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Applying Scientific Approach to Improve the Recommended Competencies of English Junior High School Teachers in Palu City

Anshari Syafar[1], Rofiqoh[2], Maghfirah[3]

[1] Universtias Tadulako, Indonesia
[2] Universtias Tadulako, Indonesia
[3] Universtias Tadulako, Indonesia

Correspondence: Anshari Syafar. Email: syafaranshari@gmail.com

Abstract
The objective of the study is to investigate the effect of applying a scientific approach to improve recommended competencies of English junior high school teachers. A quasi-experimental design was employed with the use of convenience sampling techniques to select research subjects for control and experimental groups. The 30 items test was developed and used in pre-test and post-test for collecting data. The data were analyzed using t-test analysis to measure mean differences of the data sets from control and experimental groups. The result of data analysis indicates that the mean score of the experimental group, 77.19 is greater than the control group 61.15. This result shows the use of the scientific approach to teach research subjects in an experimental group has an effect in improving their competence on the recommended competencies mandated by the Law and regulations.

Keywords: Scientific Approach SA, Recommended Competencies, The Five Steps Principle of SA

1. Introduction

The recommended competencies are the mandate of the law that must be possessed by every teacher in carrying out their profession, as stated in Law Number 14 of 2005 concerning Teachers and Lecturers Article 10 paragraph 1 states that teachers must have pedagogic competence, personality competence, social competence, and professional competence. The four competencies are holistic and constitute an integrated unit that characterizes a professional teacher. To ensure the quality of educational administrations and services which is responsive to change and demands of the times, teachers must keep on increasing their competence continuously including (1) Pedagogical competence is the ability to manage student learning; (2) Personal competence is the ability of a strong personality, noble, wise, and authoritative as well as being a role model for students; (3) Professional competence is the ability to master the subject matter broadly and deeply; and (4) Social competence is the ability of teachers to communicate and interact effectively and efficiently with students, fellow teachers, parents or guardians of students, and the surrounding community.

In this context, Law Number 14 of 2005 on Teacher and Lecturer requires teachers and lecturers to understand, master, and apply properly the mentioned four recommended competencies in teaching and learning. Moreover, this law is strengthened by the issuance of a Government Regulation of the Minister of National Education of the Republic of Indonesia Number 16 of 2007 Concerning Standards of Academic Qualifications and Teacher Competency mandates teachers to know and apply Teacher Core Competencies and Teacher Subject Matter Competencies in their teaching and learning process. This regulation covers 10 core and 37 subject matter competencies on the pedagogic domain, 5 core and 13 subject matter competencies on personality, 4 core and 7 subject matter competencies on social, and 5 core and 11 subject matter competencies on the professional competency to possess and apply teaching and learning process.

Another regulation Number 19 of 2017 was issued to enforce the teachers undertaking their teaching professionally states that teachers are professional educators with the main task of educating, teaching, guiding, directing, training, assessing, and evaluating students in early childhood education through formal education, primary education, and secondary education. The mandates of the law and regulations described above are still far from reality in the context of implementation in the field, especially in the teaching and learning process, and the problem lies within each teacher (Syafar, 2013; 2018). Then, conducting researches on the issues will assess and develop teachers' understanding and implementation of the recommended competencies in the teaching and learning process.

Furthermore, the teacher is a very noble profession and the main actor in the world of education so this profession is a mainstay for every country to improve its Human Development Index. The aims of the government's regulations and policies intend to improve teachers' quality to know wholly the recommended competencies and perform them properly in their teaching practices and daily activities. However, whether the substance of the regulations and policies have been well understood and implemented by teachers and lecturers in their teaching activities is still a question mark. For this reason, this study poses a research question such as Does applying the scientific approach have an impact on increasing English teachers' understanding of the recommended competencies by the Law and regulation?"

