

### **Improving Students' Ability In Formulating Research Introduction Through Scientific Approach**

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#### **Abstract**

This classroom action research was conducted to solve the students' difficulties in designing a research introduction by applying scientific approach. The subjects were the sixth semester students of English Department of Teacher Training and Education Faculty of HKBP Nommensen University Indonesia who took Writing Research Paper subject. There were 30 students and they were organized into 8 groups. This research occupied 2 cycles which involved 4 steps (planning, acting, observing, and reflecting) for each cycle. The findings showed that using scientific approach has successfully developed the students' ability in designing introduction of a research. The development derived from the increasing of students' mean score in pre-cycle (54), first cycle (67.73), and second cycle (77.5). The students' difficulties (fail to identify problems of research, decide research title and determine technique of solving the problem) were also decreased significantly after the second cycle had been conducted.

**Keywords** : Development, Scientific Approach, Introduction Of Research, Classroom Action Research

#### **Abstrak**

*Penelitian tindakan kelas ini dilakukan untuk mengatasi kesulitan siswa dalam merancang penelitian pendahuluan dengan menerapkan pendekatan saintifik. Subyek penelitian adalah mahasiswa semester enam Jurusan Pendidikan Bahasa Inggris FKIP Universitas HKBP Nommensen Indonesia yang mengambil mata kuliah Writing Research Paper. Ada 30 siswa dan mereka dibagi menjadi 8 kelompok. Penelitian ini dilakukan dalam 2 siklus dengan 4 langkah (perencanaan, tindakan, observasi, dan refleksi) untuk setiap siklus. Hasil temuan menunjukkan bahwa dengan menggunakan pendekatan saintifik telah berhasil mengembangkan kemampuan siswa dalam merancang pendahuluan suatu penelitian. Perkembangan ini berasal dari peningkatan nilai rata-rata siswa pada pra siklus (54), siklus I (67,73), dan siklus II (77,5). Kesulitan siswa (tidak mampu mengidentifikasi masalah penelitian, menentukan judul penelitian dan menentukan teknik pemecahan masalah) juga berkurang secara signifikan setelah dilaksanakan siklus kedua.*

**Kata Kunci** : Pengembangan, Pendekatan Ilmiah, Pengenalan Penelitian, Penelitian Tindakan Kelas

## **Introduction**

In the broadest sense of the word, the definition of research includes any gathering of data, information and facts for the advancement of knowledge. Reading a factual book of any sort is a kind of research. Surfing the internet or watching the news is also a type of research. Science does not use this word in the same way, preferring to restrict it to certain narrowly defined areas. The word 'review' is more often used to describe the learning process which is one of the underlying tenets of the rigid structures defining scientific research (Jalaluddin, 2019).

Conducting a research brings many advantages educationally, professionally, and even personally. The educational advantages includes: enhancing the student learning experience through consultation model, learning about issues and methods in students' chosen fields, applying concepts learned in coursework to "real life" situations, sharpening problem-solving skills, and learning to read primary literature. Professionally, research encourages a person to explore and prepare for future careers, and to collaborate with others and work effectively as part of a team. At last, research also gives personal benefits, such as: growing as a critical, analytical, and independent thinker; meeting challenges and demonstrating the ability to complete a project; discovering personal interests; and developing internal standards of excellence (Fonda & Sumargiyani, 2018).

Students at university level normally carry out research, which they report in the form of theses as part of the requirements for the award of degrees in higher education institutions. Especially in education field, conducting research can be a solution for the problems happened in the teaching learning activity (Firman et al., 2018). The research can be done in experiment, implementation, or a survey. As the basic aim of doing a research is to solve a problem, it means that the more the research is conducted, the more the problem will be solved. So if the students of higher education do really their research specifically in educational field, it is hoped that the problems of both teachers and students face in the class will be lessen sooner. But not all of them fully understand how to design the research itself, even though there have been interference of discussion process with the consultants and board of examiners (Niño & Pérez, 2018).

When conducting research, a researcher should use the scientific method to collect measurable, empirical evidence in an experiment related to a hypothesis (often in the form of an if/then statement), the results aiming to support or contradict a theory. Science is based purely around observation and measurement, and the vast majority of research involves some type of practical experimentation. Empirical evidence is information acquired by observation or experimentation. This data is recorded and analyzed by scientists and is a central process as part of the scientific method. Here is the problem that always be faced by the students while constructing the background of the research. The students are not able in conveying the empirical data from the field of their observation. The students tend to explain more about the theory of linguistics rather than showing the data as the source of the problem that the students have. This makes the introduction of the research sometimes does not link to the research itself (Magnifico et al., 2019).

