

## **A Closer Look at the Implementation of the Curriculum 2013 in Indonesia: Should the Scientific Approach Be Used in EFL Classroom?**

Achmad Yudi Wahyudin  
School of Postgraduate Studies, Indonesia University of Education, Indonesia  
achmadyudiwahyudin@gmail.com

Didi Sukyadi  
Indonesia University of Education, Indonesia  
sukyadi@upi.edu

### **Abstract**

The integration of the scientific approach into teaching English as a foreign language (TEFL) in Indonesia has become a controversial issue in Indonesia as the National Curriculum 2013 requires the teachers to follow each step of the scientific approach in the classroom practice when some experts believe that there is no literature in the history of TEFL that supports the use of scientific-based learning to teach English (Chodijah, 2013 cited in Prathivi, 2013; Natahdibrata, 2013; Richards, 2014). Consequently, EFL teachers, particularly at schools piloting the Curriculum 2013 in Indonesia are faced with a dilemmatic condition where they need to follow the recent curriculum demand and expectation. In relation to this issue, this paper attempts to portray the teacher's effort in integrating the scientific approach to EFL classroom in senior high school level. Involving an English teacher and 30 students in a science class, the researcher employed classroom observation to collect data in a case study to explore whether or not EFL teachers are able to implement the scientific approach effectively in classroom practices. This paper also shares some considerations to readers regarding the integration of the scientific approach into EFL classroom practice.

**Keywords:** *Curriculum 2013, English as a Foreign Language (EFL) classroom practice, senior high school*

### **1. Introduction**

The term “scientific approach” has come along in the development of English teaching for junior high school, senior high school, and vocational high school since the introduction of the new curriculum of 2013 as the “umbrella” of schooling system in Indonesia. Scientific method is considered the procedure of teaching which values much on the process of learning and student-centeredness so that it can facilitate and develop students' cognitive, affective, and psychomotor aspect. As the new curriculum has been initiated, the use of a scientific method becomes prominent with regards to the decree of Minister of Education and Culture No. 69/2013 that requires the integration of the scientific method to all subjects including English. Consequently, English teachers are required to conduct successful instruction through the scientific method in order to help students gain their target language mastery.

Originally, a scientific approach or method is basically a common term used in the field of inquiry. “Scientific method” originated from the empiricist theory that views experience as a foundation or source of knowledge (Aspin, 1995: 21). This view also gained support from a philosophy of science called *positivism* that believes the goal of knowledge is derived from logical and report of sensory experience of phenomena (Godfrey-Smith, 2003). In a positivist view of the world, science was seen as the way to get at truth, to understand the world well enough so that we

might predict and control it. Therefore, this belief gave rise to a method of finding the truth called scientific approach.

There are many literatures that elaborate the definition of “scientific approach” in education, particularly in the field of Science. It is defined as a logical orderly approach that involves gathering data, formulating and testing hypothesis, and proposing theories (Wicander & Monroe, 2006). “Scientific method” is also the process of asking questions and making experiments to find the answers (McMurry & Fay, 2008). From a psychology textbook, “scientific method refers to a set of assumptions, attitudes, and procedures that guide researchers in creating questions to investigate, in generating evidence, and making conclusions” (Hockenburry & Hockenburry, 2000). The definitions of “scientific method” proposed by some experts above can be summarized as a body of techniques for investigating phenomena, acquiring new knowledge, or correcting and integrating previous knowledge.

Lately, the 2013 Curriculum in Indonesia views scientific approach as the way of teaching adapted from principles of discovery established by Dyer, Gregersen, & Christensen (2011). According to Dyer et al. (2011), most successful innovators, entrepreneur, and executives show similar behavior which is involving several steps in discovering innovative ideas. These principles involve five main skills: observing, questioning, experimenting, associating, and networking or communicating.

First, observations are described as the activity to look at, listen to, touch, taste, or smell something, to attend some details that are resulting in gaining perceptual knowledge (Dyer et al., 2011; Paul, 1992; Bogen, 2014). Questioning is defined as the process of posing questions with respects to the things individuals are unaware of as a reflection of inquisitive nature or curiosity or simply asking for clarification towards the things as an indication of strengthening knowledge (Dyer et al., 2011; McCollum, 2009). Experimenting is closely associated with trying out new experience and piloting new ideas through collecting necessary information to accomplish the task through browsing, reading, asking somebody else or exploring further topic to support their prior knowledge (Dyer et al., 2011; Herr, 2007). Associating or associational thinking might refer to cognitive skill which exists in our brain and it tries to synthesize and make sense of novel inputs through making connections across seemingly unrelated questions, problems and information and understanding relational similarity between the current topic and other things in the process of learning (Dyer et al., 2011; Goswami, 2009). At last, networking or communicating refers to a person’s ability to find new idea through a diverse network of individuals who vary wildly in their background and perspectives as indication of social activity (Dyer et al., 2011; Hasim, 2013). These activities are intended to develop students cognitive, affective, and psychomotor capability.

