

## DEVELOPING PROBLEM-BASED INQUIRY MODEL IN INDONESIAN LEARNING IN GENERAL HIGH SCHOOLS

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| Article Info  | Abstract   |
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| <b>Article History</b><br>Received: August 2023<br>Revised: September 2023<br>Published: October 2023   | <i>This research is motivated by the importance of collaboration between teachers and students in learning Indonesian. This collaboration is marked by cooperation in improving the quality of learning by designing inquiry-based Indonesian language learning model books. This model book is designed to be more attractive to educators and students by considering the content and design to suit the needs and characteristics of students. This research aims to develop an inquiry-based Indonesian language learning model that is viewed from the aspects of validity, practicality and effectiveness. The research uses research and development methods using the Plomp model which consists of preliminary research, prototypes and assessment. Research findings reveal that the model developed produces high validity seen from the results of expert assessments, while the practicality of the model shows very high results seen from teacher assessments when testing this model. Apart from that, the effectiveness of the model is very effective as seen from the presentation of this model which is clear and well organized, the language used is easy to understand, and the structure of the model is attractive. Overall, this model can be applied well in Indonesian language learning, because it can improve student learning outcomes.</i> |
| <b>Keywords</b><br>Indonesian Learning;<br>Indonesian Teacher;<br>Problem-based inquiry models;   |  |
| <b>How to cite:</b> Ikawati, E., & Pohan, J. E. (2023). Developing Problem-Based Inquiry Model in Indonesian Learning in General High Schools, <i>JOLLT Journal of Languages and Language Teaching</i> , 11(4), pp. 834-845. DOI: <a href="https://doi.org/10.33394/jollt.v%vi%i.8978">https://doi.org/10.33394/jollt.v%vi%i.8978</a> |  |

### INTRODUCTION

The disparity between Indonesian learning materials and students' ability to absorb material is a crucial problem in this pandemic era. Many teachers have difficulty in designing appropriate materials and according to students' abilities. Learning Indonesian is affected by the incompatibility of learning materials with students' ability to absorb the learning content taught by the teacher. Teachers do not just convey cognitive knowledge, but also instill educational values in real life (Osieja, 2015). Learning Indonesia can be used as a mental process that continues to develop and reflects critical thinking in real life (Stranovská and Hvozdková, 2015). Teachers should be able to design learning materials in the form of reading texts and invite students to collaborate in context. Students are invited to find the main idea and content of the reading given, while the teacher constructs new knowledge for students according to their abilities (Kucukaydin and Sagir, 2017).

In the process of learning Indonesian, it has been arranged in a curriculum that is spread out on core competencies and basic competencies which consist of aspects of attitudes that describe changes in attitudes that are better characterized by the character of students in everyday life (Agustina, 2019). Likewise, aspects of knowledge that lead to the construction of new knowledge from the knowledge that students have learned. In the psychomotor aspect,

it is described by the skills possessed by students which are characterized by pedagogic skills, supernatural skills, and technological skills that are in accordance with the needs of the 21st century (Pohan, 2019).

The curriculum is designed according to the needs and characteristics of students in order to be able to integrate theory with student needs authentically, such as subject matter, learning strategies, learning techniques, and technology that specifically helps learning (Pozzi, 2011). Referring to the curriculum design the teacher's role in this case is a facilitator in learning by preparing facilities and infrastructure in learning. The position of students here as subjects in learning for self-actualization through student activities mastering Indonesian concepts (Macalister and Nation, 2020). So far, students are still used as objects in learning, resulting in great students in theory, but ambiguous in practice. It is not surprising that learning Indonesia in senior high schools from junior high schools is suitable for students to be able to have a dialogue with Indonesia learning (Atmazaki, 2013). In fact, there are still many students who understand vocabulary and tenses, but in conversation students are still difficult in articulation (Agustina, 2019).

This is due to the incompatibility of theoretical and practical learning materials. Aspects that are emphasized in the curriculum are discovery-based problem solving (Bacipan, 2017). That is, the presentation of learning materials prepared by the teacher is affiliated with problems in students' daily lives. Discovery here does not mean activities that find new things in the presentation of the material, but students can practice the values learned in the life they live (Schrader, 2015). The activities carried out by students started from investigation, problem formulation, collecting data, discussing with the teacher, concluding data, presenting, and presenting the results of the report (Syarifuddin et al, 2022). At the time of presentation, students must prepare interesting presentation materials so that other students can understand and discuss well with their fellow students.

