TEACHERS’ BELIEF ON LEARNING, LEARNERS, AND TEACHERS OF SCIENTIFIC APPROACH IN ENGLISH AS FOREIGN LANGUAGE

Christianti Tri Hapsari1, Rheza Kusumawardani2
1Sebelas Maret University
Christianti.trihapsari@gmail.com
2Sebelas Maret University
Rheza.nanta@gmail.com

Abstract
The changing of curriculum in Indonesia, school-based curriculum to curriculum 2013 is intended for the better future of Indonesian education in facing the tighter competition in global era (Sarosa, 2013, p.117). Meanwhile, 2013 Curriculum by the ministry of culture and education, continues to trigger controversy. Due to the changing of ministry, some schools which have implemented 2013 curriculum under three semesters should return to the level of educational curricula (KTSP). Whereas the implementation of 2013 curriculum is still immature. The teacher’s existing knowledge of practical use of curriculum 2013 has been insufficient for them to teach English as foreign language in classroom. Based on those facts, a study to investigate the teachers’ belief toward scientific approach in 2013 curriculum is important. The research was conducted in one of junior high schools in Magelang in the academic year of 2015/2016. The samples were collected from three English teachers by using purposive sampling. The research method is a case study. The results shows that teachers had positive attitude and understanding toward scientific approach. They recognised the importance of students as the center of learning and teachers’ role as a facilitator. In addition, learning should base on facts and phenomenons which could be explained by logical and critical thinking.

Keywords: teachers’ belief, scientific approach, English

Abstract

Kata Kunci: keyakinan guru, pendekatan ilmiah, bahasa Inggris
INTRODUCTION

According to Cahyono and Widiati (2011, p.1) in Haryati (2016, p. 12), curriculum is a set of plans and arrangements covering educational goals, contents, learning materials, and learning method intended as the guidelines in implementing the teaching and learning process to achieve the goals that have been set. Good as quoted in Connelly and Lantz (1991, p. 15) defines curriculum as a general overall plan of the content or specific materials of instruction that the school should offer the student by way of qualifying him for graduation or certification or for entering into a professional or vocational field. In addition, Pratt (1994, p.5) in Haryati (2016, p. 12) states that curriculum refers to plans for instructional acts, not the acts of instruction themselves.

The 2013 curriculum is characterized by science and holistic features in primary education. It is designed to adjust the globalization era and development of science and technology as the external and internal factor such as the attainment of eight competence standards and the growth of the total amount of inhabitants. The goal of teaching English in curriculum 2013 is to develop students’ competence about factual and procedural knowledge by using various spoken and written text with systematic language features.

Based on Minister of Education and Culture Regulation number 59 (2014, p.495), to implement competence-based curriculum, English applies approach, genre, and scientific. In 2013 curriculum, English is taught to improve the students’ ability in using the language to gain and transfer knowledge as well as enhance interactional skill in communication. Agustien (2013, p. 40) in Haryati (2016, p.12) states that 2013 curriculum is developed on the basis of systematic functional linguistics (SFL) theory. Eggins, Halliday and Matthiessens in Agustien (2013, p. 40) said that SFL sees language as a resource for making meaning, for interacting with others and for communication. Consequently to participate successfully in school and community, for example, students need to know how to use language (1) for achieving different social status, (2) for sharing ideas about their experience of the world, (3) for making connections between these ideas, (4) for interacting others, (5) and for constructing coherent texts in both spoken and written text (Derewianka in Agusties, 2013, p. 40). Beside those different linguistics theory, 2013 curriculum also adopts a new teaching approach, namely Scientific approach. In scientific approach, the teaching process is conducted under 5 procedures (observing, questioning, associating, experimenting, and communicating).

The changing of curriculum in Indonesia, school-based curriculum to curriculum 2013 is intended for the better future of Indonesian education in facing the tighter competition in global era and in facing bonus of demographic condition in 2045 (Sarosa, 2013, p.117). Meanwhile, 2013 Curriculum by the ministry of culture primary and secondary education, continues to trigger controversy. Schools have already implemented it under three semesters and still imposed on schools that have been doing it for the three semesters upward. Yet, due to the changing minister, some schools should return to the level of educational curricula (KTSP).

Besides its uneven spread, 2013 curriculum also leaves behind some problems. The teachers’ existing knowledge of practical use of curriculum 2013 has been insufficient for them to teach English as foreign language in classroom. They are still grasping, thinking, and learning how to teach English in curriculum 2013. Indonesian government determined scientific approach as the basic method to teach the entire subject in all school levels. There is no sufficient empirical data of teaching English as foreign language but it is believed that this scientific method is appropriate to be implemented. English teachers should be creative and imaginative in conducting teaching learning process in classroom. This controversy makes some researchers conducting research toward the implementation of Scientific Approach in 2013 curriculum.

