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THE IMPLEMENTATION OF SCIENTIFIC APPROACH TO IMPROVE STUDENTS' SPEAKING ABILITY

Indah Citra Raflesia. Juwita Boneka Sinaga
English Education Department
University of Riau Kepulauan
indah.raflezia@gmail.com[1], juwitaboneka@gmail.com[2]

Abstract

This study aimed to find out whether the scientific approach implementation could improve the students' speaking ability. This study setting was in SMK Pertiwi Batam. This study was a Classroom Action Research (CAR) which using Mixed Method of Sequential Explanatory Designs. The data taken through observation sheets, teacher's journal, field notes, and speaking tests. The data were categorized of quantitative and qualitative data. And the data would be analyzed by mixing both of the quantitative and qualitative data. This study was conducted in two cycles which each consisted of planning, acting, observing, and reflecting. The outcomes of this study indicated that there was any improvement of students' speaking ability. The mean of pre-test of speaking was 44.35. The mean of speaking project of cycle 1 was 66.08. Then, the mean of speaking project of cycle 2 was 73.33. It indicated that the scores and the mean in second cycle were better than the first cycle. In other words, the students' speaking ability improved and became better from the first meeting up to the following meeting. In addition, the scientific approach had also been implemented well.

Keywords: *Scientific Approach, Mixed Method Research*

INTRODUCTION

The curriculum 2013 (C13) emphasizes the improvement and balance of soft skills and hard skills which include aspects of competence in attitudes, knowledge, and skills. The renewal of the curriculum 2013 learning process lies in learning that underlines the modern pedagogical dimension, namely using the scientific approach. The curriculum 2013 is a new curriculum that has been implemented since the academic year 2014/2015 till now. The curriculum 2013 is mandated to apply the scientific approach as a step in a scientific learning process in the classroom (Permendikbud number 103 of 2014).

The Scientific Approach

According to Permendikbud no.103 of 2014, the scientific approach is implemented onto curriculum 2013 by applying the scientific steps and rules in teaching and learning process. Furthermore, Hosnan (2014:37) says that scientific steps that are applied include finding problems, formulating problems, submitting hypotheses, collecting data, analyzing data, and drawing conclusions. Musfiqon & Nurdyansyah (2014:40) add that the

implementation of the 2013 curriculum with a scientific approach is intended to provide students with an understanding of various materials, information that is independent of the teacher. Conceptually this approach is more directed to the humanist education model, which is education that provides space for students to develop according to their potential intelligence.

Furthermore, Hosnan (2014:32) describes the learning process touches three domains, namely attitudes, knowledge, skills. And learning outcomes generate students who are productive, creative, innovative, and effective through strengthening integrated attitudes, skills and knowledge. The attitude domain takes the form of substance transformation or teaching material so that students "know why". The realm of skills is to take substance transformation or teaching material so that students "know how". The domain of knowledge carries substance transformation or teaching material so that students "know what". The end result is an increase and balance between the ability to be a good human being (soft skills) and a human who has the skills and knowledge to live a decent hard skills) from students which includes aspects of competence in attitudes, knowledge and skills.

Moreover, these three domains of competence have different trajectories of acquisition (psychological processes). Attitudes are obtained through activities accept, execute, respect, appreciate and practice. Knowledge is obtained through activities remembering, understanding, applying, analyzing, evaluating and creating. Skills are obtained through the activity of observing, asking, trying, considering, presenting and creating.

