

AN ANALYSIS OF SECONDARY EFL TEACHERS' STRATEGIES IN APPLYING A SCIENTIFIC APPROACH TO TEACHING ENGLISH

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Abstract

This descriptive qualitative research aims to describe the procedures used by teachers in teaching English with a Scientific Approach, to know teachers' strategies in applying the Scientific Approach, and the challenges and solutions used by teachers to overcome problems that exist in applying the Scientific Approach. The research subjects were 3 English teachers at SMPN 13 Palu. Data were collected from interviews with teachers, observation of the teaching and learning process, and teacher lesson plans. The research findings show that (1) English teaching procedures in the scientific approach taken by the teacher consists of observing, asking, associating, experimenting, and communicating; (2) The challenges teachers face in applying the Scientific Approach are: lack of student motivation and students' interest in English lessons; (3) The strategies used by teachers to overcome problems in applying the Scientific Approach are: motivating students to be more active in learning, creating a conducive classroom atmosphere, creating varied learning methods, asking some stimulating questions about the material, providing comparisons the material, and translating difficult words that are found students.

Keywords: strategies, Scientific Approach, procedures, challenges.

BACKGROUND

The learning approach can be interpreted as a collection of methods and means used by educators in facilitating learning. Within learning strategies, various approaches can be employed. The learning approach can be used as a guide in preparing the teaching methods to be used. In learning techniques there are tactics that can be used in carrying out learning methods or techniques. In the method, there are several techniques that can increase the productivity of learning. In learning techniques there are tactics that can be used in carrying out learning methods or techniques. The application of various learning activities can lead to the development of a learning model. One approach that can be used in learning is the scientific approach. According to Daryanto (2014:51), applying scientific

steps includes finding problems, formulating problems, putting forward a hypothesis, collecting data, analyzing data, and drawing conclusions.

The scientific approach to learning has become a topic of discussion that has attracted the attention of educators lately, especially after the implementation of the 2013 curriculum, which is the background for the importance of this scientific approach because primary and secondary education has not yet produced graduates with critical thinking abilities comparable to those in other nations. Therefore, important components are formed in teaching using a scientific approach. According to McCollum (2009), the first presents learning that can increase curiosity (Foster a sense of wonder), the second improves observing

skills (Encourage observation), the third performs analysis (Push for analysis), and the fourth communicates (Require communication).

In the 2013 Curriculum, teachers are required to apply a scientific approach or a process-based scientific approach. This approach can utilize various strategies, one of which is contextual learning. According to Ministry of Education and Culture Regulation No. 103 of 2014, a learning model is a form of learning that has a name, characteristics, syntax, structure, and unique culture, such as discovery learning, project-based learning, problem-based learning, and inquiry learning.

The primary objective of the scientific approach is to help students understand, apply, and master subject matter in a scientific manner. Therefore, during the learning process, students are encouraged to explore various sources through activities such as observing, asking questions, experimenting, processing, presenting, drawing conclusions, and creating across all subjects (Sudarwan, 2013).

However, the results of interviews conducted by the researcher in his PLP 1 activities with English teachers in applying a scientific approach most English teachers have difficulties, let alone being required to adapt to the new curriculum, namely K13, where a teacher is more dominant as a facilitator. In contrast, students are required to be more active in achieving goals the learning such as observing, questioning, associating, experimenting, and networking. It is different from KTSP, which only consists of three components: exploration, elaboration, and confirmation.

Based on the existing problems, this study aims to determine the strategies for implementing the scientific approach in teaching English and the challenges faced in implementing the scientific approach in teaching English. Therefore, to collect valid data, the researcher uses a descriptive qualitative research design to collect data. Four stages will be carried out in analyzing

the data: data collection, data reduction, data display, and conclusion.