Michael Borg’s (2001) in Xu (2012, p. 1397) defined that a belief is a proposition which may be consciously or unconsciously held, which is evaluative in that it is accepted as true by the individual, therefore it is imbued with emotive commitment; further, it serves as a guide to
thought and behavior. Most definitions of belief propose that beliefs dispose or guide people’s thinking and action. Stephens et al. (2000, p.535) in Larenas, Hernandez, & Navarrete (2015, p.172) affirm that “there are four ways that individuals fixate beliefs: believing what one wants to believe (tenacity), believing what someone else has said is true (authority), believing what one always has and which seems reasonable (a priori) and believing what one has tested out through investigation (scientific method).”

Most definition of belief propose that beliefs dispose or guide people’s thinking and action (Fauziati, 2015, p. 53). Kagan (1992, p. 65) in Fauziati (2015, p. 53) defined teachers beliefs as tacit, often unconsciously held assumptions about students, classrooms, and the academic material to be taught. Beliefs guide teachers’ behavior and inform teachers’ practice by serving as a kind of interpretative framework through which they made sense of what they do in their classrooms (Larenas, Hernandez, & Navarrete, 2015, p.172).

Language teachers’ beliefs and understandings of teaching as well as learning play an important role in their classroom practices and in their professional growth. As Harste and Burke (1977) in (Kuzborska, 2011, p. 102) postulated, teachers make decisions about classroom instruction in light of theoretical beliefs they hold about teaching and learning. Teachers’ beliefs influence their goals, procedures, materials, classroom interaction patterns, their roles, their students, and the schools they work in. Similarly, Richards and Rodgers (2001) in (Kuzborska, 2011, p. 102) affirmed that teachers possess assumptions about language and language learning, and that these provide the basis for a particular approach to language instruction.

Teachers’ belief systems are founded on the goals and values teachers which hold on the content and the process of teaching, and the process of teaching, and their understanding of the systems in which they work within it (Richard and Lockhart, 1994, p.30) in Fauziati (2015, p. 54). These beliefs and values serve as underlying principles of the teachers’ decision making and action, hence called teaching culture. Teachers’ belief systems are built up gradually over time and they are derived from different sources, namely: (1) their own experience as language learners, (2) experience of what works best, (3) established practice, (4) personality factors, (5) educationally based or research-based principles, and (6) principles derived from an approach or method (Richards and Lockhart, p. 1994, p.30-31) in  Fauziati (2015, p. 54).

Richards and Lockhart (1994) in Fauziati (2015, p. 55) provide guidelines for English teachers and researchers for the investigations of teachers’ belief which includes beliefs, namely: belief about English, belief about learning, belief about teaching, belief about program and curriculum, belief about teaching as profession. Beliefs about English may sometimes represent stereotypical impressions, these beliefs do express realities which may influence classroom practices. Beliefs about learning reflects everything that they do in the classroom. Beliefs about teaching shows teachers’ perception about what constitutes effective teaching. Beliefs about program and curriculum represents how teachers see a particular program and curriculum. Whereas language teaching program reflects culture of the institution as well as a collective decision and beliefs of individual teachers. Beliefs about language teaching as a profession shows the degree to which individual teachers have a sense of professionalism about their work depends on their working conditions, their personal goals and attitudes, and career prospects available in their community. The term science is derived from Latin word scientia which means knowledge. It is a systematic and logical approach through testing and analysis to discover how things in the universe work. The process by which science is carried out in practice is called scientific approach (Fauziati, 2014, p. 153). Blackwell and Martin (2011, p. 10) in Ariyati (2015, p. 18) define scientific approach as a framework of systematic approach which consist of (1) rationale (background of the study); (2) objectives (the particular goals of the study); (3) the activity (experiment and analysis of the data); (4) findings (results from that experiment); (5) implications (conclusion of the finding).

Using scientific approach, students utilize process that allow them to demonstrate the mental and
the physical behaviours of scientists. Students act as scientists or inquirers. Through this process, they learn more than discreet science concepts and skills. Whewell (1859) in (Fauziati, 2014, p. 153) describes the scientific approach as follows: (1) Formulation, that is, the explanation of specific observation; (2) Hypothesis: this is a conjecture (the formation of opinions based on incomplete or inconclusive information) based on the knowledge obtained while formulating the questions that may explain the observed behaviour which is true as it is predicted by the hypothesis; (4) Testing: this is an investigation of whether or not the observed behavior is true as it is predicted by the hypothesis. This can be done by conducting experiments; (5) Analysis: it involves determining what the results of the experiment show and deciding on the next actions to take.

