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ENGLISH TEACHERS' CHALLENGES IN IMPLEMENTING SCIENTIFIC APPROACH

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Abstract : *Scientific approach is a teaching strategy which is used in 2013 curriculum in Indonesia. This approach can be implemented in all subjects at senior high school include English. Although scientific approach offers significant effectiveness in teaching and learning process, there were still some challenges faced by English teachers in each five phases. This qualitative descriptive study aims investigating and describing the challenges and solutions in implementing scientific approach experienced by English teachers in Senior high school in Jambi. The data were collected through interview with English teachers. The findings showed that the teachers faced some similar and different challenges in implementing it. Almost in each phase, the teachers faced challenges related to students' low motivation in learning English because of some factors such as having limited number of vocabulary, getting difficult in constructing idea to do tasks and having no interest in the topics. Then, the teachers also try to do some solutions for solving all the challenges such as giving example from real life, motivating the students in learning English, give them reward or additional score for whom participate actively, listing new vocabulary, and allowing students to asking by mixing Indonesian and English.*
Key words: Scientific Approach, 2013 Curriculum, Challenges, Senior High School

INTRODUCTION

Related to the concept and approach of the curriculum, Indonesia has designed and developed the educational curriculum since 1947 until now. Encountering the challenge of the world nowadays, Indonesian government represented by the Ministry of Education and Culture (Kemendikbud) designs the newer curriculum for educational institution which is called 2013 Curriculum. This is also based on constitution number 20 of 2013 that is expected to realize the process of the development for personal qualities of the students as the next generation. Thus, in 2013, Muhammad Nuh (2013) as the Ministry for Education and Culture issued the new regulation in which every school in Indonesia must implement the 2013 Curriculum . This development model attempts to show the relationship of curriculum to various decisions, activities, and

processes. They show input, transformations, and output and treat curriculum as a system composed of subsystems.

Moreover, in accordance with the standard competence of the 2013 curriculum in Indonesia, Kemendikbud (2013) states that scientific approach can be implemented in the teaching learning for all subjects including English. Scientific method has been used by the father of sciences such as physic, math, chemistry, and biology such as Galileo, Bacon, Newton, Bayes, Darwin, Poincaré, Duhem, Popper and Carnap (Gower, 2002). It means scientific approach is mostly related to the science context. Its body contains for investigating phenomena, acquiring new knowledge, and correcting and integrating previous knowledge. Scientific approach has the characteristics of "doing science" (Tang et al., 2009). This approach also allows teachers to improve the process of learning by breaking the process down into steps or stages which contains detailed instructions for conducting students learning.

The current studies about scientific approach have been done by a lot of researchers. The first study was done by Hasan (2018). He determined the effects of Scientific Approach through Information Communication Technology (ICT) of curriculum 2013 on students' English achievement. The results show that the scientific approach through Information Communication Technology (ICT) in teaching English showed the significant effect on the students' English achievement. The implementation of the scientific approach through ICT should be integrated with the strength of attitude, skill and knowledge, and teaching and learning process focused on student centered instruction that make the students become more active, creative, effective and joyful learning.

Eriani et al (2017) also conducted study about scientific approach. They focused on the implementation of scientific approach in teaching speaking recount text at eight graders of junior high school. They also find out the problems faced by the teacher while applying SA in teaching speaking recount text. The result of the study: (1) the implementation of the scientific approach is still far from what stated in regulation of the Ministry of Education and Culture no 103, year 2014. Teacher did not do observation and association stages, and for the questioning stage did not run well (2) Teacher problems were the class is too big and hard to ask the students to speak up, students' problems dealing with the basic knowledge of recount text, lack of vocabularies, and pronunciations. In implementing scientific approach better to write the stages in the lesson plan to make there is no stage will be skipped unconsciously, and more creative in design classroom activities and material to emerge the curiosity of the students.

Zaim (2017) investigated about the implementation of scientific approach to teach English at Senior High School in Indonesia and problems of teaching and learning in implementing scientific approach. The findings showed that, among the five steps of scientific approach, the teachers were not able to implement the observing and questioning steps optimally yet. Meanwhile, in experimenting and associating the teachers have applied them well, and in communicating the teachers have applied them optimally.