In line with, the 2013 curriculum recommends the use of the Scientific Approach (SA) in the teaching and learning process at any educational level—from elementary to secondary schools. SA is a learning model that uses scientific principles that contain a series of data collection activities through observing, questioning, associating, experimenting, processing information or data, then communicating phenomena (Kemendikbud, 2014). Another goal of the SA principle of teaching and learning is to improve the ability of thinking skills, form the ability to solve problems systematically, create learning conditions so that students feel that learning is a necessity, train students in expressing ideas, improve student learning outcomes, and develop student character. In this context, learners will actively construct concepts, laws, or principles through the stages of observing problems, formulating problems and hypotheses, collecting and analyzing data, drawing conclusions, and communicating concepts, laws, or principles as found in (Majid, 20140; Hosnan 2014; Karar and Yenice 2012).

2. Theoretical Perspectives

The theoretical and philosophical basis of the SA comes from Piaget's theory of cognitive constructivism and Lev Vygotsky's theory of social constructivism. Cognitive constructivism argues that people produce knowledge and form meaning based upon their experiences. Two of the key components of Piaget's theory that create the construction of an individual's new knowledge are accommodation and assimilation. Assimilating causes an individual to incorporate new experiences into the old experiences. This causes the individual to develop new outlooks, rethink what were once misunderstandings, and evaluate what is important, ultimately altering their perceptions. Accommodation, on the other hand, is reframing the world and new experiences into the mental capacity already present. Individuals conceive a particular fashion in which the world operates. When things do not operate within that context, they must accommodate and reframe the expectations with the outcomes.

In line with, the core concept in constructivism is that knowledge is constructed as students build new knowledge based on what they have already learned. The student is not a passive receiver of transmitted information.

Therefore, as students enter learning situations with knowledge acquired from previous experiences, their prior knowledge influences what new or modified knowledge they will build from the new learning experiences (Pagliaro, p. 9 2013). Instead of answering questions that only align with their curriculum, the facilitator in this case must make it so that the student comes to conclusions on their own instead of being told. Also, teachers are continually in conversation with the students, creating a learning experience that is open to new directions depending upon the needs of the student as the learning progresses.

Meanwhile, according to Lev Vygotsky's theory of social constructivism, social worlds develop out of individuals' interactions with their culture and society. Knowledge evolves through the process of social negotiation and evaluation of the viability of individual understanding. Every conversation or encounter between two or more people presents an opportunity for new knowledge to be obtained, or present knowledge expanded. The exchange of ideas that goes along with human contact is at play here. In this context, a good constructivist teacher questions students' answers, without regard to whether they are right or wrong, to make sure the student has a good grasp of the concept. Additionally, instructors should have their students explain the answers they give and not allow students to use words or equations without explanations. They should also encourage students to reflect on their answers.

Social constructivism teaches that all knowledge develops as a result of social interaction and language use, and is, therefore, a shared, rather than an individual, experience. Knowledge is additionally not a result of observing the world, it results from many social processes and interactions. The process of learning requires that the learner actively participates in creative activities and self-organization. Teachers should allow their students to come up with their questions, make their theories, and test them for viability.

Students should also be challenged by their instructors to perform open-ended investigations, working to solve problems with realistic and meaningful contexts. This activity enables the learner to explore, and come up with either supporting or conflicting possibilities. Contradictions need to be investigated, clarified, and discussed. Through the process of reflecting on the collected data, learning is given a push. These ideas can only be accepted as truth if they can make sense to the community. If they do, they become shared knowledge. Learning occurs not through hearing or seeing, but primarily through interpretation. Interpretation is shaped by what's already known and is further developed through discussion (Roth, 2011).