Scientific approach can be implemented in classroom teaching practices. According to Handelsman, et al., scientific teaching approach is a pedagogical used in classroom whereby teaching is approached with the same rigor as science at its best and it involves active learning strategies to engage students in the process of science and teaching methods that have been systematically tested and shown to reach diverse students (as cited in Fauziati, 2014, p. 154). There are three major principles that underlie its pedagogical practice in the classroom, namely: (1) Active learning: a process in which students are actively engaged in learning; (2) Assessment: tools for measuring progress toward and achievement of the learning goals; and (3) Diversity: the breadth of differences that makes each student unique, each cohort of students unique, and each teaching experience unique. Diversity includes everything in the classroom: the students, the instructors, the content, the teaching methods, and the context (Handelsman, et.al., 2004, p.522) in (Fauziati, 2014, p. 153).

The learning process in scientific approach (Fauziati, 2014, p. 155) conducted based on the following principles: students who search for knowledge, teacher as sole of learning recourse to a multiple resource-based learning, process as reinforcement, competency-based learning, integrated learning, highlights the true multi-dimensional answers, stresses on applicative skills, improving both hard skills as well as soft skills, acculturate and empower the learners as long life learners, developing a will and expanding the creativity of the students in the learning process, learning can take place at home, at school, and in the community, learning applies that everyone is a teacher, everyone is a student, and everywhere is classroom, the use of information and communication technology to improve the efficiency and effectiveness of learning, and the recognition of the difference of individuals and cultural background of the students (Ministry of Education Regulation No. 32 Year 2013). With regards to classroom procedure, the scientific approach as discussed previously is materialized in the learning cycle which comprises of five steps, namely observing, questioning, gathering information or experimenting, associating or information processing, and communicating (Fauziati, 2014, p. 156). Ariyati (2015, p. 94) in her study about English Teachers’ Belief and Practices of Scientific Approach in English Teaching found that students must be an active learner. Whereas teachers played role as facilitator and motivator. Besides, teachers believed that scientific approach enhanced students’ communicative skill. Teachers also kept the sequence of scientific teaching steps. Moreover, the researcher also discovered some factors affecting teachers beliefs, namely learning experience, teaching experience, teachers’ motivation, sharing with colleagues, and facility.

In accordance to Ariyati’s finding, Istiqomah (2016, p. 124) discovered teachers’ positive attitude toward the implementation of Scientific Approach. They considered Scientific approach as an effective way in teaching English. Yet, for the students who have low intelligence, this approach did not work well. The researcher found that the implementation of Scientific Approach was not implemented fully. Mostly, they abandoned questioning and associating. Questioning did not run well since the students were reluctant to ask. The teachers also have difficulty to differentiate experimenting and associating. They are also upset to determine what kind of activities can be
conducted in associating. Teachers would apply other methods if they found that the materials were not appropriate.

A naturalistic research done by Haryati (2016, p. 241) about the implementation of scientific approach in English Teaching showed different understanding towards Scientific Approach. The teachers do not have the same knowledge. Although they presented diverse understanding toward teachers’ belief, they still have correct understanding. In implementation, teachers were not consistent in applying Scientific Approach teaching steps. They randomly employed jumble scientific approach teaching steps, for example: observing, questioning, experimenting, associating, and communicating. Teachers played different roles for each teaching steps. They played as controller and organizer in observing phase. While in experimenting phase, the teachers played as controller, organizer, source of knowledge, prompter, and tutor. The problems faced by the English teachers are genuine since the new approach is considered to be complicated at first. They had difficulties in applying teaching steps in a single time, designing lesson plans which suit with each teaching steps, and finding appropriate materials.

Related to the explanation above the researcher wants to know about the beliefs of learning, learners, and teachers by conducting mini research undertitle “Understanding Teachers’ Belief on learning, learners, and teachers on Scientific Approach in English as Foreign Language”

This research aims to investigate teachers’ belief on learning, learners, and teachers on scientific approach in English as Foreign Language by knowing the teachers’ belief about learners, learning, and themselves, as well as their understanding and problems in implementing scientific approach.

Thus, the researcher is intended to answer these following questions:

1. What is teachers’s belief about Scientific Approach?
2. What is learning in Scientific Approach?
3. What is learners in Scientific Approach?
4. What is teachers in Scientific Approach?
5. What are problems faced by teachers in Scientific Approach?