The results of the researcher's initial investigation of Indonesia teachers in senior high schools in Padang Lawas Utara, Sumatra Utara, Indonesia found that the problem of the English learning situation seemed very rigid, less flexible, less democratic, and teachers tended to be more dominant (Pohan, 2019). Teachers teach more to pursue targets in the orientation of final exam scores, and still use the monotonous conventional model. This is motivated by the concept of development in teaching is not accompanied by a lack of understanding of teachers in designing Indonesian learning (Atmazaki, 2013).

In line with the results of Younis' research (2017), it was found that the post-test scores and attitudes of students who were taught using scientific inquiry simulations were found to be higher than the control group taught by scientific inquiry activities. Educational simulations can help in the learning process of scientific inquiry because they allow students to observe scientific phenomena, write hypotheses to test them, conduct virtual experiments, measure variables, and construct results (Diaz, 2017).

Collaboration of learning models with technology in this pandemic era is very necessary to form integrated learning. The function of the teacher here is to facilitate students in learning by providing services for students difficulties in achieving the learning objectives set (Garrison, 2017). Teachers can carry out practical investigations of student problems explored in student writing. Students are invited to work in groups to practice discussion so that students interact and collaborate with each other to improve higher order thinking skills (Lowry et al., 2006).

Learning English should be inquiry based to train students to think critically to find something new in learning. Students are directly involved in finding new concepts after the learning process is complete. The material presented can be in the form of text or context by bringing students to analyze a situation or event to take the substance of the event (Athuman, 2017). Inquiry-based learning allows students to learn content and processes at the same time

(Woolfolk, 2011). Students' pedagogic skills can improve if students are associated with learning that leads to creative thinking (Thomson, 2017). Students are invited to always ask questions about an object to develop an effective scientific inquiry (Haynes & Berry, 2014).

Learning with this inquiry learning model facilitates students to develop a culture of discovery on aspects of reality based on relevant theories. Theory becomes the basis for finding something new in terms of material relations with reality in society (Torres 2010). Direct inquiry learning will provide a more meaningful experience to students because students are faced with actual and accountable events. Phenomena that arise around the student's environment will help students understand the concepts and theories they have learned, so that students can make decisions to find the same phenomenon in different places (Susanti et al, 2017).

Dostal (2015) stated that inquiry based learning activities carried out by teachers with students focused on developing knowledge, skills, and attitudes based on students' knowledge of the scope of students' reality and learning themselves to explore. The inquiry learning model gives students the opportunity to understand the process of scientific inquiry. Students carry out self-development through investigations with careful planning to analyze to present the investigated results. This requires students' ability to analyze the content studied according to a conceptual framework based on basic theories. The link between what is learned and implementation leads to a meaning that can be applied in real life (Athuman, 2017).

Inquiry based learning is certainly heterogeneous for students, not homogeneous (Lederman and Lederman, 2012). That is, the methodology in the discovery must be uniform in a complex manner so that the findings do not differ. The student framework in discovery requires a systematic and measurable pattern so that the complexity of the problem can be predicted. This is where the teacher becomes the authority to decide whether or not students are capable of making that discovery (Chu, 2011). Therefore, a standard of scientific discovery is needed in the field of learning English. From that standard, concrete examples of inquiry learning are described so that teachers can teach students well (Kambeyo, 2017).

In assessing the effectiveness of inquiry learning, a fundamental requirement is the meticulous design and implementation of an evaluation framework. This process, spanning from the initial design stages to the ultimate assessment, necessitates a systematic, measurable, and objective approach. The evaluation of inquiry learning initiatives demands a comprehensive and methodical methodology that allows for a rigorous examination of the learning outcomes and the overall success of the approach (Spronken & Walker, 2010). In this context, it is imperative that students are equipped with the ability to self-assess their progress and accomplishments throughout the learning process, in tandem with teacher-led assessments conducted at the conclusion of the lesson. Students should be empowered to engage in continuous self-evaluation, enabling them to monitor their own learning journey and proactively reflect on their achievements prior to teacher evaluations (Csapó & Funke (2017). By incorporating both self-assessment and teacher-led assessment into the evaluation process, a more holistic and insightful appraisal of the effectiveness of inquiry learning can be achieved, facilitating a more robust understanding of its impact on student learning outcomes.