LITERATURE REVIEW

Scientific Approach to Education

The scientific approach has become a major focus in various educational curricula around the world, especially in STEM (Science, Technology, Engineering, and Mathematics) fields, and is increasingly being applied in language education. Rooted in constructivist learning theory, the Scientific Approach emphasizes active student involvement in the learning process, mimicking the stages of scientific inquiry (Violla & Fernandes, 2021). The aim is to foster critical thinking skills, problem-solving, and a deeper understanding of concepts by encouraging students to observe phenomena, formulate questions, collect and analyze data, and communicate their findings (Khumraksa & Burachat, 2022).

In the context of teaching English as a Foreign Language (EFL), the scientific approach encourages learners to actively discover language rules and usage rather than passively receiving information (Madina & Kardenia, 2021). This transforms the classroom into a dynamic environment where students are encouraged to explore language through real-world contexts, experiment with new vocabulary and grammatical structures, and engage in meaningful interactions (Anwar & Anjarningsih, 2024). Proponents argue that these inquiry-based and hands-on methods improve long-term retention and encourage learner autonomy in acquiring language skills (Anwar & Anjarningsih, 2024). This shifts from traditional teacher-centered instruction to a more learner-centered paradigm, in line with modern pedagogical trends.

Teacher Strategies in Language Teaching

Effective teaching strategies are essential for achieving successful learning

outcomes, especially in second language acquisition (Mustika et al., 2023). Teachers often use a variety of instructional techniques to cater to different learning styles and encourage active participation. These strategies may include but are not limited to, cooperative learning, task-based learning, inquiry-based activities, and technology integration (Oktafiolita et al., 2024; Subroto et al., 2023). The choice of strategy often depends on learning objectives, the nature of the material, and student characteristics (Oktafiolita et al., 2024).

When implementing approaches such as the scientific approach, teachers' strategies are crucial in guiding students through the inquiry process (Junanto et al., 2024). This involves scaffolding learning, providing clear instructions for observation tasks, modeling effective questioning techniques, facilitating collaborative experiments, and creating opportunities for students to organize and present their findings. Additionally, effective teachers employ strategies to create a positive and conducive learning environment, foster student motivation, and manage classroom dynamics to ensure all students feel comfortable participating and expressing themselves (Arifudin et al., 2024; Ronsumbre et al., 2023). This may involve the use of various motivational techniques, providing constructive feedback, and adapting teaching methods to meet the needs of specific students.

Challenges in Implementing Innovative Teaching Approaches

The integration of new teaching approaches, such as the scientific approach, often comes with a unique set of challenges for educators (Alenezi et al., 2023). One of the main obstacles can be a lack of adequate training or professional development, which leaves teachers unprepared to implement unfamiliar methodologies effectively (Eroglu & Donmus Kaya, 2021). Teachers may also face difficulties in managing class

time effectively, as inquiry-based learning can be time-consuming and require more flexibility than traditional methods (Chu et al., 2021).

Furthermore, student-related factors pose significant challenges. These can include a lack of student motivation, disinterest in the subject matter, or reluctance to engage actively, especially if students are accustomed to a more passive, teacher-centered learning environment (Mohammad, 2022). Students may also struggle with the higher-order thinking skills required by the scientific approach, such as critical analysis, problem-solving, and independent inquiry, due to a lack of prior exposure or underdeveloped cognitive abilities (Qamariyah et al., 2021). Limited resources, such as restricted access to appropriate learning materials or technology, can also hinder effective implementation. Overcoming these challenges often requires ongoing professional development, adaptive teaching practices, and a supportive school environment.

METHOD OF THE RESEARCH

This study utilized a descriptive qualitative design. The aim was to detail the strategies used by English teachers in implementing a scientific approach. According to Whitney (1960), descriptive methods focus on discovering facts, which are then interpreted accurately. To obtain relevant data on the strategies used by teachers in implementing a scientific approach in English teaching, the researcher utilized data collection techniques through observation and interviews.

The subject of this research involved three English teachers from SMPN 13 Palu. This research on teachers was conducted to find out firsthand how a teacher practiced teaching strategies with a scientific approach to students. From this activity, the researcher could obtain valid data.