Steps in Scientific Learning Activities

According to Permendikbud No.81A in 2013, there explains that the scientific approach applies five steps of learning activities that are observing, asking, gathering information, associating and communicating. The explanation for each of these steps is as follows:

a. Observating

   The teacher guides students to make observations through the activity of paying attention (see, read to hear) an object or thing. By this activity, the students expected to get data about a problem, thus comprehension is obtained as proof of the previous information.

b. Questioning

According to Permendikbud no.81A year 2013, Questioning is an activity to deliver questions to get extra information about what is being observed. Competencies are developed creativity, curiosity, ability to create questions to form critical thoughts that need to live smart and lifelong learning.

c. Exploring/ Experimenting

In Permendikbud no.81A year 2013, the activity of collecting information is carried out through experimenting, reading other sources asides students' books, observing the objects / events / interviews activity with the interviewees and so on. The expected competencies is to develop the attitudes of conscientious, being honest, polite, respecting the others opinions, speaking power, capability to collect data through varied learned ways where developing long-life learning and learning habits.

d. Associating

Association in learning intends to the ability to categorize the various ideas and connect various events then place them into memory fragments. In the association's activities, learners are expected to analyze the work that has been done and compare it with the work of other colleagues. The teacher can play an active role in guiding and directing the stages of this association to run well.

e. Communicating

According to Hosnan (2014:75), communicating in scientific approach is the last step of learning activities that the teacher does before terminating the learning activity in the classroom. At this stage, it is expected that students can communicate the results of work that has been arranged together in groups and or individually from the conclusions that have been made together. This activity can be done through summarize or telling what is found in the activity of seeking information, associating and finding patterns. These results are delivered in class and assessed by the teacher as the learning outcomes of students or groups of students.

Speaking

In this globalization, Indonesian people have to be able to develop their ability in many aspects. For being connected to the world, the people must be able to build up an interaction with the foreigner in overseas. Communicating is the main aspects for being connected with

the people in the world and English is one of the international languages that people can use to communicate. Considering this, the researcher decided to undertake the study by applying a scientific approach towards the speaking. This is done by observing the students of Pertiwi Vocational School through a speaking test at the preliminary study. Knowing that students 'English speaking abilities were very low, the researcher felt it was appropriate to conduct the study by applying a scientific approach to improve students' English speaking abilities. The goals of this study is to describe the scientific approach implementation to the eleventh grade students of SMK Pertiwi and to discover that the approach is being able to improve the students' speaking ability through the scientific learning steps.

To face the better future, speaking in English is much needed, especially for students who will soon complete their education. This speaking ability is very necessary when entering the workforce that requires employees to be competent in speaking. Therefore, it needs encouragement from educators to teach speaking skills to students throughout the scientific field. Nunan (2003) in Zareie, et al. (2014:444) define speaking is a productive oral skill which is the hardest skill, in teaching English at a foreign language (EFL) because it happens in real time. Furthermore, speaking includes productive verbal utterances to convey meaning. Spoken language is auditory and temporary.

Besides, Brown (2004) cited in Manurung (2013:10) interprets that speaking as a productive skill that can be directly and empirically observed. It means that speaking is the activity that can be heard directly by the listeners, and the success of transforming information can be measure by the listeners understanding. Communication happens if the interaction between the speaker and listener occurs so that the speaker must be careful to choose the choice of words, structures and discourse to gain the intended communication.

Components of Speaking

To enhance speaking skills, the students need to comprehend the most important components in speaking skill that according to Hormailis (2003) in Harahap et al. (2015:2):

a. Vocabulary

The most primary aspect that has to be master in speaking is vocabulary. The speaker must memorize the words to be able to speak correctly and appropriately.

b. *Grammar*

Grammar is one of the important components that have to be studied by the speaker. It deals with the text structures and manners. Without grammar, the speaker will utter the wrong sentences, inappropriate time directions and the confusing meaning. Otherwise, when the speaker speaks in the correct tenses and using the proper time directions, the listener will understand what the speaker talk clearly.

c. Fluency

According to Oxford Learner's pocket dictionary (2008: 171) fluency comes from fluent, which means a person who speaks a language easily. Someone who speaks fluently will utter the words by no repetitions, no hesitation, no disjointed words even halting, sounding smooth and confidence. The speaker will own this skill by practicing speaking frequently. This is one another important aspects to master by the speaker.

d. Pronunciation

There will a miscommunication between the speaker and the listener if one of them can't pronounce the words correctly and clearly. Speak by using the stress and intonation accurately, can help the speaker as well as the listener to interact in a good communication.