Inquiry learning can formulate conceptions as literacy to improve students skills in understanding learning activities (Adnyana and Citrawathi, 2017). Teachers facilitate and motivate students in moving them to learn. This is different from the conventional paradigm where the role of the teacher is to supervise students in learning with fun (Athuman, 2017). Referring to the problems in this research, the solution offered is to develop an problem based inquiry Indonesian learning model. This model was first validated by experts to see content, language, presentation, and graphics. After being validated, the next step was to test it with class X high school students in Padang Lawas Utara, Sumatera Utara, Indonesia to see the practical level and effectiveness of the inquiry model to see the the difference between the

learning process using the inquiry model and the conventional model, a hypothesis test was conducted. Referring to the problems in this research, the researcher put forward the following research questions. How is the development of an inquiry-based Indonesian language learning model in high school?

## RESEARCH METHOD

This type of research is research and development, namely research that develops an inquiry based model for Indonesian learning for high school students. This study uses the Plomp (2013) development model which has a three step process, requirements analysis, prototype design and assessment phase. Referring to the development model used, this research develops the product through the Plomp stages which are validated by experts in their respective fields based on the supporting theory (Pohan, 2019). The development procedure carried out follows the Plomp stage, preliminary research, prototype stage, and evaluation stage. The preliminary research stage is carried out by analyzing student needs, analyzing curriculum, analyzing literature. The prototype stage was carried out by designing Inquiry-based English learning model books, guide books for teachers, and student books.

After the three books were designed, the researcher gave them to the experts to validate the three books with the aim of seeing the lack of content, language, presentation, and graphic aspects of the three books. All experts were given the freedom to assess and validate the three books according to their scientific fields. After being validated, the researcher tried out the three books in a limited and large class. Here, the researcher provides guidance to several selected teachers to apply the inquiry-based Indonesian learning model book to limited and large classes. This is where the practicality test data and the effectiveness test of the model developed are obtained according to the data and facts in the field.

### Data Collection Instrument

The research conducted for this study encompassed the collection of both qualitative and quantitative data through a combination of research instruments, including questionnaires, observation sheets, and interview guidelines. The data collection process involved a comprehensive approach, combining qualitative and quantitative techniques (Creswell, 2014). Qualitative data, which comprises descriptive information, was harnessed to provide an insightful depiction of the developmental outcomes achieved throughout the study. This qualitative data served as the basis for drawing conclusions and evaluating the effectiveness of the learning implementation, as documented in the learning implementation observation sheet. Through this qualitative lens, the research sought to capture the nuances and intricacies of the learning process, enabling a richer and more comprehensive assessment of the implemented strategies. In contrast, quantitative data, characterized by numerical values, was derived from arithmetic calculations based on the assessments conducted by validators and the responses garnered from student questionnaires.

These quantitative data points were instrumental in quantifying various aspects of the research, providing a quantitative foundation upon which to analyze and interpret the research findings (Kurniasari, 2020). The specific research instruments employed in this data collection process encompassed the learning instrument validation sheet, the learning implementation observation instrument, and the student response instrument. By combining both qualitative and quantitative data collection methods, this research endeavored to offer a comprehensive and multi-faceted analysis of the learning implementation, ensuring a robust foundation for the subsequent analysis and conclusions drawn from the research findings. This multifaceted approach to data collection enhances the depth and breadth of insights derived from the study, enriching the overall quality of the research outcomes. The The blueprint of the research instruments used in this research are presented in Table 1.