Some researchers were interested in revealing these problems through case studies. They tried to identify the students' difficulties in designing research proposal. Widiastuti (in Sholikhin, 2021) had conducted a research in one of universities in Banten. She discovered that most students still have problems in achieving the communicative purpose of each major chapter in a research proposal, i.e. introduction, literature review, and methodology. In general, the students' main problem was in presenting arguments in terms of justification. They have not been able to justify their research area to fill the gap in previous research, justify the literature review to be correlated to the proposed study, and justify the choice of research methodology to answer the research problems.

Those findings are in line with Purnawan (in Purnamasari, 2022) research project. The subjects of his research were 30 students who took educational research class at Yogyakarta State University. The result shows that only less than 7% of the students' proposals can be categorized as effective and flawless, in the sense that they meet all the above requirements, while the rest contain either minor or serious flaws. The absence of obligatory moves dominated the problem, 26 proposals in total failed in this category. Lack of vocabulary mastery dominated the diction problem, resulting in unnecessary redundancies and repeated use of general words instead of technical terms related to research methodology. Grammatical mistakes occurred mostly in the wrong use of tenses, verb phrases, passives, and parts of speech. The flawed respondents did not

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seem to understand the quotation and citation rules (Elfeky et al., 2020). The methodological flaws were incomplete designs, wrong techniques of data analysis, and failure to answer the research questions.

The researchers also had experienced those findings in research class, and thesis consultation and examination. In Teacher Training Faculty of Nommensen HKBP University, every year there are about 300 students graduated. All of these students must fulfill one of the requirements of getting the degree of Bachelor of Education that is conducting a research. In conducting the research, the students write the background first. Mostly the researcher find in the introduction is the theory of language, and then the reason of choosing the topic of the research is just because the students had ever experience of teaching practice in that school. This is not scientific actually. Science is a systematic and logical approach to discovering how things in the universe work. It is also the body of knowledge accumulated through the discoveries about all the things in the universe. The word "science" is derived from the Latin word *scientia*, which is knowledge based on demonstrable and reproducible data, according to the Merriam-Webster Dictionary (Sari, 2018). True to this definition, science aims for measurable results through testing and analysis. Science is based on fact, not opinion or preferences. The process of science is designed to challenge ideas through research. One important aspect of the scientific process is that it focuses only on the natural world (Purohman, 2018).

This issue has been taken seriously by the researchers as a challenge to conduct a classroom action research to solve the students' difficulties in formulating a research background by applying Scientific Approach. The scientific method begins with scientists forming questions, or hypotheses, and then acquiring the knowledge to either support or disprove a specific theory. That is where the collection of empirical data comes into play. Empirical research is the process of finding empirical evidence. Empirical data is the information that comes from the research. Before any pieces of empirical data are collected, scientists carefully design their research methods to ensure the accuracy, quality and integrity of the data. If there are flaws in the way that empirical data is collected, the research will not be considered valid (García Santalla, 2022).

The scientific method often involves lab experiments that are repeated over and over, and these experiments result in quantitative data in the form of numbers and statistics. However, that is not the only process used for gathering information to support or refute a theory. Scientific approach has also been applied in a classroom action research by Dewayani (Primasari et al., 2021). Her research is aimed to investigate the implementation of scientific approach to improve students' scientific writing. The result shows that scientific approach significantly improves the students' ability in writing and the implementation of Scientific approach improve the students in introducing the problem of their research by exposing the empirical data that they have found while conducting an observation (Alfaki, 2015).

Based on some issues discussed above, the researchers intend to conduct a classroom action research entitled with "Improving Students' Ability in Formulating Research Background through Scientific Approach".

### **Method**

The design of this study was Classroom Action Research (CAR). It was called CAR because the study will be focused on a particular problem and a particular group of students in a certain classroom. According to Meinawati et al., (2021); Nurhasanah et al., (2020); Syakur et al., (2020), an action research involves taking a self-reflective, critical, and systematic approach to exploring teaching contexts. Based on the definition above, the implementation of classroom action research is able to give improvement on the quality of teaching and learning process since it can diagnose and solve problems in teaching learning activity.

