to dwell on (1) the lack of competence of teachers in teaching, (2) lack of ability of teachers in the process of learning, (3) facilities and infrastructure that do not support, (4) the use of models, strategies or approaches that are appropriate or dynamic, (5) the intellectual level of the learners, and (6) in the adequate teaching materials. It could happen, but there is another perspective that causing these problems occur is the weakening of the brain functions and performance of students as a result of the excessive work without special treatment that weakens the power of learning, interest, and motivation.

The scientific approach is a learning approach that was introduced simultaneously with the implementation of Curriculum 2013. Scientific Approach is a learning process that is designed so that learners are actively building concepts, laws or principles through the stages were observed to identify or locate the problem, formulate problems, propose or formulate hypotheses, collect data with a variety of techniques, to analyze data, draw conclusions, and communicate concepts, laws or principles are found. [1] The scientific approach is

particularly relevant to the three learning theories, namely the theory of Bruner, Piaget and Vygotsky's theory.

Brain Exercise is a set of simple movements that aim to link or unify the muscles and posture to enhance the function and performance of the brain. Movement of brain exercise: (1) crawling cross, (2) 8s alphabet, (3) doodle doubles, (4) Lazy 8 (5) abdominal breathing, (6) the elephant, (7) the roll neck, (8) energizer, (9) owl, (10) the activation arm, (11) footflex it, (12) pumps calf, (13) the gravity glider, (14) grounder that, (15) the key brain, (16) button earth, (17) button space, (18) closed mind, (19) button balance, (20) evaporates energy, (21) the cook hook up, (22) and the positive points. Carrigan [2]

[3] states that learning results is essentially a change in behavior and as feedback in improving the teaching and learning process. [4] argues is the assessment of learning outcomes and learning activities results of operations expressed in the form of symbols, numbers, letters or words that can reflect the results already achieved by each student in a particular period. [5] revealed the result of learning is the result obtained in the form of impressions that resulted in a change in the individual as a result of activities in learning.

Interest is a trend that still exists in their selves to notice and remember some of the activities. The activities of interested one, note that accompanied continuous pleasure. [7] Interest is a source of motivation to encourage people to do what they want when they are free to choose. When they see that something will be profitable, they feel interested. It then brings satisfaction. When satisfaction is reduced, the interest was reduced. [7]

[8] explains the motivation to learn is a psychological factor that is non-intellectual. Its role is distinctive in terms of growing passion, feel happy and eager to learn. Many learners do not thrive in the study because of a lack of motivation to encourage students in learning. [9] were also found motivation to learn is the driving force in the psyche of a person to be able to perform learning activities and add skills, experience. [10] describes the motivation to learn is the process to give the spirit of learning, direction, and persistence of behavior. Such a behavior motivated energetic, purposeful and long-lasting. Another opinion expressed defines motivation is the change of energy in a person characterized by the appearance of feeling and preceded with the response to their destination. [11] explains the term of motivation comes from the word motive which can be interpreted as the power contained within the individual, which causes the individual act or acts. The motive cannot be observed directly, but it can be interpreted in behavior, a stimulus boost, or power plant emergence of a certain behavior. Hamalik [12] describes the motivation may be basic impulses or intensive internal and outside individuals or gifts.

II. RESEARCH METHOD

This research is a pre-experimental research design with one-group pretest-posttest design. The location and timing of this research is in senior high school 1 Bone-Bone, Tanimba Village, District Bone-Bone. The time of collecting data is on April-May 2015. The populations in this study were all students of social sciences class XI totaling 126 which is divided into 4 classes. The sample was selected by area sampling techniques (cluster sampling). The election results are a class XI IPS1 samples totaling 32 which consist of six male and 26 male students. The methods of data collection were divided into:

a. Data is divided into two, namely by function and shape.
b. Sources of data derived from the study site, the PBM, the respondents (students), archives, and documentation.
c. The data collection was done by using tests, observations, questionnaires, and documentation

Data analysis is tailored to the type of data and instruments used. The hypotheses were tested using two samples: paired t-test (Paired Sample t-Test) to test hypotheses and nonparametric comparison. From the two different samples, (pretest and posttetst) and nonparametric test sample is using the Kolmogorov-Smirnov test for associative hypothesis.