Afrianto (2017) investigated about how English teachers implement the Scientific Approach (SA) for teaching English in a Senior High School in Pekanbaru particularly intended to about teachers' understanding on the Scientific Approach, how they implement the mandated approach in their classroom, and kinds of problems they encountered. The findings showed that the English teachers were rather skeptical with the SA. They did not really follow all stages of teaching mandated in the SA during the implementation. All the participants reported that most of the time they made some adjustments during their teaching procedures. Two participants reported that the main problems they faced during the implementation of SA were about challenges to make the students active and the complicated procedures of assessment. Lack of supervision on the new curriculum implementation has also been reported as another major problem.

Learning that based on sincerity is a capital for teacher to sincere, so that activities that are done will give influence to students from the best services. There are some factors that influence teachers in implementing scientific approach such as teachers' ability in arranging learning document , implementing learning, and assessment to learning outcomes (Wahyono, et al 2017). This is based on their study about implementation of scientific approach based learning to think high levels in state senior high school in ketapang. It aimed to know the contribution of documents to the implementation of learning reflected from the students' learning outcomes.

Besides, students' engagement in scientific approach will affect their readiness to compete. To develop their readiness to compete, they should be engaged in activities. Thus the improvement of students' activities influence positively on the students' readiness to compete including 12 indicators. They are need for achievement, apply knowledge, critical thinking, problem solving , working collaboratively, time management, creative thinking, self efficacy, initiative, mastery of information technology, responsibilty, and communication (Prianto, 2016).

Developing materials for scientific approach in English teaching process is also necessary. The development of environmental song based materials are effective in teaching English to the first grade junior high school students (Tamaela, 2016). This is based on her study which aims to develop

and validate environmental song-based materials using a scientific approach which follow the stages of research and development. She created environmental lyrics and put them on traditional melodies that are familiar to the students. Moreover, developing products as tool for vocational students vocation program is also effective to be used as the learning products. Those products have advantages such as the students are more quickly to form a group when they are instructed by the teacher, they are more orderly and regulated when they do the task, they also can measure their own abilities individually through interactive multimedia software when they learn individually and also the teachers are more easily control the students development (Said, et al 2016).

Those Studies show that there are some aspects of SA which have been investigated. They are such as readiness in implementing SA in a school which does not apply it yet, implementing SA in certain text, and tense, the methods used in SA, materials development, problems in SA, and also evaluation. Although some studies aim investigating about the problems faced by teachers in implementing scientific approach in English teaching, but they still deals to general problems. Then, those previous studies do not aim to investigate about the solutions proposed by the teachers to face the challenges. Regarding to these facts, more studies need to be conducted to ascertain the challenges faced by English teachers in implementing scientific approach in detail for each five phases. The purpose of this study are investigating and describing in detail the challenges and solutions in implementing scientific approach faced by English teachers in senior high schools.

LITERATURE REVIEW

Scientific Approach is concerned with ascertaining the conjunctions of characteristic traits which descriptively determine kinds in relation to one another and the interrelations of characters which constitute abstract conceptions of wide applicability. Scientific approach means is adequate satisfaction of logical conditions imposed by control of inquiry. The students must use logical thinking. They have to criticize the phenomenon by using *what, how* and *why* questions. The main problem is to ascertain the related kind to which phenomena of belong to. Logical conditions for scientific determination of a universal. In order to make students become a critical thinker, Kemendikbud (2013) stated that teachers have to use five phases of learning—observing, questioning, associating, experimenting and communicating. The activities of each phases can be explained as follows.

a. Observing

Observation is about taking students seriously, hearing what they have to say, respecting their

interpretations, and valuing their imagination and ideas, their unexpected theories, their explorations of feelings and viewpoints. Teacher can learn about them through watching and listening in an alert and informed way that raises awareness and sharpens understanding. Yani (2014: 125) explains that in this phase, the teacher can ask the students to observe their environment, watching videos, looking at pictures, read tables and graphics, analyzing maps, and searching information in internet. It means, during observation, the students can use their eyes, ears, nose, mouth and skin to identify and analyze the object.

b. Questioning

In Curriculum 2013, teachers must be able to make their students giving or creating questions. In this phase, the students ask questions related to what they have known about an object, even or a process. They can purpose this question to the teacher, guess teacher or their friends. Then, they can give the questions in oral or written form.