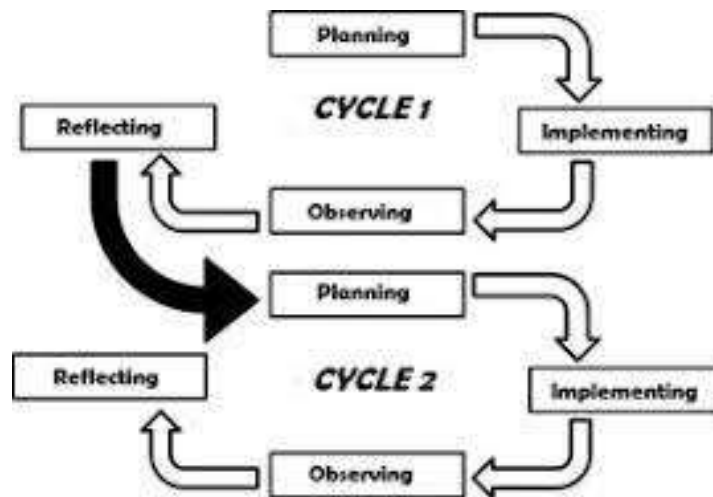


Figure 1. Classroom Action Research Design

This research will be conducted in Teacher Training Faculty of Nommensen HKBP University of Medan North Sumatera Indonesia. It is located at Jl. Sutomo No.4 Medan. The subjects were the sixth semester students who took research on Writing Research Paper course. There were 38 students and they were grouped into 8 group works. The researchers were the lecturers of this course and organized based on the cycles needed in the classroom (Supriyanto et al., 2019).

In this Classroom Action Research (CAR), the researchers will apply CAR cycles model to collect the data. Each cycle consists of 4 steps: planning, acting, observing, and reflecting. Some instruments were applied to obtain the data in this study. The researchers occupied observation dealing with the qualitative data. The observers' fieldnotes were used to evaluate the learning process. On the other side, the researcher used the students' research proposal as a pre-test and post-test to obtain the quantitative data (Susanty et al., 2021);(Saputra, 2020).

In analyzing the data related to the students' test of designing research proposals, the researchers used scoring rubric that has been implemented by the English Department of UNDIKSHA (Universitas Pendidikan Ganesha) in assessing students' research introduction. To get the validity of the data, the researchers used triangulation technique. Triangulation is one of the most commonly used and best known ways of checking for validity (Popel et al., 2020). The aim of triangulation technique is to gather multiple perspectives on the situation being studied.

## Result And Discussion

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### Analysis of Cycle 1

This classroom action research was conducted in two cycles where each cycle consists of four steps: planning, acting, observing, and reflecting.

#### Planning

The researcher designed two lesson plans for this cycle. The first lesson plan objectives were to introduce the material (research introduction) to the students and to plan the investigation in group. The researcher prepared slides of PowerPoint and some e-books (in pdf. format) to be shared to the students as references. The e-books were: *Introduction to Research in Education* by (Wulandari et al., 2019), *Qualitative Inquiry and Research Design: Choosing among Five Approaches* by (Hajerina, 2018), and *Doing Action Research in English Language Teaching* by (Yusransal et al., 2022). The objectives of second lesson plan were to carry out the investigation, to prepare and present final report.

### **Acting**

In this step, the researcher taught the students the design of research introduction. The researcher started by explaining the way how to see problems of the students in learning English. Then, she exposed the difficulties on the board and formulated the problems of the research paper. She taught the students also how to expose the problem from general to specific ones. After that the most important thing also the researcher taught the students how to connect the problems to the formulation of research title. After that, design of research introduction was shown to the students along with five examples.

After presenting the material, the researcher asked the students to create group work which consisted of 4 to 5 members. The task was firstly to find some research problems. He suggested them to share their experiences during teaching practice program at school. After sharing, they were instructed to decide which problems they should focus on personally. By completing this first point, they, then, should do an investigation to complete their research introduction. The investigations they were suggested to carry out were reading scientific journals and books, discussing matters to be researched, creating imaginary data, and writing final report. The students were asked to complete those tasks in a week. A week later, the students presented their report in front of class. Because of the limitation of time (100 minutes), the researcher asked only 5 students to present their report, while the others were as audiences. All the groups' report were submitted to the researcher to be assessed later.