Furthermore, SA is a learning model that uses scientific principles that contain a series of data collection activities through observation, questioning, associating, experimenting, then communicating (Kemendikbud, 2014). The learning process is expected to be directed to train analytical thinking in which students are taught how to make decisions instead of routine mechanistic thinking by simply listening and memorizing (Majid, 2014). Rusman (2015), states SA is a learning approach that provides broad opportunities for students to explore and elaborate on the material being studied, in addition, it provides opportunities for students to actualize their abilities through learning activities designed by the teacher. In line with Hosnan (2014), SA is a learning process designed so that students actively construct concepts, laws, or principles through observing, formulating problems, proposing hypotheses, collecting data with various techniques, analyzing data, drawing conclusions, and communicating. Karar and Yenice (2012), SA is a learning process designed in such a way that learners actively construct concepts, laws, or principles through observing stages--to identify or find problems, formulate problems, formulate hypotheses, collect data with various techniques, analyze data, draw conclusions, and communicate concepts, laws or principles found.

In line with Hosnan (2014) which states that PS has the following characteristics in the learning process: 1) Student-centred; 2) Involving science process skills in constructing concepts, laws, or principles; 3) Involving potential cognitive processes in stimulating intellectual development, especially students' higher-order thinking skills, and; 4) Can develop students' character. The purpose of learning by using PS is to develop students' character. In addition, to improve students' thinking skills so that students can solve every problem they face and have high learning outcomes. Ellizar et al., (2018), explaining that the scientific approach is a learning process designed so that students actively construct their knowledge through the stages of the scientific method. The same thing was stated by Dyer et al., (2011) who explained the concept known as the five discovery skills based on

creative intelligence, namely intelligence that is beyond cognitive abilities and involves two sides of the brain to create new ideas using 5 (five) skills, namely: 1) associating, 2) questioning, 3) observing, 4) experimenting, and 5) communicating.

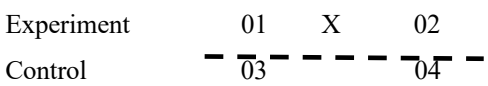
In the research report Mahmoud (2014), shows the effect of learning using SA with the Discovery Learning Strategy model that can improve children's metacognitive abilities. This research uses the learning process by observing, asking, experimenting, associating, and communicating. The findings of this study are not in line with the results of Suyanto's (2018) research which examined teacher performance by applying SA through observing, asking, associating, reasoning, and communicating. The results showed that the teacher's performance in implementing SA was not optimal.

Apriauny, et al., (2017) states that the results of the interviews showed that the participants of this study did not appear to have an understanding of the five SA steps in teaching English. However, data from classroom observations show that some teachers have applied some steps of the approach quite well, particularly observing, questioning, and experimenting. In line with Firman, et al., (2018), states that the effectiveness of the economics learning module with SA showed the average results of the experimental class using the development of learning modules had a positive impact on student learning outcomes where the experimental class had a higher score than the control class. The score indicates that the module developed using SA can improve student learning outcomes effectively.

Nugraha and Suherdi, (2017) reveal that the five stages of the scientific approach are carried out completely in four meetings to deliver one material, although the five stages are not always carried out in every meeting that is different from the lesson plans made. SA applied by teachers can involve students in active learning activities. The way teachers lead active learning activities and student contributions vary depending on the stage. The SA that was applied succeeded in growing students' critical thinking and developing high-level student learning behavior. Second, the difficulties faced by teachers during the implementation were the problems of students' low English skills, time allocation, and teacher teaching management.

3. Methods

This study applies the quantitative method in terms of Quasi-Experimental Design. According to (Cohen et al., 2005) this design is one of the most commonly used in educational research that can be represented as follows:



The dotted line separating the parallel lines in the unequal control group diagram indicates that the experimental and control groups have not been equated with randomization—hence the term 'unequal.' Both groups will receive pre-test marked 01 and 03 and post-test 02 and 04. Label X indicates that the experimental group will receive treatment using the independent variable "scientific approach" while the control group will not receive treatment using the 'scientific approach, but use the form other variables that are not controlled and manipulated.

The population of this research is all English teachers of junior high schools who are members of the English Subject Teacher Consultation (MGMP) of SMP Rayon I and II, Palu City, totaling 153 people. The research sample was selected using a convenience sampling technique where the research subjects are selected based on their desire to be involved in the study, both experimental and control groups. The research instruments used in recording the data were tests. Quantitative data were analyzed using the t-test formula to look for differences or variations in the average score of the experimental and control groups.