c. Associating

In this phase, the students are asked to criticize, to compare, to interpret or to argue something. It means associating can be defined as a process to compare between the data and the theory in order to find out the important concept. Information taken in by the sense organs goes through an initial stage of perception, which involves the analysis of its content. Even at this early stage of processing, the brain is already extracting meaning from the input in an effort to make sense of the information it contains. The process of perception will often lead to the making of some kind of record of the input received, and this is the process people call learning and memory storage.

d. Experimenting

In this phase, the students can do observation, interview or do experiment in a laboratory. To support their experiment, the students can read the book, use observation sheet, use interview guide, and give questionnaire. Next, they have to analyze the data that have collected in the field of study. In experimenting, the students also can be grouped into several groups and discuss something related to the material.

e. Communicating

In communicating, the students must have the communicative competence. The teacher must therefore provide them with opportunities to use the language themselves for communicative purpose. The teachers are ultimately concerned with developing the learners' ability to take part in the process of communicating through language. The students have to communicate their activities that are related to observation and experiment. The communication can be in oral or written form. They can present in the classroom or upload it in the internet.

METHODOLOGY

This study is a qualitative descriptive study which aims to investigate and describe the challenges and solutions in implementing scientific approach faced by English teachers in Senior high school. The site for this study was one Senior High School located in Jambi province in academic year 2018. The participants were three English teachers.

For collecting data, the interview was conducted as the instrument. The questions of the interview were derived by synthesizing. They are consisted of questions related to challenges, and solutions faced in implementing five phases of scientific approach. Analyzing data in this study was begun since the data had been collected. The recorded data interview which would be quoted were transcribed and translated into English since some interviewees used Bahasa Indonesia in answering the questions of interview. The next step was deriving the data to be related to codes, theme, or category. Then, it was analyzed and reanalyzed by using within-case and cross-case displays and analyses. Wihtin case was used to analyzed among the data collected from each participant while cross-case was used to analyzed the data among all participants. After that, in data there were found several common themes shared by the participants. Then, the data were discussed descriptively. The data were also discussed in the relation to previous research and theory if there is any relation.

FINDINGS AND DISCUSSIONS

Based on the interview with three teachers in Senior High School Jambi, teachers face some challenges for each phase in implementing scientific approach and they also have some solutions for solving those challenges.

a. Teachers' Challenges in Implementing Scientific Approach

The 2013 curriculum has been designed to emphasize the mastery of communicative competence for students both in spoken and written skills. In this curriculum, the applying of scientific approach in teaching and learning process can be implemented. This approach consists of five phases, observing, questioning, associating, experimenting and communicating. In the practice of implementing those phases, teachers still have to face some challenges.

Based on the interview, all three teachers in Senior high school in Jambi faced some challenges for each phase in English teaching and learning process. Those challenges can be summarized in Table 1 below.

***Table 1**. Summary of teacher's challenges in implementing scientific approach*

Phases of Scientific Approach	Challenges Faced by Teachers
Observing	▪ The students' understanding about the material were limited. ▪ The students were lazy to read ▪ The teachers found difficulties when they were teaching about text
Questioning	▪ The students were passive and shy to ask. ▪ The students still used Bahasa Indonesia in asking questions.
Associating	▪ The students sometimes were not serious in doing task. ▪ The teacher had to understand the meaning or point of students' statement or answer. ▪ The teacher had to develop suitable task of material for students.
Experimenting	▪ Teacher needed time for two meetings to conduct experimenting. ▪ The students got stuck of the idea ▪ Some students had low motivation to do the tasks.
Communicating	▪ The students who had low motivation were passive. ▪ The students were shy and doubtful. ▪ Teachers needed time for two meetings. ▪ The students just repeated what teacher said before, not try to find other statements.

From the table above, it can be seen that there were some challenges faced by English teachers in implementing scientific approach through teaching and learning process. All three teachers faced challenges for each phase, with some similar and some different challenges which have been summarized.