Concurrently, some attempts have been made in defining and structuring scientific approach to language teaching. According to Sudrajat (2013), scientific approach in learning is science-based learning that highlights personal experiences through observing, associating, questioning, concluding, and communicating. Priyana (2013) argued that scientific approach is actually a scientific-method-step-based classroom since it is a procedure of teaching and learning steps

designed to help students attain the knowledge about the language, communicative competence, and attitude in the classroom. Syahmadi (2013) pointed out several activities that represent the integration of scientific approach to EFL classroom practices. It is inspired from the idea proposed by Dyer et al. (2011). to make it clearer, Syahmadi (2013) describe the learning process with table of specification as follows:

**Table 1:** Scientific-based learning activity in language teaching

STAGE	LEARNING ACTIVITY
Observing	<ul style="list-style-type: none"> <li>• Students see, observe, read, and listen to teacher's explanation (texts) with or without media. (Listening-reading)</li> </ul>
Questioning	<ul style="list-style-type: none"> <li>• Students deliver some questions that are factual related to the observation and define some questions, hypothesis (speaking-writing). This activity will be guided by teacher until it becomes habitual (independent) activity for students.</li> </ul>
Experimenting	<ul style="list-style-type: none"> <li>• Students collect data through available resources such as document, object, book, internet media, experiment (Reading-Listening)</li> </ul>
Associating	<ul style="list-style-type: none"> <li>• Students analyze the data by forming categories and relationship within them. (Reading)</li> <li>• Students draw conclusions from the result of data analysis started from the data. (reading-writing)</li> </ul>
Communicating	<ul style="list-style-type: none"> <li>• Students present their conceptual understanding regarding the conclusion they have made in the form of oral and/or written text, chart, diagram or picture. (speaking-writing)</li> <li>• Students begin to write a text they have learnt through guided or free writing task (writing)</li> </ul>

Translated from Syahmadi (2013)

However, many practitioners and experts in teaching English as a foreign language (TEFL) skeptically responded the government's decision in integrating scientific approach in language teaching (Chodijah, 2013 cited in Prathivi, 2013; Natahdibrata, 2013). The most critiques have been delivered in the forum of Teaching English as a Foreign Language in Indonesia (TEFLIN) International Conference held in Solo at October 7<sup>th</sup> – 9<sup>th</sup>, 2014. Since teaching English through scientific method is unfamiliar concept as well as the literature regarding the use of scientific method in language teaching (Richards, 2014), most practitioners questions the practicality and the effectiveness of the approach. The teachers also considered it difficult in applying scientific approach to the language classroom because they may not get enough training and professional development (Mulyasa, 2013). Consequently, this condition has led teachers to own different beliefs and perceptions regarding scientific approach.

Concurrently, there are several studies confirmed that English teachers have different perceptions towards the implementation of 2013 curriculum in classroom practice. According to

Jasmi (2014), teachers were likely to be unconfident in implementing 2013 curriculum due to inadequate training. Therefore, it is hard for them even to design the lesson plan before teaching. In addition, Budianto (2014) stated that English teachers have enough conceptual understanding regarding the new curriculum but they cannot perform well in the level of implementation due to limited time allocation for English subject in senior high school level. Shofiya (2014) pointed out that some teachers had some trouble with doing assessment along with the application of “scientific steps” in the classroom. Besides those unsatisfying findings, there are some findings reported from the study conducted by Herlina (2014). She conducted the study to explore the benefit of scientific approach to nursing students in English for specific purposes (ESP) class. It was found that scientific approach give positive effect to the students’ participation in the classroom as well as their motivation in learning. In addition, Widiasih (2013) noted in her study the increase of students’ reading comprehension after being taught through scientific approach at 10<sup>th</sup> grade of senior high school level.