**METHODOLOGY**

The research design employed is a case study design. Cresswell (2012, p. 465) defines case study as an in-depth exploration of a bounded system (e.g., activity, event, process, or individuals) based on extensive data collection. Bounded means that the case is separated out for research in terms of time, place, or some physical boundaries. Moreover, Merriams (1998, p.27) stated that a case study is an intensive, holistic description and analysis of single instance, phenomenon or social unit. The researcher aims to uncover the interaction of significant factors characteristic of the phenomenon by concentrating on a single phenomenon or entity (the case). In line with the principles of case study, this research investigates teachers’ belief of three English teachers about the implementation of scientific approach in Curriculum 13.

Since the data of this research appears in words rather than numbers, the data was collected through some variety of ways (observation and interview). Miles and Hubberman (1984, p.21) propose the interactive model of data analysis to analyze the data that is in the form of words. Therefore, the variables in this research were analyzed by using interactive model that consists of data collection, data reduction, data display, and conclusion.

**FINDING AND DISCUSSION**

In this study, the first part of the finding was classified into three categories proposed by Xu (2012, p. 1398). They are beliefs about learners, beliefs about learning, and beliefs about themselves. Teachers may hold any one or a combination of beliefs about those whom they teach. The sociologist Roland Meighan (1990) in Xu (2012, p. 1398) has suggested that learners may be construed metaphorically as: resisters, receptacles, raw material, clients, partners, individual
explorers, and democratic explorers. Such constructions reflect individual teacher’s views of the world and also have a profound influence on their classroom practice. If teachers consider their students as resisters, receptacles or raw materials, they will force learners to master a language, fill learners with knowledge, and shape learners according to the teacher’s wishes. While, if teachers consider their students as clients, partners, individual explorers or democratic explorers, then they will alter the nature of the relationship between teachers and learners. The teachers will have the language learning activities from learners’ needs, and take themselves as co-learners, facilitators and co-operators.

In this study, it was found that teachers saw students in various perspectives. Yet, they had the same core beliefs about their students. They considered their students as a center of learning. The first teacher believed that a student should be an active learner. They should learn actively to promote their critical and logical thought. The teachers thought that by having logical and critical thinking, the students would be able to analyze problems, find solutions and face life wisely. Whereas the second teacher believed that students were inquirer. They found knowledge by themselves. The teacher hoped by knowing independently, the students would be independent. Moreover, they would be able to analyze problems and become a problem solver. While the third teacher believed that students were independent learners. The teacher expected that students would be able to acquire knowledge by themselves. This opinion was quite similar to what second teacher believed. Students were seen as independent learners. By being independent learners, they would be expected to know something without being taught, constructing their own knowledge, and solving their problems. By implementing Scientific Approach, teachers believed that students should be in the center of learning. It changed the previous beliefs that teachers stated as the center of teaching and learning process. It was appropriate with one of the principles of Scientific Approach proposed by Ministry of Education Regulation No 32 Year 2013.

British psychologists Gow and Kember (1993) in Xu (2012, p. 1398) suggest that most approaches to learning can be placed under one of the following headings: a quantitative increase in knowledge; memorization; the acquisition of facts, procedures etc. which can be retained and / or used in practice, the abstraction of meaning, an interpretative process aimed at the understanding of reality, and some forms of personal change. The first three of these conceptions can be conveniently subsumed under the heading of reproductive approaches, while the subsequent three can be seen as meaning-based. The first three approaches also can be induced as the direct transmission instruction, which implies that teachers’ role is to communicate knowledge in a clear and structured way, to explain correct solutions, to give students clear and resolvable problems, and to ensure calm and concentration in the classroom. The following three can be induced as constructivist instruction, which focuses on students not as passive recipients but as active participants in the process of acquiring knowledge, emphasizes facilitating students inquiry, prefers to give students the chance to develop solutions to problems on their own, and allows students to play active role in instructional activities. However, these approaches should not be mutually exclusive in language teaching-learning process.

The first teacher saw that learning was based on facts and phenomenons which could be explained by logical and critical thinking. In accordance with the basis of Scientific Approach, learning emphasized in the nature of scientific concepts and skills (Fauziati, 2014, p. 153). The second teacher had similar opinion with the first teacher in which she thought that learning should be based on scientific perception. Moreover, the third teacher also saw that learning should be in the basis of logical and critical thinking. It reflected what the notion of science was. By having logical and critical thinking teacher would be able to gain curiousity, analyze problems, and solve problems. Besides, learning should be conducted in active, creative and interesting atmosphere. Teachers should be able to bring such kinds of atmosphere to make students happy with teaching and learning process. Being happy affected how students performed. Teachers’ role also influenced
learning process. If the teachers were creative, the learning processes will be interesting. Thus, as a teacher, learning should be designed to make students love learning and gaining benefits from its activity.