Table 1  
The Research Instruments Grids

| No  | Fase                        | Research Focus              | Instrument   |
|-----|-----------------------------|-----------------------------|--|
| (1) | (2)                         | (3)                         | (4)  |
| 1   | <i>Preliminary Research</i> | Needs and Context Analysis  | Indonesian pretest questions                                     |
|     |                             |                             | Interview format with teachers                                   |
|     |                             |                             | Interview format with students                                   |
| 2   | <i>Prototyping phase</i>    | Validity                    | Validation sheet for the inquiry learning model book             |
|     |                             |                             | Teacher handbook validation sheet and validation sheet           |
|     |                             |                             | Book validation sheets for students and validation sheets        |
| 3   | <i>Assessment phase</i>     | Praktikality and Efectivity | Implementation observation sheet and validation sheet            |
|     |                             |                             | Teacher handbook practicality questionnaire and validation sheet |
|     |                             |                             | Student book practicality questionnaire and validation sheet     |

### Research Participants

The inquiry learning model in Indonesian learning was tested in two classes, namely the experimental class and the control class. The sample in this study was 90 student consisting of two classes, namely the experimental class with 45 students and the control class with 45 students. The experimental class consisted of 45 students there are 30 female students and 15 male students as the object of research using the inquiry learning model and the control class with 45 students there are 40 female students and 5 male students using the conventional learning model. Both classes were tested for homogeneity and normality test saw homogeneous and normal data to be tested with parametric statistics by SPSS.

In the context of this research, a multifaceted approach to data analysis was employed, encompassing both qualitative and quantitative data, with the overarching goal of developing an inquiry learning model. The data analysis process was systematically structured and included three key components: (1) an assessment of the validity of the inquiry learning model, (2) an evaluation of the practicality of the inquiry learning model, and (3) an analysis of the effectiveness of the inquiry learning model. The assessment of the inquiry learning model's validity was conducted through a rigorous validation process, involving the participation of five validators. These validators played a pivotal role in scrutinizing and providing feedback on the model, thereby contributing to the validation process. Their input and expert assessments formed a critical part of the data analysis, shedding light on the model's validity and its alignment with established educational standards and principles. This multifaceted data analysis approach allowed for a comprehensive examination of the inquiry learning model from multiple perspectives, ensuring its robustness and suitability for educational applications. By integrating both qualitative and quantitative data analyses and incorporating the expertise of validators, the research sought to not only validate the model but also provide valuable insights into its practicality and effectiveness, ultimately contributing to the enhancement of inquiry-based learning methodologies.

Data analysis of the practicality of the inquiry learning model was obtained from the results of implementing the learning process, the results of assessing the practicality of the teacher's handbook, and the practicality of the student's book. The implementation of the learning process is observed by observers. Observers fill in the learning observation sheet using the inquiry learning model. Data analysis of the effectiveness of the inquiry learning model. To test the effectiveness of the model developed, a quasi-experimental study was used, namely the One Shot Case Study with a pretest and posttest design. Analysis of student activity data was obtained from observations of student learning activities which were collected and then tabulated.

## RESEARCH FINDINGS AND DISCUSSION

### Research Findings

Based on the research questions that were stated in the introduction, what are the results of developing an inquiry-based Indonesian language learning model. Researchers tested the product/model book on experimental class students first and then looked at the learning results of control class students. The results of the student questionnaire analysis are obtained as follows.

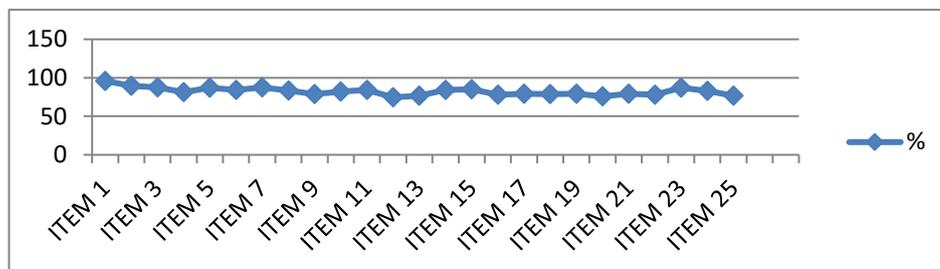


Figure 1. Student Questionnaire Results

From the graph above, it can be explained that the questionnaire consists of 25 statement items. The statement consists of 19 positive items and 6 negative items. Student answers are scored according to a Likert scale and processed to produce a certain percentage and interpreted. For the first statement, the percentage of students' answers to the questionnaire was 95.9%. This means that the inquiry learning model can improve English learning. The normality test in this study used the Kolmogorov-Smirnov result follows. Data from the normality test of the trial class in the table above are 0.097. Because  $0.097 > 0.05$ , it is accepted. The decision taken is the trial class sample data is obtained data that is normal. The normality of the data can also be seen in the Q-Q Plot chart. Q-Q Plot graph in the form of left and right diagonal lines. The dots around the line are the data.