Assessing Speaking

Brown and Abeywickrama (2010) as cited in Rahmawati & Etin (2014:204) contend that to provide effective assessment, there are four rules that need to establish: specify criterion, give appropriate tasks, present maximum output, and set practical and reliable scoring procedures. Brown (2007) as cited in Rahmawati & Etin (2014:204) suggests that there are at least six criteria to assess speaking skill: pronunciation, fluency, grammar, vocabulary, discourse feature, and task accomplishment. To evaluate the students' performance, the researcher would like to use the table on oral presentation criteria as follow. Each criterion is created to ease teacher in scoring students' presentation. It is also ease the teacher to just ticking the appropriate score presented in.

Table 1. Oral Presentation Assessment Criteria by Brown & Abeywickrama (2010).

Criteria	E	VG	G	S	P	Comments
SPEAKING SKILLS ***Fluency and Coherence*** ▪ *Speaking fluently with only rare repetition or self-correction;* ▪ *Speaks coherently and develops topic fully and appropriately* ***Lexical resource and range*** ▪ *Express with some flexibility and appropriateness, giving affective descriptions and expressing viewpoints on a variety of topics.* ***Grammatical range and accuracy*** ▪ *Complex sentence use and minor grammatical occurrence.* ***Pronunciation*** ▪ *Pronounce words correctly, accurate clearly, intonate appropriately* ***Interaction (listen and respond)*** ▪ *Good contribution to other* ▪ *Active in conversation development* ***Task accomplishment***						
PRESENTATION SKILLS ▪ *Presentation was organized, information was logical and presented in well sequencing.* ▪ *The assignment was completed according to instruction provided.* ▪ *Presentation done within time allocation.*						
Total						

Comments : …….....

…….....

Table 2. Rating Points Criteria by Brown & Abeywickrama (2010)

Initial	Criteria	Score

E	Excellent	5 points
VG	Very good	4 points
G	Good	3 points
S	Satisfactorily	2 points
P	poor	1 points

METHODOLOGY

This study was categorized as a *Classroom Action Research* (CAR), a research that becomes increasingly significant in contemporary professional teaching practices. Kemmis & Mc.Taggard (1988) explain in Jakni (2017:139), action research study that was conducted to improve you yourself, work experience itself is done in a systematic, planned, and the introspective attitude. Furthermore, Arikunto (2010) in Jakni (2017:138) argues that CAR is a reflection of action activity in the learning that is appeared in classroom in unison. This action is given by the teacher to be done by students. Meanwhile, Zainal (2008) as cited in Muchith, et al. (2009:13) states that CAR is a study conducted by teachers in their own classrooms through self-reflection with the aim of improving their performance in order that the student learning outcomes improve.

According to Sani & Sudiran (2017:22), the stages introduced by Kemmis and Mc.Taggart are more acceptable because it includes reflection activities. The steps that are commonly applied, namely: *(1) Planning, (2) Action, (3) Observe, and (4) Reflection.* Hence, this study will apply the model developed by Kemmis & McTaggart, which explained as follow.

1) *Planning,* an action plan that will be carried out to improve, enhance or change their behavior and attitude as a proposed solution to the problems and find the cause of the problem.
2) *Action,* what is done by the teacher as an effort to repair, improves or desired changes. The action taken is the implementation of the plan that has been compiled.
3) *Observation,* an observation activity for actions carried out or imposed on students. Generally observations are made when teaching and learning activities are taking place.

4) *Reflection,* an activity to study, see and consider the processes carried out in relation to the results or effects of actions. Based on the results of this reflection, the teacher can make improvements to the original plan.

As cited in Sani & Sudiran (2017:25), there is figure of those steps is represented as below.