Nevertheless, even though the research mentioned above have explored the teacher’s perception and problem regarding the implementation of 2013 English curriculum (Jasmi, 2014; Budianto, 2014) and the benefit of scientific approach (Herlina, 2014; Widiasih, 2013), little has been known regarding to what extent EFL teachers at senior high school level are able to apply scientific approach in classroom practice as it is required by 2013 curriculum. Therefore, there is a need for further study documenting the implementation of scientific approach in EFL classroom practice. It is believed that a case study in schools implementing 2013 curriculum serves well the purpose of the present study since teaching English as a foreign language is very specific in terms of context and situation.

## **2. Research Objectives**

In relation to the issue stated in Introduction, this paper is aimed at gaining the portray of the implementation of scientific approach in EFL classroom practice, particularly in senior high school which is piloting 2013 English curriculum since 2013. More specifically, this paper elaborates briefly the process of teaching in terms of observing, questioning, experimenting, and associating in attempt to find out to what extent the teacher was able to implement scientific approach as it is required by the 2013 curriculum. In relation to the purpose of the study, the research question is formulated as follows: “How does the English teacher implement scientific approach to EFL classroom practice?”. This research question becomes the central of this paper and it is considered relevant to serve the purpose of the study and to sharpen the focus of the study. In addition, this overarching research question guides the selection of research method presented in the subsequent section.

## **3. Research Methodology**

In order to answer the research question presented initially, case study was carried out in a senior high school which is piloting 2013 English curriculum. The participant involved in this study was an English teacher who has been teaching for 28 years in senior high school and currently she has been trying to teach English through scientific approach-based learning in her classroom, particularly for eleventh grade students majoring in Science program. Classroom observation was conducted five times in that class and it was administered once a week. Each

meeting took approximately 80-90 minutes. Based on the lesson plan designed by the teacher, the teacher was trying to implement all stages of scientific approach to teach report text to her students. The objective of the teaching of report text is that the students will be able to identify generic structure, language feature, and social purpose of report text at the end of learning. Students are expected to be able to compose and present their report related to natural disaster and unique animals and plant. The process of collecting the data used not only videotape to record the interaction between teacher and students, but also observation guide developed by the teaching framework developed by Syahmadi (2013) to help the researcher classify the teaching process in terms of observing, questioning, experimenting, associating, and communicating stage. The process of data analysis was begun with transcribing and coding the interaction between teacher and students. Then, the data was categorized into five steps of scientific approach inspired from Dyer et al. (2011) and scientific approach to language teaching pointed out by Priyana (2014), Syahmadi (2013) and Sudrajat (2013).

#### **4. Results and Discussion**

As previously stated in the previous section, the expected learning processes are divided into five stages: observing, questioning, associating, experimenting, and communicating. However, by referring to the result of the five time observations, it was revealed that teachers were not applying all of scientific learning steps in every meeting during the practice of teaching report text (See Appendix 1). In the first meeting, the teacher administered four out of five steps of scientific-based stages namely observing, questioning, and experimenting, and associating. In the second meeting, the teacher used similar pattern with the previous meeting. However, in the third meeting, it appears that there are only activities that represent observing, questioning, and communicating stage in the learning process. The third meeting was employed to provide a lot of opportunity for students to present their work in group. In the fourth meeting, the teacher concerns the language feature in the context of report text through three scientific-based steps: observing, questioning, and experimenting. In the fifth meeting, still scientific-based steps are not completely applied by teacher. In the last meeting the teacher added free writing activity in which the students were individually composing report text in communicating stage.

In addition, by looking at the pattern used by the teacher, the observing, questioning, and experimenting stage are the steps mostly applied by the teacher whereas associating and communicating are the least stages applied by the teacher in five meetings. This finding somehow seems to be inconsistent with the procedure of effective teaching required by Curriculum 2013. In classroom practice, there has been distortion in the way the teacher carried out the instruction as the teacher was supposed to give adequate proportion of time to all stages of scientific approach. The process of teaching was seemingly incomplete in a meeting due to ineffective time management that causes all scientific learning steps were not effectively followed by the teacher. The teacher seemed to spend more time in the process of observing, questioning, experimenting, and associating rather than communicating as it is depicted in the first and second meeting. As a result, the students did not get much opportunity to use the target language as communicating stage was not given sufficiently to students.