To obtain data, the researcher collected research data by investigating teachers through observation and interviews. Those techniques fit the research design as qualitative research. Both were used to find out teacher's strategies in applying a scientific approach to teaching English.

1. Observation

The observation was conducted to observe the teacher teach and then observe how they apply the scientific approach. The observation is held in order to get data about teacher's strategies in applying a scientific approach to teaching English. The researcher made observations in class three times. In this case, the steps observation to know how teachers apply a scientific approach in teaching English:

- a. The researcher asked permission from the teacher to do observation. In this case, the researcher followed the English teacher to teach in the classroom. During the observation, the researcher did observation in the classroom, observing the ongoing teaching and learning process. The researcher used the class VIII A, IX B, and VIII D of SMPN 13 Palu to observe directly. Its purpose was to obtain information about teacher's strategies in applying a scientific approach to teaching English in the classroom.
- b. To obtain data, the researcher used lesson plans made by the teacher and then made comparisons while the teacher was teaching.
- c. As a result, researchers were able to find out teachers' strategies for implementing a scientific approach to English lessons. Then, researchers used lesson plans to collect data about teachers' strategies for implementing a scientific approach to English lessons.

2. Interview

The researcher collected data by interviewing English teachers at SMPN 13 Palu to obtain information about how teachers apply a scientific approach in

teaching English, as well as the challenges they face and what solutions to overcome them. In this study, the researcher used an unstructured interview technique. These interviews were free-flowing, in which the researcher did not use a systematic and comprehensive interview guide when collecting data. The only guide used was an outline of the issues. The interviews conducted by the researcher lasted approximately 10-15 minutes for each teacher and were recorded after obtaining permission from the teachers. All interviews were conducted in Indonesian.

After the data were collected completely, the researcher analyzed the data. In analyzing data, the researcher employed the method suggested by Miles and Huberman (1984) as follows:

1. Data Reduction

Refers to the process of selecting, focusing, and summarizing raw data from interviews, observations, documents, or other qualitative data (Miles et al., 2014). The researcher focuses on choosing which parts need to be included in observation and interview transcripts.

2. Data Display

At this stage, the selected data is presented in the form of essays and tables. The purpose of displaying data is to help researchers understand what happened to the data presented and consider what to do next. In this research, observation data will be classified in tabular form, while the interviews are presented in narrative form.

3. Concluding

The last is drawing and verifying conclusions. After displaying the data, the researcher creates a conclusion based on the research findings. Furthermore, the data have to be checked for their credibility and accuracy.

FINDING AND DISCUSSION

This section is divided into two main parts. The first part presents observations about the application of the Scientific

Approach in English Teaching. The second part of the interview supports the first finding.

Result of Classroom Observation

Observing

In teaching practice, T1 and T3 deliver the same material even though they are in different classes. T1 uses images that have been presented on the screen to describe, and T3 uses images that have been printed. They are creative in using media. They present different media for description. Thus, it made students engage easily in the learning process because she asked the students to use their senses to see.

On the other hand, T2 conveys different material, but the method of presentation is the same as T3, namely, using printed media. In terms of observing T2, ask students to read the picture conversation provided by the teacher and has been distributed to students. Apart from that, the T2 teacher also delivers verbal instructions to be listened to and observed. Then, he asked students to note down the instructions given. Based on the research results, all teachers carried out the observation stage well. This shows that all teachers are creative in using relevant media to make observations.

Questioning

At this stage, teachers T1 and T3 involved students in formulating questions orally and asked several representatives to write them down in front of the class. Uniquely, teachers continued to stimulate students to answer and create more questions. They applied active learning to create a conducive atmosphere so that students could easily formulate questions and statements. In contrast, teacher T2 continues to ask relevant questions and hold group discussions to encourage students to ask questions and express their arguments.