The main instrument of this research is the objective test. The test was developed into 30 items with 4 choices and evenly distributed levels of difficulty to record information of teacher prior knowledge about teacher standard competencies in the pre-test. The same test was used in the post-test to assess teachers' standard competencies after they had been taught applying SA for the experimental group, no teaching was applied on the control group.

The aim of the pre-test was carried out was to determine the subject's initial or metacognitive knowledge about the recommended competencies which are what-so-called Core and Teacher Subject Matter Competencies.

The research instrument that had been developed was delivered to research subjects via an online google form to answer multiple-choice test questions by deliberately determining that teachers who answer early, numbers one to twenty were categorized as experimental groups, and numbers two one to forty were included in the group. control. This was done with the consideration and assumption that those who respond quickly might have the desire to participate in research online and that's what we did to be able to carry out this research in less scientific conditions because this research had not been able to control and manipulate research variables under the rules due to severe Covid-19 pandemic

To analyze the data, this research applied "Statistical Package for the Social Sciences" or "SPSS" with two applications, namely One-sample statistics and one-sample test, both of which aim to describe the comparison of the mean values. mean, standard deviation, standard error of the mean, and explanation of the central tendency of the distribution of scores for both control and experimental groups. The findings are firstly presented in descriptive statistics to display the central tendency distribution of the scores of research subjects on pretest and post-test.

4. Findings and Discussion

4.1. Findings

The findings of the study are presented and displayed in the five tables to expose scores of the pre-test and the post-test for both control and experimental groups. The first table displays descriptive statistics consisting of the number of research subjects with symbolized N, range, minimum-maximum, mean, standard error, standard deviation, and variance. The second and third tables are related to the one-sample statistics and one-sample test of the pre-test of both control and experimental groups. the fourth and fifth tables are concerned with the one-sample statistics and one-sample test of the post-test of control and experimental groups.

Table 1 describes the scores of the pre-test and post-test in which the range or the difference between the largest value and the smallest value of variability in the data on the pre-test are fairly distributed on both groups with the range 43 on control and 40 on experimental. The minimum-maximum scores are quite greater on the experimental group with a minimum of 40 and a maximum of 80 scores compared to the control group with 30 and 73. We can also scrutinize the average of the pre-test of both groups in which the score of experimental is 4 digits greater from 61.14 compared to the control 57.14. However, the standard error of pre-test to measure the accuracy of a sample distribution is higher 0.1 on experimental from 2.51 compared to 2.41 on the control group. The same score difference is also identified in the standard deviation to measure the dispersion of a set of data from its mean obtained from the pre-test for both groups. The dispersion is 0.44 greater in the experimental group 11.49 compared to the control one 11.05. The variance of data from the pre-test of both groups is 10 digits superior on the experimental 132.03 compared to that of the control group 122.03.

Table 1: Descriptive Statistics of Pre-test dan Post-test Scores on Control and Experimental Groups

Test	N	Range	Minimum	Maximum	Mean	Standard Error	Standard Deviation	Variance
Pre-test Control	21	43.00	30.00	73.00	57.14	2.41	11.05	122.03
Post-test Control	21	46.00	34.00	80.00	60.09	2.60	11.93	142.29
Pre-test Experiment	21	40.00	40.00	80.00	61.14	2.51	11.49	132.03
Post-test Experiment	21	21.00	68.00	89.00	77.19	1.29	5.93	35.16

The descriptive data that are displayed in Table 1 columns two and four concerning the results of the post-test indicate the change or difference from that of the pre-test. The range of the control group is 46 and the experimental 21 with minimum and maximum scores respectively 34 and 80 on control, while 68 and 89 of the experimental. The mean difference of the control group 60.09 from the experimental group 77.19 is quite significant with 17.1 digits of differences. We can also identify the score differences on both groups either standard error or standard deviation.