There were five phases of scientific approach, observing, questioning, associating, experimenting and communicating. In implementing them, one teacher combined observation

and questioning become one phase only. Thus, she just merged the answer of both phases. The finding of interview section can be seen in the following discussion.

a. Observing

Observing was the activity to introduce the learning materials for the students. Teacher may conduct some activities such as asking students to observe an object associated with learning materials, watch the video, read the example of a text and discovering the fact based on the learning materials.

Based on three teachers, teacher A faced shared different challenge in impelementing observing phase with teachers B and C. Teacher A faced that the students had limited understanding about the material. It was caused by they did not have enough understanding in the previous level. It also was caused by they only had limited number of vocabulary. This finding is in line with Zaim (2017) in his study. While teacher B and C found that their students were lazy to read. It happened when they were teaching genre of text for the students. The students were not interested when their teachers teaching them about text. The students got difficult when they had to remind the structure of the text. Thus, this phenomena became a challenge for teachers to motivate them in learning.

b. *Questioning*

This phase is aimed to build students' critical thinking, and also answering questions logically and systematically. In this phase, teacher may ask to the students related to the material and the students also may ask the questions to their teacher. But, in conducting this phase, the teachers faced some challenges. All teachers shared same idea of challenges in questioning. They found that their students were passive and shy to ask questions. This is finding was similar with studies done by Eriani (2017) Zaim (2017) and Afrianto (2017). This phenomena happened because they were afraid if they missed pronuncing the words. They also had limited number of vocabulary, therefore they could not express their idea to create the questions. Then, if there were any students who wanted to ask questions, they still asked in Bahasa Indonesia that make the target of communicative competence in learning English could not be achieved.

c. Associating

In implementing associating, there are some activities that can be conducted such processing the information the students have got, finding the relationship between one information with other information, discussing in a group, and also analyzing the information.

Based on the finding, teacher A and B shared same challenges that they faced their students were not seriously doing the task. Only some of them who did the task. The students who were

not serious made noisy and even disturbed other students. While teacher C faced that she found difficulty when the students wanted to share their idea. The challenge faced by teacher C is in line with the finding found by Zaim (2017). Teacher had to understand the meaning or point of students' statement or answer , because the students also had limited knowledge about grammar. Thus, the students often made the statements or answering the task grammatically incorrect. Then, teacher C also faced challenge that the students still did not understand to do task.

d. Experimenting

In experimenting phase, teacher may facilitate the students to be actively involved in the teaching and learning process. The students may give their opinion whether in group discussion or in individual task. This phase also means that the students use the information related to the material to be experimented in a task.

Teacher A shared different challenge in implementing this phase. In her classroom, she needed two meetings for conducting experimenting phase. It spent more time to achieved the learning objective of one topic. This is similar with Zaim's (2017) finding in his study. While from teacher B and C, they faced that their students got stuck idea when they tried to do some tasks. They felt difficult to construct the idea from material because they did not really understand about the lesson. Therefore, some of them had low motivation in doing task.

e. Communicating

In communicating phase, teacher accommodate students to communicate orally or written, directly or indirectly in the classroom based on what the students have done in the experimenting phase before. Teacher A and B shared the same challenges in communicating phase. Their students who had low motivation in learning English were passive. This finding is in line with Zaim's (2017) finding. The students would not show or perform their works when their teachers asked them to present or show their work in front of the classroom. They were also doubtful and shy if they pronounced the words incorrectly. In addition, teacher A also shared that it needed two meeting to conduct communicating phase as well as in experimenting phase. While teacher C faced the students who just repeated what she had given example before. They just reused the statements that the teacher used and did not try to find another model of work or sentences. The stduents had difficulty in constructing new idea and new sentences.

b. Teachers' Solution for Encountering the Challenging

In facing the challenges occurred in each phase of scientific approach, all three teachers also try to solve them by doing some solutions. This part is not found in previous studies that have

been explained in introduction. The summary of solutions done by the teachers can be summarized in Table 2 below.