III. FINDINGS

1. Initial Condition Results, Interests, and Motivation Student Indonesian Learning
   a. Learning Result (Pre Measures)

Table 1 Distribution of Komulatif Learning Result (Pre Measures)

Range of Values	Category	Frequency
86-100	Very Good	0
66-85	Good	2
46-65	Good Enough	9
26-45	Low	15
0-25	Very Low	2
Total		28

According to the table above, it is known not maximized student learning outcomes. On average ability students are still very low. There are only two students who test well. While nine students good enough, 15 students low, as well as two other students are very low. This proves that the students had not been able to remember well the material that has been taught. Therefore, it was determined that all three of these competencies have been selected as the subject matter in the implementation of the action.

   b. Interest in Learning (Pre Measures)

Table 1 Distribution of Komulatif Interest in Learning (Pre Measures)

Range of Values	Category	Frequency
4,00 – 5,00	Very Good	0
3,00 – 3,99	Good	4
2,00 – 2,99	Good Enough	23
1,00 – 1,99	Low	1
0,00 – 0,99	Very Low	0
Total		28

According to the table above, it shows that there is no student who interest in learning Indonesian language is very high. Meanwhile, four of whom have an interest to learn with high category, 23 students have interest in learning with good enough category, one student with the category of less interest to learn Indonesian, and no student is considered to have very

low interest in learning. These results indicate that most students well enough interest in learning but in this study the learning success indicator if student interest at the high category (3.00 to 3.99).

c. Motivation in Learning (Pre Measures)

Table 1 Distribution of Komulatif Motivation in Learning (Pre Measures)

Range of Values	Category	Frequency
4,00 – 5,00	Very Good	0
3,00 – 3,99	Good	3
2,00 – 2,99	Good Enough	25
1,00 – 1,99	Low	0
0,00 – 0,99	Very Low	0
Total		28

According to the table above, it indicates that no student motivation to learn the Indonesian language is very high, less, or very low. Meanwhile, three of them have interest in learning the high category, 25 students have interest in learning the category quite well. The size of the learning success is if the majority of students' motivation with good or excellent category.

2. Final Conditions of Result. Interest, and Motivation Student Indonesia Learning

a. Learning Result (After-Action)

Table 1 Distribution of Komulatif Learning Result (After-Action)

Range of Values	Category	Frequency
86-100	Very Good	4
66-85	Good	12
46-65	Good Enough	7
26-45	Low	2
0-25	Very Low	0
Total		28

According to the table above, it is known that the student learning outcomes after treatment has increased. Four of the students' learning results with excellent category, 12 in good categories, seven people with enough categories, two students with low category. No students were netted by category is not very good.

b. Interest in Learning (After-Action)

Table 1 Distribution of Komulatif Interest in Learning (After-Action)

Range of Values	Category	Frequency
4,00 – 5,00	Very High	6
3,00 – 3,99	High	21
2,00 – 2,99	High Enough	1
1,00 – 1,99	Low	0
0,00 – 0,99	Very Low	0
Total		28

According to the table above, it is known that an increase of students' interest in learning Indonesian which previously had no interest in learning Indonesian is very high to six people have a very high interest in learning after treatment. If the previous four of them have interest in learning the high category, after treatment changed to 21 students. If earlier, 23 students have interest in learning the category quite well, reduced to one student only. Furthermore, there is no more students who opted to study less interest categories or very less.

c. Motivation in Learning (Ater-Action)

Table 1 Distribution of Komulatif Motivation in Learning (After-Action)

Range of Values	Category	Frequency
4,00 – 5,00	Very High	6
3,00 – 3,99	High	22
2,00 – 2,99	High Enough	0
1,00 – 1,99	Low	0
0,00 – 0,99	Very Low	0
Total		28

According to the table above, it notes that before the treated no student motivation to learn the Indonesian language has risen very high, no it turns into six students. Furthermore, if the prior treatment, there are three students have interest in learning the high category, changed to 22 students. Once treated, there is no more students who have the motivation to learn with enough categories, less, or much less.