The findings of this study seem to be in line with the result of previous study conducted by Budianto (2014) who pointed out that time constraints become one of the challenges that should be fixed by the teacher during the implementation of scientific approach. It is reasonable that during two-times period of teaching, where each takes 45 minutes, all scientific approach stages cannot be accommodated. However, the teacher is supposed to give the Though the finding is somehow unsatisfying, Reiser & Dick (1996) argue that teachers can use the different strategies of teaching to cope with the problems and to achieve teaching-learning goals and objectives. This suggests the strategies used by teacher will not always follow the literature and practical guidance provided by curriculum. Perhaps, the practice of teaching in the reality does not always precisely occurred as it is written in the lesson plan and meet the expectation. The attainment of the learning objectives becomes the heart of the teaching which is the important aspect that should be underlined.

Despite the incomplete process of teaching and learning process carried out by the teacher during classroom process, some features of scientific approach used by the teacher somehow gave positive contribution to the students' participation and confidence during learning process.

#### *Observing stage*

Concerning observing as the first stage of scientific approach, the teachers commonly asked the students to observe picture and text as it was depicted from the first, second, fourth, and fifth meeting. While showing some pictures, the teacher also triggered students to brainstorm words related to natural disaster. It is surprising that one of students mentioned SAR that stands for *Search and Rescue* that is one of technical term in the use of aircraft, squad, equipment to search and rescue personnel on distress (Dictionary of Military and Associated Terms, 2005). While, the others mentioned *victim, destroy, food, bag, medicine*, etc. This finding indicates that students in Science Class were diverse in terms of existing knowledge and vocabulary. This stage took about 15 minutes for each meeting.

The second main point of the observing stage is that teacher began to give a model of report text in relation to the topic related to *natural disaster*. The text was about *flood* available in students' textbook. In this stage, students were asked to read carefully the text. While students were reading the text, the teacher asked them some questions such as, "*what is the text about?*", "*how many paragraphs are there?*" to make them aware of the topic being investigated. After few minutes reading the text as the process of observation, students were guided by the teacher to the process of questioning stage where they were required to answer some questions related to the text.

This stage was also used to remind the students the material they have learned in the previous meeting. The students were also often asked to take a note of what seems to be important such as, difficult words, specific information in the text, and feature of the text. This main important feature of observing stage was seemingly connected to the concept of observation established by Dyer et al. (2011), Paul, (1992), Bogen (2014). All of activities in the stage of observing may function as the facility for students to relate the current topic of discussion with something they already know.

### *Questioning stage*

In reference to the questioning stage, the teacher mainly encouraged the students to answer some questions related to the text *flood*. In the second meeting, the students were also asked to work in pairs to answer the questions based on the text *hydroponics*. This questioning stage took 15 until 20 minutes for each meeting. The questions provided by the teacher in the text *flood* and *hydroponics* were related to the theory of reading comprehension such as finding specific information, discovering main ideas, and identifying reference (Brown, 2001) (See Appendix 2). This questioning stage was intended to strengthen the students' knowledge related to the generic structure of report text (Dyer et al., 2011; McCollum, 2009; Syahmadi, 2013). Therefore, it is assumed that questioning stage might give contribution to students' ability in comprehend written text. These questions-answer stages were considered having numerous benefits. Firstly, the teacher can be better in monitoring students' comprehension (Davey & McBride, 1986). This activity, in fact, will also improve students' comprehension ability itself and they can get better recall of information (King, 1994; Davey & McBride, 1986; Rosenshine, Meister, & Chapman, 1996) as they have encountered such kind of questions. Thus, providing students with questions and train them to answer those questions will enhance students' accuracy in answering questions and better identification of main ideas (Rosenshine et al., 1996).

As they were exposed with questions the teacher provided, the students also seemed to be able to generate appropriate *wh*-questions. The indication of this improvement was seen in the students' presentation. The students wrote questions such as “*What is tsunami?*”, “*How do earthquakes generate tsunamis?*”, “*What happened when a tsunami encounter a land?*” to be the title of each slide the presented in front of the class (See Appendix 4.). Additionally, questioning happened also in student-student interaction during questions-answers sessions in relation to the presentation in communicating stage. This questioning process somehow give opportunity for students to develop their ability in making a questions intended to ask for clarification, to express their curiosity, and finding some information (McCollum, 2009). There was an indication of positive effect of the questioning activity that may also contribute to the process of the development of their critical thinking. It can be seen from Appendix 3 that some questions generated by students in a group work were representing *high-order thinking* questions as it is stated by the even though the teacher was not intentionally asked the students to produce *high-order thinking* questions.

### *Experimenting stage*

The third stage is concerned with experimenting; the students were found trying to collect information to answer the problems posed by the teacher. The problems or case was created in relation to the topic being talked about.