The standard error difference in score is 2.60 for the control group and 1.29 for the experimental. Meanwhile, the standard deviation of the control group is 11.93, different from the experimental one 5.93. The same thing happens on the variance data in which the control group is greater than 142.29 compared to the experimental group 35.16.

Table 2: One-sample statistics of pre-test on control and experimental groups

Pre-test	N	Mean	Std. Deviation	Std. Error Mean
Control	21	57.1429	11.04665	2.41058
Experiment	21	61.1429	11.49037	2.50740

Table 2 displays data about one-sample statistics which covers differences of scores in mean, standard deviation, and standard error mean. we can notice the difference of mean from the result of pre-test 57.14 on the control group and 61.14 on the experimental group. The standard mean error is 2.41 for the control and 2.50 for the experimental groups. These data correlate with the one-sample test below in Table 3 concerning the score of the pre-test of control and experimental groups.

Table 3: One-sample test of pre-test on control and experimental groups

Pre-test	t	df	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
Control	23.70	20	57.14	52.11	62.17
Experiment	24.38	20	61.14	55.91	66.37

Table 3 display the score of one-sample test analysis indicating the *t*-distribution of 23.70 with 20 degrees of freedom, 57.14 of mean difference, with a confidence interval of the difference—lower 52.11 and upper 62.17 on the control group. The experimental group indicates *t*(24.38) with 20 degrees of freedom, 61.14 mean difference with a confidence interval of the difference on lower 55.91 and upper 66.37. We can identify from Table 3 the score differences of pre-test on both groups which are not significantly different.

Table 4: One-sample statistics of post-test on control and experimental groups

Post-test	N	Mean	Standard Deviation	Standard Error Mean
Control	21	60.09	11.92	2.60
Experiment	21	77.19	5.92	1.29

Table 4 displays data about one-sample statistics of post-test of control and experimental groups which covers differences of scores in mean, standard deviation, and standard error mean. We can notice the difference of mean from the result of post-test 60.09 on the control group and 77.19 on the experimental group, with a standard deviation of 11.92 for control and 5.92 for the experimental. The standard mean error is 2.60 for the control and 1.29 for the experimental groups. These data have similar differences with the one-sample test below in Table 5 concerning the score of the post-test of control and experimental groups.

Table 5: One-Sample Test of post-test on control and experimental groups

Post Test	t	df	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
Control	23.08	20	60.09	54.66	65.52
Experiment	59.65	20	77.19	74.49	79.89

The result of one-sample test analysis of post-test of both control and experimental groups indicates *t*(23.08) with 20 degrees of freedom, 60.09 of mean difference, with a confidence interval of the difference—lower 54.66 and upper 65.52 on the control group. There are significant differences in scores on the experimental group in which the *t*(59.65) with 20 degrees of freedom, 77.19 mean difference with a confidence interval of the difference on

lower 74.49 and upper 79.89. We can identify from Table 5 that the score differences of post-test on control group are having significantly different from the experimental one.

All tables show the number of research subjects analyzed is 21 subjects in the calculation using the SPSS package. The results of the analysis with this package indicate that the average value difference is not much difference between the two groups on the pre-test. Likewise with the difference in the distribution of scores seen from the standard deviation where the control group has a deviation slightly lower than the experimental group. This shows that the individual scores are distributed more varied in the experimental group compared to the control group. Likewise, the mean standard error is also higher in the experimental group. The results of the one-sample statistical analysis indicate that the distribution of individual scores obtained by the research subjects and described in terms of the average value, standard deviation, and standard error of the mean is in the distribution position with a lower level of difference with the ability to answer the test at the middle to the upper level.

This increase, for the experimental group, is of course due to the process of manipulating the independent variable and affecting the dependent variable. The increase of seventeen digits can be classified as significant compared with the control group which was not treated SA. Statistically, there is also an increase of data on the control group around three digits if the results of its pre-test and post-test are compared.