Overall, all teachers demonstrate efforts to encourage, stimulate, and motivate students to ask and answer relevant

questions. They strive to build active learning and develop students' thinking skills. However, in practice, this goal has not been achieved well. Therefore, teachers have taken the initiative to ask several relevant questions and hold discussions to encourage students to ask questions.

Experimenting

In conducting experiments, students gain real or authentic learning (Abidin, 2014). T1 and T3 teachers provide opportunities for students to collect relevant data according to the material and practice writing and pronunciation to describe something. T2 divides students into several groups to collect information from the internet. Apart from that, in teaching other material (greetings), the teacher asks students to practice and imitate greeting expressions.

Associating

T1 and T3 invite students to create or write information according to the material. Then, students associate the knowledge obtained from observations and experiments to describe it. Next, T2 asks students to create a conversation.

Communicating

In communicating, T1 and T3 asked students to present the assignments they had made. Then, the teacher observes and gives an assessment. T2 asks students to discuss assignments in groups of two or four while the teacher monitors and leads the discussion activities. The summary of these activities is as follows:

Table 1. Summary of Observation Activity

procedures	T1	T2	T3
observing	Asked Students to prepare their family photos which they had printed.	Made conversations with students related to the recent material.	Asked Students to prepare their family photos which they had printed.

questioning	Asked the students to ask questions related to the material.	Asked the students to ask questions related to the material.	Asked the Students to ask questions related to the material.
experimenting	asked students to introduce their family members in writing in paragraph form.	Divide students into groups. Each group must collect relevant information.	Asked students to introduce their family members in writing in paragraph form.
associating	asked students to write about themselves and their families in paragraph form.	Asked students into groups and then made conversation	Asked students to write about themselves and their families in paragraph form.
communicating	Asked students to present their task	Asked students to present their task	Asked students to present their task

Based on the available data, the three teachers have implemented the steps of the scientific approach in teaching English, namely observing, questioning, experimenting, reasoning, and communicating. This is in line with Sani's (2015:53) opinion that the scientific approach can be applied in the teaching and learning process through these stages.

The findings of this study indicate that the three teachers understand the concept of the scientific approach and how to apply it in the classroom. Although they sometimes carry out the scientific steps out of order, they do so very well. This is also supported by the fact that all teachers had previously attended a workshop on the implementation of this approach, so they have a good understanding of how the scientific approach should be applied in the teaching and learning process.

Result of Teacher interviews

The Challenges Faced by Teachers

The interviews were conducted to determine the challenges and difficulties faced by teachers in implementing a scientific approach to teaching English. The

difficulty referred to in this case is the five steps of the scientific approach: Observing, Questioning, Experimenting, Associating, and Communicating.

Based on interview results, the challenges faced by teachers were common, namely, how they motivate and attract students' interest in English lessons and increase their basic knowledge in this learning. Apart from the challenges, there are also difficulties faced by teachers. As for the difficulties faced by teachers, at the experimenting stage, teachers experienced difficulty in motivating students to work independently. At the associating stage, the teacher experienced difficulty in inviting students to analyze the material. At the communicating stage, teachers had difficulty inviting students to present the results of their work in English. There were several factors that caused teachers to experience this difficulty, these being students' difficulty in finding answers, students' inability to analyze material, and students' lack of vocabulary mastery.

Several factors most likely cause this situation. First, students are still accustomed to teacher-centered learning methods, which may hinder the development of their critical thinking skills. Second, the students' environment does not support them in practicing English, so they lack motivation and tend to be passive in class. Support for this view also comes from Astuti's (2013) research, which found that students were less motivated because they did not have friends to talk to. Similarly, Exley (2005) described Indonesian students as passive, shy, and quiet.

Teachers Solutions to Overcome The Problems

The teacher's strategy for increasing motivation and attracting students to be interested in English lessons, based on the results of interviews, was that the teacher started by creating a conducive classroom atmosphere so that students felt safe and comfortable during the learning process.

Creating varied learning methods was emphasized, as educators needed creativity in learning methods.