**Table 2:** Case posed by teacher

Instruction: Work in pair and try to answer the following questions!
1. What natural disaster often occurs in Indonesia?
2. What is the worst natural disaster that has occurred in your town? How much damage did it cause?
3. What would you do if you know that you live in a flood prone area?
4. Suppose you did not suffer from floods and could help the victims of floods, what will you do?
5. What should the government do to cope with floods?

In order to answer those questions, the students must use English along with the language features of report text such as *simple present tense* and *passive voice*. These two features of report are commonly used to elaborate description of particular things and facts. While the students were experimenting using the target language by using *simple present tense* or *passive voice*, errors commonly occurred. In this stage, the teacher played a major role to give explicit corrective feedback to students. The use of corrective feedback did not seem to discourage the students. Instead, feedbacks and corrections make students enjoying the learning process even though it somehow obstructed communication.

In addition, the experimenting stage was also used to administer group work project where each group was required to make a report and to present it in front of the class by using Ms. PowerPoint. The students were free to choose the topics they are going to present. During this stage, the students were collecting necessary information and data regarding the topics they have chosen. It seemed that all students were actively participated in this stage. It can be seen that they cooperated in group to complete the task. Somehow this process develop their responsibility for their own learning (Holec, 1981), driven by encouraging projects to construct knowledge (Marlowe & Page, 2005) The result depicted in the experimenting stage confirms the previous studies done by Herlina (2014) and Widiasih (2013) where scientific approach affect positively to the students' active participation.

#### *Associating stage*

In relation to this stage, the teacher commonly asked the students to work in group as it assembles collaborative learning. She asked the students to work in pair and or group so that the students can work cooperatively in discovering the language features and generic structures of report text. The following excerpt may indicate the way the teacher tried to help the students analyze the text structure.

Teacher : You are learning about *flood*. The text *flood* belongs to report text, and then I want you to identify the text *flood* in terms of , *eem.* introduction, general classification and closing statement. Tadi apa keterangannya general classification?

Students : *Topik*

Teacher : Yaa Topic or what you are talking about. And then you are required to identify the description, the description means sequence. What is sequence?

Students : *urutannya* (similar meaning of *sequence* in Bahasa Indonesia)

Teacher : *Yah hal-hal apa saja yang dideskripsikan dari topik itu.* How about the closing statement of the text *flood*?. Closing statement,

Students : *kata kesimpulan terakhir.* (meaning of *conclusion* in Bahasa Indonesia)

Teacher : Ok, jelas?. is it clear? Now what you need to do is just showing the paragraph that indicates the general classification, introduction and closing statement. You only show me what paragraph and line.

In the associating stage, the teacher commonly play important role as a facilitator and guidance in order help the students to identify and classify the generic structure and the language features from the texts *flood* and *hydroponics* and to draw conclusion or the points of the meeting they had just experienced. It was also found that the teacher often used first language (L1), *Bahasa*

*Indonesia* in several occasions. First, the teacher used L1 to instruct the students to give opinion about the natural disasters occurred in their local place in association with what they had just read in the text. Sometimes the teacher also gave clues when the students seemed to forget the definition of the terms related to the generic structure of report text such as general classification, description, and closing statement. Secondly, in relation to associating stage, the teacher also used L1 to explain the meaning of unfamiliar words by associating one word to another relevant word. However, the finding based on observation showed that the associating stage was missed by the teacher in the third, fourth and fifth meeting as there was no tasks that resemble associating stage or trigger the students to use their associational thinking. When the students were fully understand about the nature of report text, the students were asked to proceed their project and they were required to present their report in front of the class in the communicating stage.

### *Communicating stage*

At last, communicating stage is used by the teacher to provide opportunities for students to use English as a medium of interaction (Dyer et al., 2011; Hasim, 2013). In this case, the groups took turns to present their report (See Appendix 4) in front of class while the others who have not taken turn should carefully pay attention and take notes throughout their friends' performance. For the students who gave attention to the presentation, it had been the process of observing as they need to be aware of the content of information disseminated by their friends. Additionally, the process of communication happened here through questions-answer session. The following excerpt may give an example of question-answer between student 2 and student 3 happened during presentation.

Student 2: okay! What is a tsunami? tsunami is a series of large waves of extremely long wavelength and period usually generated by a violent, impulsive undersea disturbance or activity near the coast or in the ocean.

Student 2: What causes a tsunami? A tsunami is a large ocean wave that is caused by sudden motion on the ocean floor. This sudden motion could be an earthquake, a powerful volcanic eruption, underwater landslide or and even the impact of cosmic bodies

Student 3: What should we do when tsunami happens?