3. Result Test of Hypothesis

Hypothesis comparative measured with a significance level of 5% (0.05). The terms of acceptance of the hypothesis, if the t-count value is greater than the value of the t-table, then the alternative hypothesis is accepted and the null hypothesis is refused. And the hypothesis associative was measured with a significance level of 5% (0.05). About the terms the hypothesis is accepted if the probability value is smaller than the level sig. 2-tailed 0.05%. The results are as follows:

a. Comparative hypothesisPaired sample t test indicated value (-19 768) and the significant value of 0.000. Hypothesis testing can be done in two ways: if t> t table (5%, n-1) H0 is refused or if sig <0.05 then H0 is refused.

Based on the information, it is known the value of the t (-19 768) is smaller than t table (1.703) and 0.000 significance value less than 0.05. Based on these results, then H0 refused, which means that there are differences in the average Indonesian students' learning outcomes before and after the integrated scientific approach to brain exercise given.

H_0 = the average of interest of students in learning Indonesian before and after the integrated scientific approach to brain exercise given are the same

H_a = there are differences in the average of students' interest in learning Indonesian before and after the integrated scientific approach to brain exercise given

Paired sample t test indicated value (-15 000) and the significant value of 0.000. Hypothesis testing can be done in two ways: if t> t table (5%, n-1) H0 is refused or if sig <0.05 then H0 is refused.

Based on the information, it is known that the value of the t (-15 000) is smaller than t table (1.703)

and 0.000 significance value less than 0.05. Based on these results, then H0 refused, which means that there are differences in average interest in learning Indonesian students before and after the integrated scientific approach to brain exercise given.

H_0 = average learning motivation Indonesian student before and after the integrated scientific approach to brain exercise given are the same

H_a = there was an average difference in students' motivation to learn Indonesian language before and after the integrated scientific approach to brain exercise given

Paired sample t test indicated value (-11 779) and the significant value of 0.000. Hypothesis testing can be done in two ways: if t> t table (5%, n-1) H0 is refused or if sig <0.05 then H0 is refused.

b. Based on the information, the known value

H_0 = average Indonesian students' learning outcomes before and after the integrated scientific approach to brain exercise given are the same

H_a = there are differences in the average Indonesian students' learning outcomes before and after the integrated scientific approach to brain exercise given

of the t (-11 779) is smaller than t table (1.703) and 0.000 significance value less than 0.05. Based on these results, then H0 refused, which means that there are differences in the average Indonesian student learning motivation before and after the integrated scientific approach to brain exercise given.

c. Hypothesis Associative

H_0 = no influence brain exercise integrated scientific approach to the learning outcomes Indonesian students

H_a = there is influence integrated scientific approach to brain exercise a positive and significant impact on Indonesian students' learning outcomes.

Nonparametric Kolmogorov Smirnov test results for students at the top shows that the value Asymp.Sig. (2-tailed) of 0.000 which is known under the probability value of 0.05, H0 is refused. While, there is the influence of an integrated scientific approach to brain exercise a positive and significant impact on student learning outcomes Indonesian.

H_0 = no effect integrated scientific approach to brain exercise on the interest of students learning Indonesian.

H_a = there is influence integrated scientific approach to brain exercise a positive and significant impact on students' interest in learning Indonesian.

Nonparametric Kolmogorov Smirnov test student interest above indicates that the value Asymp.Sig. (2-tailed) of 0.001 which is known under the probability value of 0.05, H0 is refused. That is, there is the influence of an integrated scientific approach to brain exercise s a positive and significant impact on students' interest in learning Indonesian.

H0 = no effect of an integrated scientific approach to brain exercise to motivate students to learn Indonesian.

Ha = there is influence integrated scientific approach to brain exercise a positive and significant impact on students' motivation to learn Indonesian.

Table nonparametric Kolmogorov Smirnov test students' motivation above shows that the value Asymp.Sig. (2-tailed) of 0.000 which is known under the probability value of 0.05, H0 is refused. That is, there is the influence of an integrated scientific approach to brain exercise a positive and significant impact on students' motivation to learn Indonesian.

IV. DISCUSSION

Learning the scientific procedure is a way of learning that can be taken by students to optimize the learning process and results. Learning with scientific procedures outlined in the Curriculum 2013 as a learning approach that emphasizes process (observe, ask questions, gather information, process information, draw conclusions, and communicate findings) called scientific approach. Learning the method or procedure is believed to have a positive impact on the development of cognitive, affective, and psychomotor student. This is consistent with the results of research conducted by [13] that the application approach to learning, especially learning Biology effectively to improve student achievement and positive influence on the process skills in students. Therefore, it is highly recommended scientific approach to be applied in learning.