After having studied teachers’ beliefs about learners and learning, there should some more advanced beliefs about teachers ourselves, such as teacher self-efficacy and teacher emotions can be important ways for us language teachers to enhance our overall quality. Teachers self-efficacy (Albert Bandura, 1994 in Xu (2012, p. 1399) defined perceived self-efficacy as people’s beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. Self-efficacy beliefs determine how people feel, think, motivate themselves and behave. Teacher emotions related to what social constructivists Pine and Boy (1977) in Xu (2012, p. 1399) found that — effective teachers create learning atmospheres which are cognitively and affectively expanding; learning atmospheres which enable the learner to become a more adequate and knowledgeable person. It is clear that this kind of approach places great emphasis upon what the teacher as a person brings to the teaching-learning relationship and how the learner can be helped to develop as a whole person.

The first teacher defined herself as a facilitator. She believed that her role as a teacher was to guide and observe students' performance in learning. The teacher should bring active atmosphere to the classroom to make students motivated. Moreover, teachers should be as creative as possible to provoke students to be able to use their logical and critical thinking. For example by asking students some questions which could trigger students’ curiosity. The same as the first teacher, the second teacher also saw herself as a facilitator. She added that teacher also played as an observer. In the learning process, teachers help students if they had problems. The third teacher also considered herself as a facilitator. In addition, she saw herself as stakeholder, As a teacher, she designed something and made students to do something. In designing learning activity, teachers needed to maximize their ability to bring great atmosphere for the students to promote their logical and critical thinking.

The second part of categories are teachers’ understanding and problems in implementing Scientific Approach in Curriculum 2013. The first teacher defined Scientific approach as lessons based on particular logic. She believed that Scientific Approach could make students to be able to think logic and critical. The second teacher defined Scientific approach as method that consisted of 5 steps, namely observing, questioning, experimenting, associating, and communicating. The third teacher defines Scientific Approach as approach that made students construct their own knowledge. It could be concluded that all of the teachers in this study had good understanding of Scientific approach. Besides, all the teachers also knew the steps of Scientific approach and the basic knowledge of it.

The problems faced by the teachers in implementing scientific approach were about time allocation, teaching steps, teaching management, and understanding. The second teacher found that the time allocated did not fit with whole activities in Scientific Approach. It needed two or three meetings to finish 1 full teaching activities in Scientific Approach. The first and the third teachers found that in questioning activity, students were having difficulties in asking questions. They tended to be passive. Teachers needed to give stimuli to students to make them ask questions. The second teachers firstly found that Scientific Approach was hard to implement because she had experienced an unclear training. The training only gave basic things about Scientific Approach that made her confused in implementing Scientific Approach.

Besides its difficulties in implementing, Scientific Approach gave positive impacts to teachers and students. The first teacher found that students would become more active and focused in learning because they actively involved. The second teacher found that students became more independent in learning. They were more motivated in reading books and browsing something in the internet. The third teachers found that students became more creative. The teaching and learning process
grew to be more lively and interesting because learning did not only focus inside classroom.

CONCLUSION
There are three main categories of teachers’ belief proposed by Xu (2012, p. 1398), namely teachers’ beliefs about learners, beliefs about learning, and beliefs about themselves. It can be concluded that by implementing Scientific Approach, teachers believed that students should be in the center of learning. It changed the previous beliefs that teachers stated as the center of teaching and learning process. Besides, learning should be conducted in active, creative and interesting atmosphere. Teachers should be able to bring such kinds of atmosphere to make students happy with teaching and learning process. In addition, learning should base on facts and phenomenons which could be explained by logical and critical thinking. Teacher defined herself as a facilitator. The role as a teacher was to guide and observe students’ performance in learning. Teachers also played as an observer. In the learning process, teachers help students if they had problems. Moreover teachers were seen as stakeholder. As a teacher, she designed something and made students to do something. In designing learning activity, teachers needed to maximize their ability to bring great atmosphere for the students to promote their logical and critical thinking. The problems faced by the teachers in implementing scientific approach were about time allocation, teaching steps, teaching management, and understanding. Although scientific approach brought some difficulties to the target language. Scientific Approach also gave positive impacts to teachers and students. Students would become more active, independent and focused in learning because they actively involved. The teaching and learning process grew to be more lively and interesting because learning did not only focus inside classroom.

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