Student 2: okay, I am trying to answer your question. If you are at home and hear there is the tsunami warning you should make sure your entire family is safe and aware of the tsunami. Second, move immediately to higher ground if you are at the beach. Is it clear?

Student 3: thank you.

The excerpt above actually contained some errors generated by the student 2, and her fluency was average. However in order to make ease of reading, the excerpt is presented appropriately to give a portrait of communicating stage happened during the meeting. Although the student 2 was lack of accuracy and fluency while they were communicating, they seem to be confident in expressing their idea and the message can be accepted well by the student 3. In the last meeting, the students are required to compose report text individually as a part of communication through written language. Based on the observation, the students were actively involved during communicating stage as group of presenters and group of audience have taken their part well. The presenters managed and presented their report well to the audience, and the

audience paid attention and responded the presentation well through asking for questions and clarification.

### **5. Limitations of the study**

As the study was carried out based on several considerations related to the practicality and feasibility of the research, the researcher is fully aware of limitations bounded along with the attempts to reach the objective of the study. The limitations considered in this study are mainly related to several aspects such as the period of study, participant of the study, and focus of the study. As the study was carried out based on several considerations related to the practicality and feasibility of the research, the researcher is fully aware of limitations bounded along with the attempts to reach the objective of the study. The limitations considered in this study are mainly related to several aspects such as the period of study, participant of the study, and focus of the study.

The first limitation is concerned with the period of the research. As stated earlier in previous section, the research was stopped at the end of the fifth meeting or observation. This was happened since there was school's policy that requires the participants in this study to follow some agendas such as the celebration of Kartini's Day, simulation of National Examination, and the days of National Examination. At this state, the researcher has no authority to move the schedule of the research so that the research was stopped. However, regardless the limited time of observation, the data were considered sufficient to serve the purpose of the study since the pattern of how the teacher conducted teaching-learning process through scientific method has been discovered. It was also noted in teacher's lesson plan that the main learning objectives were attained at the end of observation process.

Second, the limitation of the study deals with the participant of the study. Since this study mainly focused on single case study in portraying teacher's effort in applying scientific approach in classroom practice, only a single teacher and a class of eleventh grade was observed as the participants of the study. Thus, the data portrayed in this study could not be compared and contrasted to another case. Thus the finding of this study was lack of generalizability and transferability to the other conditions. The finding of the study might only suit to the context where the research was carried out and to the participants being observed.

At last, the limitation of the study is related to the focus of the study. The focus of the study was mainly concerned with describing the process of teaching, particularly how the teacher applied scientific method in the classroom practice. The effect of scientific method to students' communicative ability such as the knowledge of grammar, sociolinguistic competence, discourse competence, and strategic competence were not given attention. The study did not also cover the students' four language skills ability in terms of listening, speaking, reading, and writing as the recent teaching program was not carried out through skill-based syllabus anymore. In addition, the material observed in the process of teaching was only scoped in the teaching of report text. However, the researcher believes that the classroom observation somehow successfully portrayed the contribution of scientific approach to the students' participation, confidence and critical thinking during the classroom activity.

## 6. Conclusion

In conclusion, there are several points pointed out from this study in accordance to the teacher's implementation of scientific approach to eleventh grade students at senior high school level. First, it seems that scientific approach could not be effectively applied by the teacher but it somehow gave some positive contributions to the students' participation, and critical thinking as it is depicted in the questioning stage and communicating stage. Scientific-based learning activity also seem to positively affect students' confidence in using the target language though the accuracy and fluency were still average. It is recommended that the teacher should improve her/his effort in applying scientific approach to classroom practice by effectively using the time, creatively developing structured tasks that make the students encounter the process of scientific-based learning.

The teacher is also required to fully understand the nature of scientific approach and the purpose of each stage as it is expected by the 2013 Curriculum as it has already been disseminated through workshop and training initiated by government. In addition, in order to cope with the time management that might be the concern of English teacher during teaching process, collaborating with peers can be a solution to improve the effectiveness of the teacher's teaching practice. Partners can evaluate and give some feedbacks of the teaching practice conducted by the teacher. Therefore, it strengthens the sense of reflective teaching for teacher so that she or he is able to locate the strength and weakness of her teaching practice. Creativity is also vital for the teacher in conducting meaningful and engaging teaching practice. As the curriculum is recently initiated, the textbook and other supplementary materials might not be fully provided by government. Consequently, the teacher is expected to creatively create, adopt, or use various media and techniques in order to attain the learning objectives.