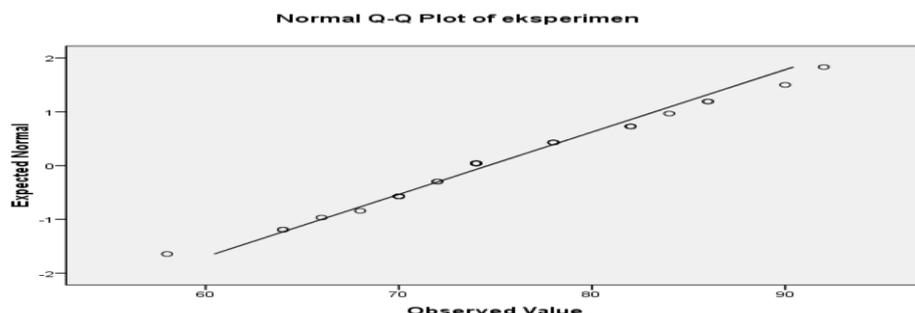


Figure 2. Trial Class Normality Test

The results of the trial class Q-Q Plot data test show that the data points are around the line. Thus it can be concluded that the trial class data is normal. Therefore, the normality test for the control class showed the number of 0.112. Because  $0.112 > 0.05$  it is accepted. The decision taken is the control class sample data is normal.

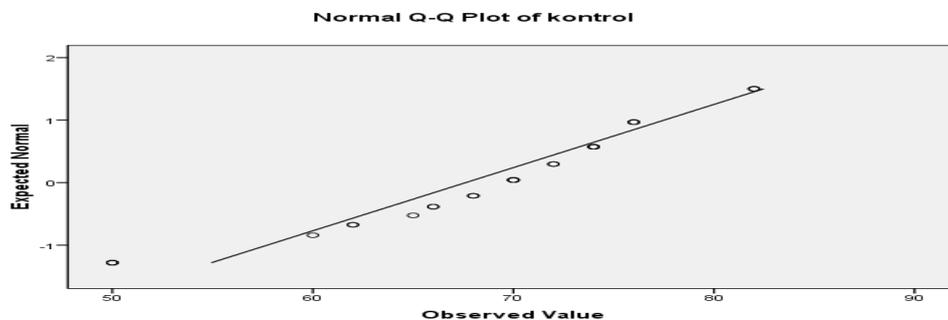


Figure 3. Control Class Normality Test

The results of the control class Q-Q Plot data test results show that the data points are around the line. Thus it can be concluded that the control class data is also normal. The homogeneity test of the sample was tested using the Levene Statistic formula for the SPSS program with a significant level of 0.05. The terms of variance testing if the significant value (probability)  $> 0.05$  then the data has the same or homogeneous variance. If the significant value (probability)  $< 0.05$ , then the data has a different variance or is not homogeneous. The results of the analysis can be seen in the table below.

Table 2  
Data Homogeneity Test

| Data                   | df | Sig.  | $\alpha$ | Information |
|------------------------|----|-------|----------|-------------|
| Experiment and Control | 58 | 0.524 | 0.05     | Homogen     |

From the analysis results contained in the Levene test column, the significant probability value is 0.524. Based on the above criteria, this value is compared with a significant value of 0.05. Because  $0.524 > 0.05$ , the data in this study have the same or homogeneous variance. Hypothesis testing was carried out with parametric t-test statistics. The following results.