According to dr. Dewata Aprilia Marilyn through TanyaDok.com, the main function of brain exercise is to optimize brain functions, especially the strengthening of the human memory. The opinion was reinforced by [14] that have functions including brain exercise strengthens the long-term memory and short-term human. in addition, strengthen the power of reasoning, creativity, and artistic imagination of man. Moreover, brain exercise also strengthens human linguistic skills such as writing, reading, listening, and speaking.

In learning activities, the brain exercise has a very important role to restore power or ability of the brain to work if experiencing burnout or exhaustion in the work. Thus, the function of brain exercise to strengthen the human memory both short-term memory and long term is needed by students in mastering the subject matter given stack.

Sure enough [15] in his research proves that doing brain exercise before learning to have a very positive impact on student achievement. Exercisenastics brain is also recognized by the National Learning Foundation USA as the best learning techniques.

Based on the advantages of both, integrating scientific approach to brain exercise will certainly have an impact that is

much better. Complex components into the variable success of student learning will certainly gain influence positive if integration is run properly. This can be evidenced by the results of this experiment. Integrating scientific approach to brain exercise proved to have a positive influence and significant to the result, interest, and student motivation.

Before the treatment is given, the average student learning outcomes is still very low. There are only two students who tested well. While nine students good enough, 15 students unfavorable, as well as two other students are very poor. However, after being treated, there is a difference in student learning outcomes are positive that four students with learning outcomes excellent category, 12 in both categories, seven people with enough categories, two students with less category, and no more students who netted the category is not very good.

Furthermore, positive changes before and after treatment can be seen from the results of the questionnaire interest in learning and students' motivation to learn Indonesian. Before being treated, as there is no student interest in learning Indonesian is very high. Meanwhile, four of whom have an interest to learn with high category, 23 students have interest in learning with good enough category, one student with the category of less interest to learn Indonesian, and no student is considered to have very low interest in learning. However, after being given treatment, there is increased interest in learning Indonesian students who previously had no interest in students learning Indonesian is very high to six people have a very high interest in learning after treatment. If the previous four of them have interest in learning the high category, after treatment changed to 21 students. If previously, there are 23 students have interest in learning the category quite well, reduced to one student only. Furthermore, there is no more student who opted to study less interest categories or very less.

The same thing can also be seen on students' motivation. Before being treated, as there are no students motivation to learn the Indonesian language is very high, less, or very low. Meanwhile, three of which have interest in learning the high category, 25 students have interest in learning the category quite well. However, after the treatment is given the changes were positive and significant. If it was treated no student motivation to learn the Indonesian language has risen very high turn into six students. Furthermore, if prior to treatment there are three students have interest in learning the high category, changed to 22 students. After the treatment, there is no more students who has the motivation to learn with enough categories, less, or much less.

With systematic instructional procedures and the brain functions that working optimally, it is allows students to master the subject matter provided. The material easily learned by students because the process of remembering and appreciating in learning running well. The students will be active in learning and do not undergo stress because of the burden of learning so much. Plus the power of motivation and concentration of students are getting better. A supportive learning environment and atmosphere of the mind and an open heart will easily add student interest.

However, it cannot be denied, the application of integrated scientific approach to exercise the brain requires skill and tenacity of work of a teacher to be able to run the learning procedure correctly. To make the students learn to achieve the maximum results also certainly not an easy thing. it takes the hard work of teachers to determine the root of the problem faced by students and teachers.

In some studies, they just blame the competence of teachers, IQ level of students, the use of the method, or simply teaching materials used for the failure of students to learn. However, the core issue is almost forgotten. Are the teachers not professional? Are not the students learning also need training to achieve maximum results? Does each method have its own strengths and weaknesses? The material that is not taught very much that available, either printed or teaching materials over the Internet. Then, if the issue that continues to be cultivated, while the root of the problem is ignored. Through this research, proved that the roots of the problems faced by the students over the years, especially with regard to the problem of learning outcomes, interests, and student motivation lies in the condition of the learner's own particular stamina and performance of the brain (brain) them. The brain is an organ that serves as the core of the command center throughout the performance of human organs.