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## 8. The Authors

Achmad Yudi Wahyudin, Ph.D. is working for School of Postgraduate Studies, Indonesia University of Education, and Didi Sukyadi, Ph.D. is a Professor of Educational Linguistics at Indonesia University of Education. Both authors have a very keen interest in educational practices as affected by the new curriculum of Indonesia. Both express their concern over the practicality of the prescribed "scientific method" to be applied to the ESL teaching and learning context in their country.

## 9. References

Aspin, D.N. (1995). Logical empiricism, post-empiricism and education. In P.Higgs (Ed.). *Meta theories in Philosophy of Education* (p. 21 – 99). Johannesburg: Heinemann.

Budianto, D.E. (2014). *Teacher's pedagogical competence in the implementation of 2013 English Curriculum*. (Abstract). Paper presented in International Postgraduate Colloquium of Research in Education (IPCORE) 2014. Bandung, West Java.

- Bogen, J. (2014). Theory and observation in science. In Edward N.Z (Ed.). The Stanford encyclopedia of philosophy (Summer 2014 edition). (online). Retrieved on <http://plato.stanford.edu/archives/sum2014/entries/science-theory-observation>
- Davey, B., & McBride, S. (1986). Effects of questions generation on reading comprehension. *Journal of Educational Psychology*, 78(4), 256-262.
- Dyer, J., Gregerson, H., and Christensen, C.M. (2011). *The innovators' DNA: mastering the five skills of disruptive innovators*. Boston: Harvard Review Business Press.
- Jasmi. (2014). *Teacher's difficulties in designing lesson plan in the implementation of 2013 English Curriculum*. (Abstract). Paper presented in International Postgraduate Colloquium of Research in Education (IPCORE) 2014. Bandung, West Java
- Hasim, A. (2013) Contoh penerapan pendekatan saintifik pendidikan agama Islam dan budi pekerti. (online). Retrieved on <http://linguistika.staff.stainsalatiga.ac.id/wp-content/uploads/sites/36/2013/08/2013-curriculum-at-glance-in-English.pdf> on February, 12<sup>th</sup> 2015
- Godfrey-Smith, P. (2003). *Theory and reality: an introduction to philosophy of science*. Chicago: The University of Chicago Press.
- Goswami, U. (1992). *Analogical reasoning in children*. New Jersey: Lawrence Erlbaum Associates.
- Herr, N. (2007). *The sourcebook for teaching science*. (online). San Fransisco: John Wiley. Retrieved on <http://csun.edu/science/index/html>
- Herlina, N. (2014). *Scientific approach to teach English for nursing in English for Specific Purposes (ESP) class*. Unpublished thesis.
- Hockenbury, D.H., & Hockenburry, S.E. (2000). *Psychology*. ( 2<sup>nd</sup> ed). New York: Worth Publisher.
- King, A. (1994). Guiding knowledge construction in the classroom: effect of teaching children how to question and how to explain. *American Education Research Journal*, 31(2), 338-368.
- McCollum, K. (2009). 'A scientific approach to teaching'. (online). Retrieved on: <http://networkedblogs.com/2gOcg>
- McMurry, J.E., & Fay, R.C. (2008). *Chemistry*. (5<sup>th</sup> ed.). Pearson/Prentice Hall

Natahdibrata, N. (2013). ‘Teachers not ready for new national curriculum’.(online). The Jakarta Post July 10<sup>th</sup> 2013, 8:10 AM. Retrieved from:  
<http://thejakartapost.com/news/2013/07/10/teachers-not-ready-for-new-national-curriculum.html/>

Paul, R.W. (1992). Critical thinking: What, why, and how. In Barnes, A. C. (1992). (Ed). *Critical thinking: Educational imperative*. San Francisco: Jossey-Bass Publishers.

Prathivi, N. (2013). *Teaching science, the best way*. (online). The Jakarta Post, Jakarta, Education available on: <http://thejakartapost.com/news/2013/03/24/teaching-science-best-way.html>.

Priyana, J. (2014). *Language learning activities in the scientific-method-step-based classroom*. (proceeding). Paper presented in the 61<sup>st</sup> TEFLIN International Conference on October 7<sup>th</sup>-9<sup>th</sup> 2014. Solo, Central Java.

Reiser, R. A., & Dick, W. (1996). *Instructional planning: A guide for teacher*, (2<sup>nd</sup> ed.). Boston: Allyn and Bacon.