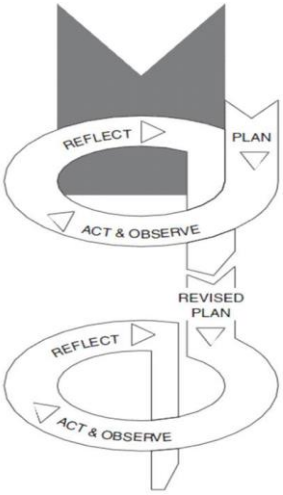

Figure 1: Action Research Cycles by Kemmis and McTaggar (1988)

This study was a *Mixed-Method Research (MMR),* which using explanatory design. Brannen, Cresswell and Clark (2007) quoted from Masrizal (2011:54) defines MMR as a research design that departs from the philosophical assumption of the inquiry method, which focuses on collecting, analyzing and blending the data of qualitative and quantitative executed in a sequences of studies. Moreover, Tashakkori & Teddlie interpret the mixed method research is a sets of quantitative and qualitative approaches in a research methodology. Johnson et al. (2007) cited in Cresswell & Clark (2018:5) MMR as a type of research where the researcher integrates the components of quantitative and qualitative research approaches intended to generating breadth and depth in understanding and strength. Meanwhile, Tashakkori and Creswell (2007b:4) cited in Creswell & Clark (2018:6) explain MMR as a type of research where the researcher collects and analyzes data, combines findings and draws conclusions using quantitative and qualitative procedures or methods in a single study or research program. Creswell and Clark (2018:109) describe the sequential explanatory design as figure below.

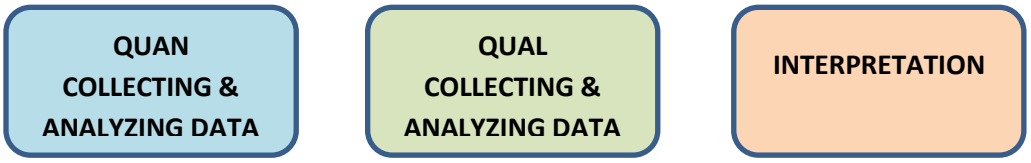

Figure 2. Sequential Explanatory Designs

In an explanatory design, quantitative data was collected first and depending on the results, qualitative data was collected afterwards (Masrizal, 2011:55). This design consisted of 2 phases, first; gathering and analyzing of quantitative data continue with qualitative data collection and analysis afterwards make an interpretation according to the outcomes analysis of the two data combination. An explanatory design is utilized when the goals of the research is to describe, elaborate, or explain quantitative findings.

To analyze quantitative data in Classroom Action Research (CAR), the researcher used the following formulation to calculate the scores. This was describes by Ovalina (2010) cited in Darwati and Yana (2017:87).

1. Students' Score

$$(S)= \frac{Obtained\ Mark\ (R)}{Maximum\ Mark\ (N)} \text{ x Total Score}$$

2. Mean

$$\overline{X} = \frac{\Sigma X}{n}$$

Ẍ : Mean
X : Total Score
n : Number of score
Σ : Sum or Add

RESULTS

The quantitative data were taken from the speaking tests result in the class, which was carried out in two cycles, there was six meetings were conducted. The tests were given to the students in forms of speaking video projects of cycle one and cycle two.

The students' speaking outcomes seen from the students' speaking mean score enhancement from the preliminary study up to the second cycle described on the chart below.