The learning process could be through songs, audiovisuals, case studies (exercises), and so on. The aim was so that students did not get bored in the learning process; this could also increase students' enthusiasm and eagerness for learning. Learning would have been successful if students had motivation in the learning process.

The solution to the difficulties that teachers face at the stage of implementing the scientific approach is as follows.

Table 2. Teachers' Solutions

Step	T1	T2	T3
experimenting	Gave some questions and examples related to the recent materials	Gave the students some stimulating questions related to the material	Gave some questions and examples related to the recent materials
associating	Gave the students the comparisons of the materials	Asked students to compare the previous material with the recent material	Gave the students the comparisons of the materials
communicating	Gave students the correct words or sentences while they speak the wrong words	Translated the difficult words	Translated the students' missing word or sentences

The findings of this study are in line with the study by Apriani (2015). In her study, teachers stated that they applied the Scientific Approach by asking students to observe and identify objects of observation in the observing stage, providing opportunities for students to ask questions in

the questioning stage, giving time and facilitating students to search for information related to the material; and asking students to discuss the information received in group discussions and design the results of the discussion to be presented in the communicating stage.

The similarities in how teachers overcame difficulties in implementing the Scientific Approach may be due to several factors. First, the teachers had previously attended workshops on the implementation of this approach. Second, because the teachers teach at the same school, it can be assumed that they have a similar culture that influences their perceptions. According to Richardson in Rosyida (2015:13), factors that influence teachers' perceptions can come from personal experiences, experiences with education and instruction, experiences with formal knowledge (both school subjects and pedagogical knowledge that influences teaching and learning practices), as well as student abilities and situations.

Research findings indicate that English teachers in grades 8 and 9 at SMP Negeri 13 Palu have implemented a scientific approach in their teaching. They carry out all stages, namely observing, questioning, experimenting, reasoning/associating, and communicating.

Teachers need to consider time allocation so that students have ample opportunity to explore each of these stages. Observation is carried out using a variety of media and delivered creatively. However, the questioning stage needs to be emphasized more, as students tend not to start learning without stimulation and encouragement from the teacher. Therefore, teachers show efforts to stimulate and motivate students to ask questions.

In addition, teachers use discussions to create active, cooperative, and collaborative learning. In line with this, the lesson plans (RPP) they used to cover all components and stages of the Scientific Approach following the 2013 Curriculum.

However, there are also challenges and difficulties that teachers face in implementing this scientific approach. The challenges are how teachers motivate and attract students' interest in English lessons, and the difficulties are experimenting, associating, and communicating. The strategies that teachers use to increase motivation and attract students' interest in English lessons are creating a conducive atmosphere in the classroom and creating creative learning. To overcome the difficulties (experimenting) Gave the students some stimulating questions related to the material Gave the students some stimulating questions related to the material, (associating) Gave the students the comparisons of the materials, asked students to compare the previous material with the recent material, and (communication) Gave students the correct words or sentences. At the same time, they spoke the wrong words, translated the difficult words, and translated the students' missing words or sentences.

Thus, from the discussion above, the application of the scientific approach carried out by teachers in their English lessons is carried out very well. Same as the challenges, they can find solutions to the challenges.

CONCLUSION AND SUGGESTION

Conclusion

Based on the data presentation and research findings above, the following conclusions can be drawn: When teachers apply a scientific approach in English lessons, the teachers apply the steps of a scientific approach. The challenges faced by the teachers in applying a scientific approach to teaching English are motivating and attracting students' interest in English lessons, and the difficulties are experimenting, associating, and communicating.

Suggestion

Because the current study focuses on teachers within the same school, the environments in which they were teaching affected how they answered during the interviews. Therefore, in future studies, it would be beneficial to involve teachers from various schools to enhance the depth and diversity of perspectives. Detailed info Furthermore, future studies could utilize surveys to gather data. Survey to gather a common trend from a larger group of teachers.

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