Table 3  
Result Parametric Test

| T test results |    |         |              |
|----------------|----|---------|--------------|
| T count        | Df | T table | Information  |
| 2,740          | 58 | 2,00    | reject $H_0$ |

From the table above, there are t-count results of 2.740. The value of t count  $>$  than t table is 2.00. In accordance with the criteria for testing the hypothesis, namely if t count  $<$  t table then it is accepted and rejected, on the contrary if t arithmetic  $>$  t table then it is rejected and accepted. From the results of the t test above, it can be seen that the value of t count  $>$  from t table. Thus, it is rejected and accepted. Hypothesis testing can also be proven by a two-party test curve. In the two-party test, the provision applies that if the t-count price is in the

acceptance area or lies between the table prices, it is accepted and rejected. Vice versa if the t count is outside the table price then it is rejected and accepted. The value of t count is absolute, so it is not seen as positive (+) or negative (-). Based on the results of hypothesis testing, it shows that the proposed research hypothesis is acceptable. That is, there is a significant difference in learning using the inquiry model compared to conventional learning.

## DISCUSSION

Based on the research results obtained, the researcher describes the process of developing an inquiry learning model in Indonesian learning as follows. First, refer to the data analysis of the needs of Indonesian teachers in high schools in Padang Lawas Utara, Sumatra Utara, Indonesia show the hope of an inquiry learning model book in learning Indonesian. They are aware that the learning model used in learning Indonesia is still using the conventional learning model. This resulted in student learning outcomes only cognitive aspects, while the aspects of attitude and psychomotor neglected.

As research conducted by Williams and Ivey (2010) which state that a teacher should be able to compile learning materials in line with students' learning abilities. The position of the teacher as a facilitator directs students to achieve the learning objectives that have been set in the syllabus. In addition, the teacher also acts as a companion in student difficulties in learning by providing learning services according to the specified time. The goal is that students feel comfortable in the learning process so that students can focus on learning. Based on the analysis of teacher needs, the researcher designed the composition of the inquiry learning model book that was aligned with concepts and terminology. The inquiry learning model book is integrated with the realities of students and teachers who teach. The design of the model book was modified with a general systematic model. The components of the model book can be formulated according to the philosophy that influences it and the relevant theories. The inquiry learning model book is referred to from the constructivism philosophy which constructs students' new knowledge.

Second, the data obtained from the inquiry learning model validity test was obtained from the accumulation of entries from experts who assessed the inquiry learning model book and the results were categorized as very valid. The value obtained from the validation results is seen from the aspect of content, presentation, graphics. That is, the inquiry learning model is very suitable and according to the needs of students. In line with the opinion of Byrne and Cheek (2016) that validation is used to see how much validity, practicality, and effectiveness a learning model is applied. From this opinion, this inquiry learning model can be used after being assessed by experts in their respective fields.

In addition to the validity test and the results obtained, this inquiry learning model was tested to obtain the practicality of the model. From the results of trials conducted in a limited and large class, the results obtained that this model is practical. That is, this model is easy to use by teachers and students according to the level of student knowledge. In line with the opinion of Gall et al (2003) which states that a quality model is obtained by continuous trials and improvements are made to deficiencies and input from experts as well as teachers and students. Therefore, the inquiry learning model has been tested on a limited and large scale. This model will also be tested several times to see the shortcomings so that it can be improved so that this model is more perfect.

The practicality of the inquiry learning model can also be seen from the teacher's interest in model books by giving constructive suggestions. In this model book, teachers are invited to be creative by using various teaching techniques. The teacher is not monotonous in teaching, but gives freedom to students to study seriously and independently. From that freedom, students are better able to collaborate with fellow students in producing good writings. In this regard, this inquiry learning model can be used as an effort to improve the

ability of English teachers in shaping students' character in learning. Students are more controlled and are always noticed by the teacher from time to time. By controlling student attitudes, students will be consistent with positive attitudes in learning.

In this regard, this inquiry learning model can improve the ability of English teachers in learning English in forming problem solving skills, communication skills, integration skills. The formulation of this model book makes students more actualized according to learning achievement. In the student's book, the basic competencies achieved by students are described in detail, accompanied by tasks that will be done by students. Learning can be done anywhere and in accordance with virtual learning during this pandemi era. Students can do their own learning according to the inquiry learning steps in the model. If students have learning difficulties, students can ask questions through e-learning, google meet, and so on.