### **Observing**

The researcher and collaborator carried out the observation. The researcher observed the students' discussion process by monitoring the students' activities in this cycle. The students discussed seriously. Some of them were having argumentation in deciding their research topic. They used laptop and smartphone as learning tools in seeking information. In communicating their ideas, they spoke Indonesian. After about 60 minutes, the researcher visited the groups. This was done to monitor their work. If they had difficulties, then the researcher helped them by giving information related to their topic of research.

In group presentation process, each member had role. One of them presented the material, and others were responsible to answer the audiences' questions. Before delivering answers, the group presentation asked the audiences more time to discuss. Presenters and audiences would continuously argue unless the audiences felt satisfied with the answers. The process of presentation was done well, but the problem was only 2 of 6 groups got passed in introducing their research background well in accordance with the problems they found in the field.

### **Reflecting**

After observing and evaluating the groups presentation, the researcher found that only 37,5 % who passed the minimum score. It was concluded that the implementation of scientific approach had not given satisfactory result on the improvement of students' research introduction. The students did not achieve the minimum score (Serevina et al., 2018).

Based on the result in cycle 1, there was a slight development on students' research proposal design. The mean score of the pre-cycle was 54 and the mean score of cycle 1 was 67,73. This means that there was development in students' research introduction for 25,42 %.

$$P = \frac{y_1 - y}{y} \times 100$$

$$P = \frac{67,73 - 54}{54} \times 100$$

$$P = 15,74 \%$$

Most of the students were having problems in designing research background and its accordance with the problems formulated in their research. These problems would be the main focus in cycle 2. The researcher intended to explain more on those points and provide more examples.

### **Analysis of Cycle 2**

Since the result of post test in cycle 1 was not sufficient to be categorized successful, then the

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researcher did cycle 2.

### Planning

The researcher, helped by the collaborators, designed lesson plan for the second cycle. The design was not so different with the first lesson plan. It was focused more on the students' difficulties in designing research introduction and its accordance with the problems formulated in their research. The students would be arranged in group to study more on how to write effective background, research problems and purposes. The researcher intended to provide some effective examples of those points.

### Acting

In the first meeting of cycle 2, the researcher focused the explanation on research background, problems and purposes of the introduction section of a research. The researcher showed some examples from research journals and other research report. Before showing their mistakes, the researcher asked the students to compare their work with the examples and find their mistakes. The researcher gave time (1 week) to the students to redesign their research introduction. In the second meeting of cycle 2, the students reported their research introduction (Bulian & Jambi, 2018). They presented their work in front of class. After that the researcher collected their paper to be assessed to see the result of second cycle post test.

### Observing

The researcher did observation during students' discussion and presentation process. Again, they discussed enthusiastically to revise their research introduction. Each member of the group investigated their mistakes by comparing their previous paper with the examples given by the researcher. Four groups presented their final report in the next meeting. The researcher observed that their presentations run well. The audiences' questions could be answered effectively. Their performances were good in presenting their paper.

### Reflecting

After assessing the students' post-test in cycle 2, almost all the students pass the minimum standard of value 70. There were 29 research introduction which passed the minimum score. So, The class percentage who passed the minimum criterion of 70 score was 96,66 %. The mean score was 77,5. The development percentage was 14, 42%. This means the students' ability in designing research introduction has been successfully developed.