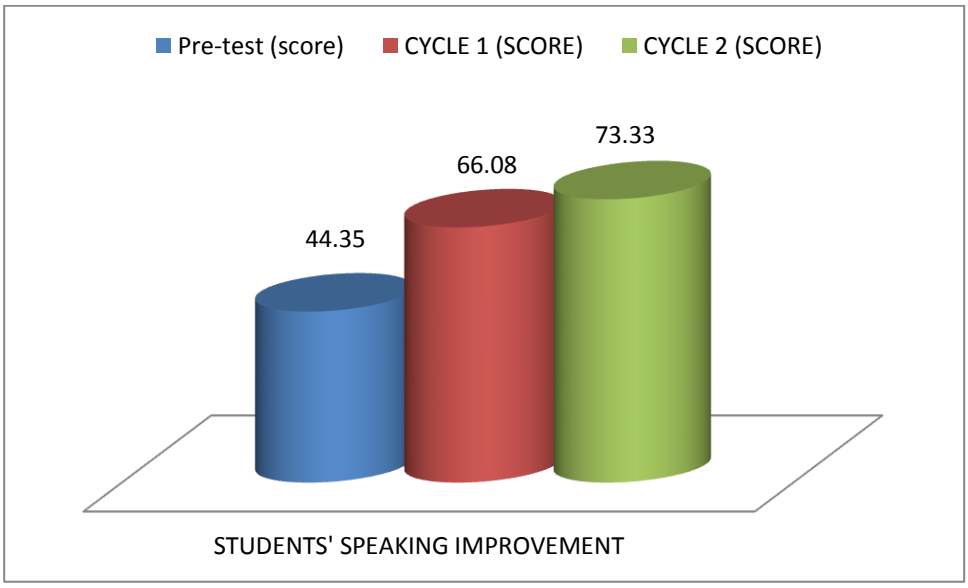

Figure 3, Students' Speaking Improvement

Indicated by the preliminary observation, the students' speaking mean score before conducting the Class Action Research (CAR) was 44,35. This is the students' speaking score before the Scientific Approach is applied. In that moment, students who passed the Minimum Completion Criteria (KKM) were only 3 students. Meanwhile, the Minimum Completion Criteria (KKM) is 70 and there were 23 students who were out of the target.

Furthermore, the researcher conducted the Classroom Action Research (CAR) by implementing the Scientific Approach and tasking the speaking project to the students. The students' mean score of speaking project in cycle one was 66.08. It means that there was an improvement of students' speaking scores from the past test. Based on the quantitative data, it can be identified that all students improving their speaking scores in cycle one. However, only 11 students achieved the Minimum Completion Criteria (KKM), while 19 others were still below of the Minimum Completion Criteria (KKM). This means that the students' speaking abilities still need to be improved. And the researcher together with the collaborator decided to continue to the next cycle.

Next, the students' mean score of speaking project in cycle two was 73.33. It indicates the improvement 7.25 of score from the speaking project in cycle one (the mean was 66.08). In this cycle, there were 15 students which improved their speaking scores

where 13 of them reached the Minimum Completion Criteria (KKM). Whereas the other 9 students were still under the target and 4 students more were unidentified due to absent or didn't submit their works.

DISCUSSION

This study was held to find out the students' speaking enhancement in English lesson through the scientific approach application. The scientific approach is the only approach used in the 2013 curriculum applied by teachers, mainly in teaching English. The study that had been done represented that the application of scientific approach was effective and must be applied by English teachers in teaching speaking. This could be seen from the increase of student mean scores from pre-test, speaking project 1 and speaking project 2. This also could be seen from observation sheets and field notes showed the better changes which students more active in learning activities. Besides that, the teacher had to be able to control the class and created an active class. Hereafter, the used of scientific learning could guide students easily to comprehend the lesson. Eventually, the conclusion was drawn that the application of the scientific approach was proven to be able to improve students' speaking ability.

CONCLUSION

From the data analysis in the previous chapter, it could be inference that the implementation of scientific approach at the eleventh grade of Pertiwi vocational School Batam has proven capable to improve the students' speaking ability. This is evidenced by the calculated of the students' speaking score and the speaking mean score that is increased starting from the pre-test, speaking test 1 and speaking test 2. Although the improvement did not occur to all students, yet the results of the study were able to answer the formulating problems listed in chapter 1 namely '*is the implementation of the scientific approach able to improve the students' speaking ability*?' And the answer is '*yes*'. Hereafter, the scientific steps written in lesson plans have been implemented contextually and coherently in the classroom. From the result of field notes and observation sheets showed that the class condition during teaching learning process was better than before, it even showed an improvement from preliminary study until cycle two learning accomplished. The positive atmosphere created,

made the students more creative in finding the ideas. All actions were noted in the teacher's diary as evidence that the scientific approach has been implemented properly. This matter fulfills the writer's expectation in answering the formulating problem listed in chapter 1 namely '*how is the implementation of scientific approaches in teaching speaking?*'

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