Rosenshine, B., Meister, C., & Chapman, S. (1996). Teaching students to generate questions: A review of the intervention studies. *Review of Educational Research*, 66(2), 181-221.

Shofiya, A. (2014). *Teachers’ Responses towards 2013 Curriculum: After a Year of Implementation*. (proceeding). Paper presented in the 61<sup>st</sup> TEFLIN International Conference on October 7<sup>th</sup>-9<sup>th</sup> 2014. Solo, Central Java.

Sudrajat, A. (2013). Pendekatan saintifik/ilmiah dalam proses pembelajaran. (online). Retrieved on: <http://akhmadsudrajat.wordpress.com/2013/07/18/pendekatan-saintifikilmiah-dalam-proses-pembelajaran/> [March, 27<sup>th</sup> 2015]

Syahmadi, H. (2014). *Bedah Curriculum 2013 bagi guru Bahasa Inggris*. Bandung: ADOYA Mitra Sejahtera.

Wicander, R. & Monroe, J.S. (2006). *Essentials of Geology*. (4<sup>th</sup> ed.) Thomson Book/Cole

Widiasih, R. (2013). *Meningkatkan kemampuan reading comprehension dengan scientific approach*. (online). Retrieved on [http://kampungjuara.blogspot.com/2013/11/artikel\\_8544.html](http://kampungjuara.blogspot.com/2013/11/artikel_8544.html)

## 10. Appendices

### Appendix 1. Summary of observation result during teaching-learning process

	1 <sup>st</sup> Meeting	2 <sup>nd</sup> Meeting	3 <sup>rd</sup> Meeting	4 <sup>th</sup> Meeting	5 <sup>th</sup> Meeting
<b>OO</b>	observing slide of picture and text	Observing text	Observing students’ work	Observing text	Observing text

<b>QQ</b>	Generating questions related to specific info on the text	Generating questions related to specific info, language feature & generic structure of the text,	Generating questions related to their friends' presentation	Generating questions related to language feature of the text	Generating questions related to model of text provided by teacher
<b>EE</b>	In pair, collecting information to find solution to the problem given by teacher	In group, selecting topic, collecting information about the report they will present	No significant feature	Individually, doing exercise in relation to language feature of report text	Individually, writing an outline for their writing task
<b>AA</b>	Connecting words of what they have discussed in pair	Drawing conclusion of what they have discussed in group	No significant feature	No significant feature	No significant feature
<b>CC</b>	No significant feature	No significant feature	Presenting the report	No significant feature	Free writing task to compose report text

Note) O: observing stage, Q: questioning stage, E: experimenting stage, A: associating stage, C: communicating stage

**Appendix 2.** Summary of aspect of questions used by the teacher

No	Aspects of question	Text	
		Flood	Hydroponics
1.	Finding specific information	What is a flood? What areas flood quickly? How many major flood types are there?	What is hydroponics? What factors influence the methods of hydroponics? What is the greenhouse made of? What is the function of water pipes?
2.	Discovering main idea	What does the paragraph three discuss about?	What does the paragraph fourth discuss about?
3.	Identifying reference	“ <u>They</u> are also very destructive...” (par.4). What does the underlined word refer to?	“... everything they need to grow, i.e. water, nutrients, and sunlight.” (par.4). What does the underlined word refer to?

**Appendix 3.** Summary of questions generated by each group occurred in the questioning stage

Group	Form of question	
	Low-order question	High- order question
1.	<ul style="list-style-type: none"> <li>What is the similarity between human and monkey?</li> </ul>	<ul style="list-style-type: none"> <li>What makes <i>kucing kampung</i> become the icon of Indonesian cat?</li> </ul>
2.	<ul style="list-style-type: none"> <li>How many types of cactus do exist in Indonesia?</li> </ul>	
3.		<ul style="list-style-type: none"> <li>Why is it called love birds?</li> </ul>
4.	<ul style="list-style-type: none"> <li>Is it possible for flightless bird to fly again?</li> </ul>	<ul style="list-style-type: none"> <li>Why can't penguin fly?</li> </ul>
5.	<ul style="list-style-type: none"> <li>Will silkworm become a butterfly?</li> </ul>	<ul style="list-style-type: none"> <li>Why does silkworm metamorphose perfectly?</li> </ul>
6		<ul style="list-style-type: none"> <li>What should we do when the tsunami happens</li> </ul>

**Appendix 4.** Example of presentation generated by the group in the communicating stage