5. Discussion

After having been analyzed the data on pre-test and post-test, the study comes up with interpreting the data based on the principle of the cause and effect relationship of the research variables. In this context, SA stands as the cause and improvement in understanding the recommended competencies by research subjects as the dependent variable. The propensity of statistical data obtained in pre-test as depicted in the findings indicate the prior knowledge of research subjects on the recommended competencies of both control and experimental groups. The data are slightly distributed at the same level of understanding the recommended competencies even though the scores of the experimental group exceed a little bit over the control group, but it is not significantly.

The one-sample statistics analysis displays and represents the total number of individuals in the sample with the mean, standard deviation, and standard error mean portraying slightly different data set distribution for both the control and experimental groups. In other words, they more or less have the same level of knowledge about the recommended competencies mandated by the Laws and Regulations. The variance in a *t*-distribution is estimated based on the degrees of freedom of the data set total number 21 sample size of observations minus 1. The difference in the average scores or mean scores of the control and experimental groups in the picture above shows the tendency of research participants to have the competence or prior knowledge of the recommended competencies in four areas—pedagogic, personal, social, and interpreting government policies regarding efforts to improve the quality and professionalism of teachers have not received a serious response and this is a question that needs to be found a democratic and scientific solution.

The result on pre-test shows a clear picture related to the prior knowledge or initial competence of research participants who are at a level slightly above the median value, both in the control group and the experimental group. Theoretically and practically, this value shows the importance of researching to change the level of understanding. Even so, the data analysis can provide an overview of the behavior of research participants towards their understanding of the recommended competencies as a mandate by the Law and regulations.

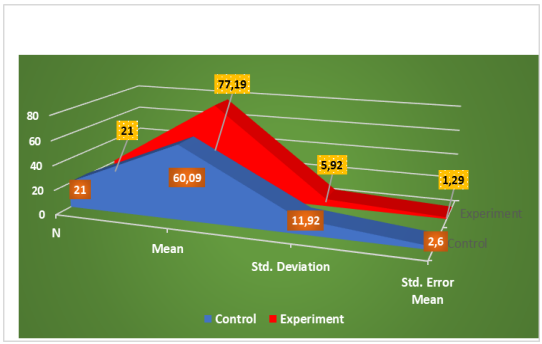


Figure 1: One-sample statistics of post-test scores on control and experimental groups

In general, the results of this study indicate the impact of the independent research variable on the dependent variable. However, it should also be stated that the level of difference in scores which is the basis for stating that there is a causal relationship is quantitatively above mean the category. The level of difference in data from pre-test and post-test to the two groups—control and experiment were at a level of significance. The results indicate that there is a difference in the average value between the group that received learning using SA and the group that did not receive treatment with the SA variable.

Analysis of the data through the one-sample test program in Figure 2 shows that there is a difference in the average value between the control and experimental groups, which means that there is an impact of learning using SA on the competence of research subjects. However, this result does not confirm with previous research such as that conducted by Suyanto (2018) which examined teacher performance by applying SA through the five steps principle--observing, asking, associating, reasoning, and communicating, where, the results showed that teacher performance was not optimal in implementing SA. Nevertheless, It confirms with the research conducted by Mahmoud (2014) which found an increase in children's metacognitive abilities as a result of learning applying SA with the Discovery Learning Strategy model. This study also applied the five steps principle of SA in the teaching and learning process.