Although the benefits generated so good, scientific approach to the integration of brain exercise certainly have weaknesses or obstacles encountered during the study, especially being applied in Indonesia. Scientific approach and brain exercise are two different concepts. Combining the two into one new concept is something that is not easy. Some of the problems encountered during the implementation process as follows:

1. In application, the integration of the scientific approach to brain exercise requires substantial time, so it is not very effective if applied in teaching with a relatively short duration of time without the benefit of the environment beyond learning activities.
2. Some complex movement to be applied during the learning activities taking place as it requires special preparation such as a mattress. This equipment must be prepared because the students had to lie and sit directly on the floor.
3. Teachers must be good at maintaining classroom atmosphere for brain exercise movements are often used as a talking point or a student prank.
4. Teachers should be able to hold the attention of students of the subject matter when students are directed to carry out the movements of brain exercise that is inserted in some parts of the stages of student learning. Because, very vulnerable students will switch attention when learning activities transferred to the brain exercise activities.
5. The weaknesses found in the test phase and early stages of learning activities. Furthermore, the vulnerability is reflected back and evaluated so that it does not re-occur in the following learning activities.

V. CONCLUSION

The conclusions that can be drawn based on the results of the research and discussions are as follows:

a. The average Indonesian student learning outcomes before treatment equal to 37.5714 and the average Indonesian student learning outcomes after treatment equal to 69.0000 increased average Indonesian student learning outcomes at 31., 4286. The correlation between the two variables (learning outcomes before and after treatment) resulted in a significant number 0818 with a value of 0.000. It is addressed that the correlation between learning outcomes Indonesian before and after treatment are closely and actually related significantly. Hypothesis testing results prove that the value of the t (-19 768) is smaller than t table (1.703) and 0.000 significance value less than 0.05. Based on these results, then H0 refused, which means that there are differences in the average Indonesian student learning outcomes before and after the integrated scientific approach to brain exercises given.
b. Average interest in learning Indonesian students prior to treatment equal to 2.1071 and the average interest Indonesian students studying at 3.1786 after treatment experienced an average increase students' interest in learning Indonesian at 1.0715. The correlation between the two variables (interest in learning before and after treatment) resulted in a significant number 0648 with a value of 0.000. It is addressed that the correlation between interest in learning Indonesian language before and after treatment are closely and actually related significantly. Based on the results of hypothesis testing known value of the t (-15 000) is smaller than t table (1.703) and 0.000 significance value less than 0.05. Based on these results, then H0 refused, which means that there are differences in average interest in learning Indonesian students before and after the integrated scientific approach to brain exercises given.
c. The average Indonesian student learning motivation prior to treatment equal to 2.1071 and the average Indonesian student learning motivation after treatment equal to 3.2143 experienced an average increase students' motivation to learn Indonesian language at 1.1072. The correlation between the two variables (motivation to learn before and after treatment) to produce numbers 0611 0101 with significant value. It is addressed that the correlation between learning motivation Indonesian before and after treatment are closely and actually related significantly. Based on the results of hypothesis testing known value of the t (-11 779) is smaller than t table (1.703) and 0.000 significance value less than 0.05. Based on these results, then H0 refused, which means that there are differences in the average Indonesian student learning motivation before and after the integrated scientific approach to brain exercises given.
d. Based on the results of hypothesis testing is known that the Asymp.Sig. (2-tailed) of 0.000 which is known under the probability value of 0.05, H0 is refused. That is, there is the influence of an integrated scientific approach to brain exercises a positive and significant impact on student learning outcomes Indonesian.
e. Based on the results of hypothesis testing known Asymp.Sig value. (2-tailed) of 0.001 which is known under the probability value of 0.05, H0 is refused. That is, there is the influence of an integrated scientific approach to brain exercises a positive and significant impact on students' interest in learning Indonesian.
f. Based on the results of hypothesis testing known Asymp.Sig value. (2-tailed) of 0.000 which is known under the probability value of 0.05, H0 is refused. That is, there is the influence of an integrated scientific approach to brain exercises a positive and significant impact on students' motivation to learn Indonesian.

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