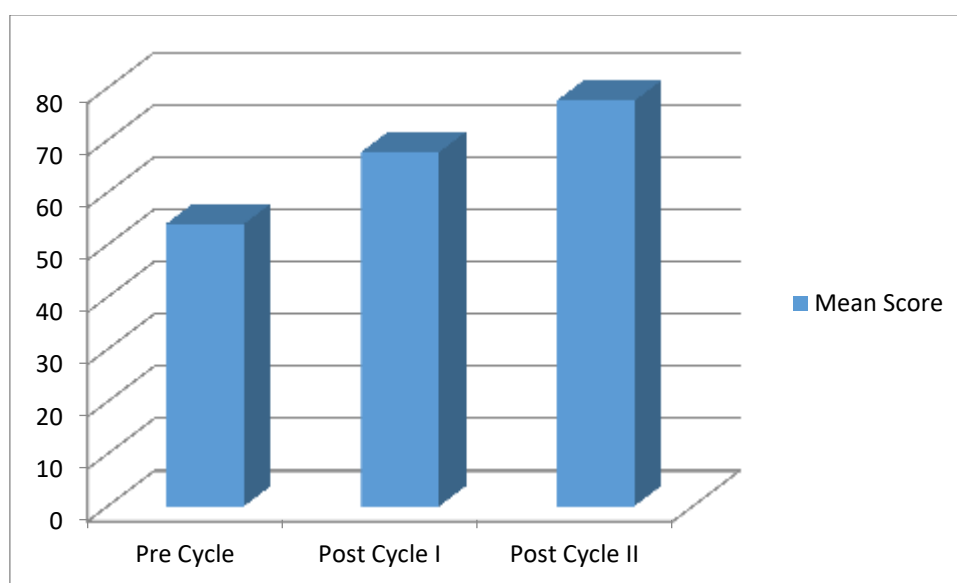
### Research Finding

Based on the data analysis, there was better improvement in students' research introduction. This can be seen from the students' score in the pre-cycle to the second cycle. The mean score for the pre-cycle was 67, 73 while mean score of post-test in cycle 2 was 77, 5. It means that there was 9.77 points or 14, 42% of mean score development. By implementing scientific approach through group investigation, the students' research introduction have been developed successfully. Table and figure below will show the development of students' research introduction from pre-cycle to cycle 2.

**Table 1. The Summary of Students' Research Introduction Score**

No	Name of the Students	Pre Cycle	Post Cycle I	Post Cycle II
1	SS	50	70	80
2	TGWS	50	72	85
3	THS	40	65	75
4	DLB	60	70	80
5	YPSR	65	75	90
6	AS	50	65	75
7	CDW	50	60	75

8	EFS	45	60	70
9	JS	60	75	90
10	RS	45	60	75
11	DSS	70	75	90
12	LMS	60	70	80
13	HP	65	75	85
14	SB	55	60	75
15	SES	55	65	75
16	RM	60	70	85
17	FET	60	70	80
18	RES	60	75	85
19	RT	50	65	75
20	DRNS	50	60	75
21	IA	65	75	85
22	MA	65	70	75
23	AFS	70	75	80
24	ECS	65	70	80
25	VRS	65	75	80
26	AP	50	65	75
27	ECR	50	65	70
28	SJS	45	65	75
29	ASS	45	65	75
30	HS	0	50	60
<b>Mean</b>		<b>54</b>	<b>67,73</b>	<b>77,5</b>



**Figure 1. The Development of Students' Research Introduction**

### **Interpretation of Research Finding**

The students' difficulties in designing research introduction were also decreased significantly after the second cycle had been conducted. In the preliminary data, the researcher found that the most of the students were not able to differentiate fact and opinion in exposing the problems they found in the observation (Supena et al., 2021). The students tend to explain more and more about language and its definition, skill and function in their background of research introduction. The students tried to convey their opinion towards the functions of language in society but they could not support the opinion with empirical evidence that they found while observing (Jacobsen, 2020). After cycle 1, they started to understand the way to expose the problem of learning English from general to specific in accordance with the empirical evidence (Stehle & Peters-Burton, 2019). Their problems here were connecting the problems with the research title and purposes. Finally, in cycle 2, most of them were able to write a coherent research background along with the problems formulated, title and its purposes. There was only one student left behind (Simamora & Saragih, 2019). This student was fail in exposing the empirical evidence of the research background. The student kept explaining about language and its skill in the background of the research.

### **Conclusion**

The result of this research showed that the use of scientific approach through group investigation method has successfully developed the sixth semester students' ability in designing research introduction at English Department of Teacher Training and Education Faculty of HKBP Nommensen University Medan. The collaborators' field notes during observation showed that the students were actively engaged in both investigation and presentation process. The students collaboratively and enthusiastically designed their proposal and presentation.

### **Suggestion**

The researcher intends to propose some suggestions that hopefully will be useful, especially for as follows:

#### **1. Lecturers of Research in ELT Course**

Lecturers need to solve students' problems in designing research introduction. The researcher suggests the lecturers some points of consideration to be focused on while teaching research: Clear concept of background of a research. The researcher found that the students were not able to expose the empirical evidence as a research background, The consistency of title to content. Most of the content of students' introduction were not consistent with their titles, Quoting relevant theories. Some of the students were still confused how to quote references and what theories were relevant to their research.

#### **2. Other researchers**

The researcher also gives suggestion to other researchers to investigate not only in scope of research proposal but the complete research report. There are still many methods of student-centered learning approach which can be applied in teaching and learning process. This research can be used as reference since it proved that group investigation can develop students ability in designing a research.

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