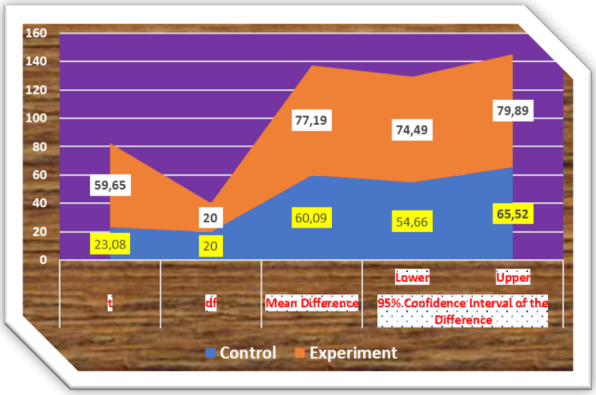


Figure 2: One-sample test of post-test on control and experimental groups

The results of this study contrast with the results of research by Apriauny, et al., (2017) which showed that the application of SA in English language learning with a qualitative research design showed that the participants of this study did not appear to have an understanding of the five steps of SA in teaching English. However, what is different in these two studies lies in the design and research studies, where one uses a quantitative design and the other one is qualitative. Then the quantitative research study applied the principle of the five stages of SA learning coherently to control and manipulate variables, while the qualitative design conducted observation or evaluation on research participants who were doing and applying the principle of the five stages of SA in the learning process.

The results of this study are also in line with the findings of Nugraha and Suherdi, (2017) who investigated the practice of a teacher applying SA in learning English. The results of their study show that the teacher's ability to apply SA completely in four meetings to deliver one material even though the five stages were not always carried

out in every meeting that was different from the lesson plans made. However, confirming to the findings of Firman, et al., (2018), showed the effectiveness of the SA principle in the development of the Economics module to improve the learning outcomes of high school students. The application of SA in learning shows that the average result of the experimental class has a higher score than the control class. These results indicate that the application of SA by controlling and manipulating the elements of learning materials and following the stages of the learning principles in a coherent and varied manner will have more impact on the dependent variable.

6. Conclusion

SA is a learning approach recommended by the Curriculum 2013 to be applied in the teaching and learning process by every teacher. This approach has five stages principle and learning models as well as stages in delivering learning materials in a coherent but flexible manner. The meaning of coherent but flexible refers to the five steps implementation stages -- observing, asking, associating, reasoning, and communicating which can be systematically integrated, combined, or reversed. This means that the teacher is not fixated on the first thing to do in applying the five steps concept. SA must be interpreted as a concept that can be interpreted by every teacher so that each teacher can apply this SA in the teaching and learning process based on subject matter characteristics and the nature of the subject being taught.

The five steps concept of SA encourages a learning principle that can be processed or applied using learning models or methods such as discovery-based learning, problem-based learning, student-centered learning, contextual teaching, and learning or community learning. This study uses SA as an approach used in the learning process by controlling the five steps concept which is adapted to the learning materials and media used. The use of SA during the learning process for the experimental group showed an increase in the acquisition score compared to the score obtained by the control group. The findings of this study indicate that there is a causal relationship between the use of SA in the learning process and the level of understanding of research participants on the recommended competencies by Law and Regulations

The improvement of cognitive or scientific abilities on the recommended competencies will theoretically have an impact and influence on the way the teachers think, behave, and adapt to every Government policy intending to improve the quality of teaching and learning as well as educational management. Therefore, if we refer to the results of this study which show that there is an increase in teachers' understanding of the recommended competencies as a result of the learning process using SA.

7. Suggestions

The teacher must understand comprehensively the five steps learning principles SA by exploring the philosophy and learning theories that become the basis and reference for the emergence of the approach. Then, understand deeply the learning methods or models with SA nuances such as—discovery learning, problem-based learning, student-centered learning, contextual teaching and learning, community learning, and others. Only with a deep understanding of the concepts and principles of SA learning, we can apply this approach as expected by the 2013 curriculum. SA is an approach that is defined as a research variable for all levels of education from Elementary School to Higher Education. Therefore, this study suggests that interested researchers can use the results of this study as a reference for carrying out research, with qualitative or quantitative designs. SA can be used as a research variable at the tertiary level in the form of action research—teaching while researching.

This study also suggests teachers that should know properly the five stages principle of applying SA in the teaching and learning process since this approach has been recommended by the government in Curriculum 2013. SA can also be employed as the research variable for conducting qualitative and quantitative research, especially classroom action research as this is one of the recommended competencies mandated by Law and regulations. Interested researchers can also explore and conduct mixed research design applying SA as the research variable to explore and investigate educational and teaching-learning issues.

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