Avsec (2016) examined the effect of inquiry learning to increase scientific knowledge and problem solving skills. The research sample consisted of 59 male and female students who were given the task of finding the substance in the reading text. The results showed that the teaching method used was effective in increasing students' understanding, enriching knowledge and problem solving skills which lead to real life. The same thing Brian et al. (1994) examined a group of students who were divided into four groups using different learning methods. This study shows that the inquiry learning method is more integrated than other learning methods.

Clarified, the results of Suendarti research (2017) show that the inquiry learning model has a significant effect on increasing science learning outcomes. In other words, there are differences in science learning outcomes using the inquiry learning model by using conventional learning model. This can be seen from the average score of science learning outcomes using the discovery learning model of 78.96 while the average score of science learning outcomes using the conventional learning model is 65.75. Based on the description of the inquiry learning model development process above, it can be concluded that this inquiry learning model can measure learning outcomes, especially in the aspects of knowledge, attitudes, and skills.

This inquiry learning model focuses on a learning climate that encourages students to do learning tasks according to their abilities. Students feel freer in thinking, creating, arguing, based on authentic tasks. This is in line with the opinion of Gower (2002) which states that inquiry learning encourages students to think logically, analytically, and empirically from experience that helps students' mindsets in thinking. In addition to thinking students, students are also encouraged to be able to do assignments authentically, namely the real situation in reality described by students.

The findings of this study are the implementation of the inquiry learning model in learning Indonesian has proven to be very practical based on the level of observations on the consistency of teachers assessing from meeting to meeting. In addition, the effectiveness of the model also shows that this model is very effective, judging from the results of the teacher's questionnaire on the effectiveness of the model. The effectiveness of this inquiry learning model is measured by the level of validity, reliability, and practicality that has been proven on average to have shown very well according to the teacher.

The above findings strengthen several previous research findings, including Caswell and LaBrie (2017) have succeeded in applying the inquiry learning model to learning reading skills. Student learning outcomes increased after being carried out with authentic assessments applied by classroom teachers. If it is associated with this research, the inquiry learning model improves student learning outcomes. This integrated process has succeeded in encouraging both parties, teachers and students, to improve and increase the effectiveness of learning. Improving the quality of learning can be achieved through improving the skills of teachers in providing regular feedback that is positive, clear, specific, and constructive. In other words,

tasks based on the inquiry learning model are more effective in improving teacher skills in problem solving than conventional learning and classroom assignments.

The next finding, Kinay and Birsen (2016) who examined the impact of the inquiry learning model on teacher problem solving skills. The results of his research indicate that the inquiry learning model contributes positively to the perception of teacher skills in solving problems and acquiring problem solving skills in teacher education. The impact of the inquiry learning model on teacher problem solving skills learned in various courses for prospective teachers from various branches of education. The inquiry learning model also has a positive impact on prospective teachers' perceptions of problem-solving skills, but conventional learning does not have a significant impact.

## CONCLUSION

In light of the extensive discussion and the findings derived from this study, several noteworthy conclusions emerge. Firstly, it is evident that the inquiry learning model employed in the context of Indonesian learning commands exceptionally high validation from experts. This validation underscores the model's remarkable alignment with the learning materials and the unique characteristics of the students, signifying its capacity to harmonize these crucial elements. Moreover, the model's structure is notably lucid, rendering it accessible and applicable for both educators and students, rooted in contemporary educational theories. Secondly, this inquiry learning model, when applied to English instruction in high schools in North Sumatra, Indonesia, proves to be not only practical but also highly effective. Educators who have integrated this model into their classrooms report a seamless adaptability to the diverse learning needs of their students. Furthermore, the practicality of this model is further substantiated by the demonstrable improvement in student learning outcomes observed after its implementation, as compared to traditional instructional approaches. This empirical evidence underscores the model's efficacy in facilitating enhanced learning experiences and outcomes. In summation, these findings collectively emphasize the substantial value and applicability of the inquiry learning model in the Indonesian context, particularly in elevating English language education in North Sumatra high schools.

## ACKNOWLEDGEMENT

The author would like to thank the teachers who have participated and students as the object of this research. Hopefully the results of this research can be useful for the scientific treasures of teacher education.

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