***Table 2**. Summary of teachers' solutions for encountering the challenges*

Phases of Scientific Approach	**Solutions Done by Teachers**
Observing	▪ The students listed the difficult words, and found the meaning of those words then they explain the words. ▪ The teachers gave the example of real life
Questioning	▪ The teachers tried to ask the students who were able to answer the question as the sample to other students. ▪ The students might use combined language, English and Indonesian. ▪ The teachers gave the students reward to motivate them.
Associating	▪ The teacher gave the students motivation and suggestion about they have to work cooperatively in group. ▪ The teachers guided the students directly. ▪ The teachers had to develop and relate the material with students' real life
Experimenting	▪ The teachers tried to use time efficiently and choose the suitable assessment and task to limit the time ▪ The students had to read the example ▪ The teachers would write the new vocabulary and asked the students to make new sentence by using those vocabulary.
Communicating	▪ The teachers designed an interesting teaching and learning process ▪ The teachers gave the students reward. ▪ The teachers guided the students to make new sentences.

From the table above, it can be seen that the teachers have done some solutions to solve the challenges that they face in implementing five phases of scientific approach. Those solutions are

explained in the following discussion.

a. Observing

To solve the challenges that have been explained above, the teachers have some solutions on them. The first solution from teacher A and B was the teachers asked the students to list the difficult words, and find the meaning of those words. Then, the students explained the words, and other students will listen to their friend. Here, teacher is as facilitator to help the students in understanding the lesson. It is also the way to solve the challenge of students who were lazy to read, because one of the reasons that made them lazy was they did not know the meaning of the words. The next solution was shared by teacher C who faced difficult to teach about text. It was because the students were not interesting to study text. Teacher C tried to give the example based on real life and as possible as students' environment. This way in giving real example is as the authentic realia.

b. *Questioning*

In questioning phase, the teacher C faced the challenge of the students are passive and shy to ask by trying to ask the students who are able to answer the question as the sample to other students. It was done to motivate other students to ask questions. Then, for the challenge of the students still use Bahasa Indonesia in asking questions, teacher A and B just let them to use combined language, English and Indonesian but the teachers would also guide them to use English step by step. And the last solution to cover all the challenges, teacher A, B, and C shared same solutions that they would give them reward such as additional score for students who ask questions.

c. *Associating*

Since teacher A and B shared same challenges that they faced their students were not seriously doing the task they also did the solution for facing this challenge. The teacher gave them motivation and suggestion that they have to work cooperatively in group. The teacher explained that the task would be easier if they did in a group. Thus, they were better in group where they can shared idea each other, the smarter one can help the other and also they can solve the problems faced in doing task together. Teacher C solved the challenge that she had to understand the meaning or point of students' statement or answer by coming near to those students and guide them directly. By doing this, it is expected the teacher can get the meaning of the students' answers and statements in delivering ideas. Teacher C also tried to develop and relate the material with students' real life in order they can understand the task and materials of the lesson.

d. *Experimenting*

In experimenting phase, teacher A needed two meetings to conduct experimenting and also communicating. Thus, the teacher shared solution that she tried to choose the suitable assessment that would be used which was more efficient and effective based on the topic of the lesson to limit the time. While teacher B and C shared solution to overcome the challenge on the students who got stuck in idea, by reading conversation again and also guiding them in constructing the idea when the students doing the task. The teacher also would write the new vocabularies and asked them to make new sentence by using those vocabulary.

e. ***Communicating***

In facing the challenge on students who have low motivation in learning English, all teachers shared same idea that they tried to design an interesting teaching and learning process. They also tried to give example of real life relate to students in order they can understand easily and interest with the lesson. Then, teachers would motivate them to participate in teaching and learning process by giving reward. Teacher C added the solution for the students who just using the statements or sentences as she gave as example before by guiding them to make new sentences.

CONCLUSION

Scientific approach can be implemented in English teaching and learning process to help the teachers achieve the purpose of the 2013 curriculum. In implementing this approach, the teachers still face some challenges for five phases. They faced some similar and different challenges in implementing it. Almost in each phase, the teachers face challenges on students' low motivation in learning English because of some factors such as they have lack of vocabulary and they do not interest to the topic. Then, the teachers also try to do some solutions for solving all the problems. All teachers try to share idea based on their capability.

Based on the study, it is suggested for English teachers who face some challenges as in this study to try to apply the solutions in solving the possible challenges in teaching and learning process. This study only focuses on the challenges and solutions in implementing scientific approach in one senior high school. Therefore, it is suggested to the next researcher try to investigate the challenges in implementing scientific approach in other level of education or in any other aspects of the 2013 curriculum and scientific approach.

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