

# The effectiveness of inquiry-based learning in improving students' learning outcomes

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## Abstract

Teacher-centered learning results in low student engagement and learning achievement. This study aims to examine the quality of the learning process and student learning outcomes through the application of inquiry-based learning. The study used a classroom action research design conducted in two cycles on seventh-grade students at a public junior high school in Southwest Sumba Regency. The number of participants involved was 15 students. Data were collected through observation of learning activities and learning outcome tests to assess changes in learning practices, student engagement, and academic achievement. The results indicate a consistent improvement in student learning activities and learning outcomes from the first cycle to the second cycle. The application of the inquiry model encourages students to be more active in exploring concepts, expressing opinions, and building understanding independently through questioning and guided discussion. Inquiry-based learning contributed positively to strengthening student-centered learning and developing critical thinking and independent learning skills. It confirms the importance of developing pedagogical strategies and improving teacher competence in implementing innovative learning.

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## 1. Introduction

Education refers to activities that are consciously directed toward developing individual abilities, both as individuals and as part of a broader social life (Nurkholis, 2013:25). Education is defined as the transfer of knowledge and a space for interaction between educators and students that functionally takes place. Educators carry out their roles as learning guides and facilitators, while learners are positioned as active subjects who experience, interpret, and construct knowledge. This process encourages learners to develop their potential, shape their character, increase their intelligence, and foster moral attitudes and skills that are useful for personal and social life (Lede et al., 2024).

The direction and objectives of national education in Indonesia are clearly set out in Article 3 of Law Number 20 of 2003 on the National Education System. National education is aimed at developing abilities and shaping the character and civilization of a dignified nation, thereby educating the nation. This objective is realized through the development of students' potential to become individuals who believe in and fear God Almighty, have noble character, are knowledgeable, skilled, creative, independent, and able to play a role as democratic and responsible citizens. Therefore, schools function as one of the strategic vehicles for enriching students' knowledge and shaping their personalities, both through the mastery of general knowledge and the instillation of religious values.

One subject that plays an important role in shaping students' character and spirituality is Catholic Religious Education and Ethics. This subject is designed to help students grow as people of faith who can

appreciate and practice their faith values in their daily lives. Catholic Religious Education and Ethics is oriented towards mastery of the material and equips students with insights, attitudes, and skills derived from the Holy Scriptures, Church tradition, official Church teachings, and personal faith experiences. Therefore, students are expected to be increasingly able to understand, appreciate, and express their faith reflectively and contextually (Bonardy & Suria, 2021). However, in practice, various problems persist. This condition also occurs at Wewewa Barat 1 Public Junior High School, especially among seventh-grade students. The learning evaluation results indicate that final-semester exam scores are relatively low. Of the 15 students who participated in the evaluation, only one achieved the Minimum Completion Criteria, with a score of 76.67, resulting in a class completion rate of only 6.66%. This finding indicates that the learning process that took place was not yet able to achieve the learning objectives optimally.

Based on an interview with one of the Catholic Religious Education teachers at Wewewa Barat 1 Public Middle School, it was revealed that the learning conditions in the seventh grade varied, with some students showing higher levels of engagement. Some students follow the lessons quite seriously, while others show low commitment to learning. This situation is inseparable from the teaching methods used, which tend to be monotonous and dominated by lectures, simple discussions, and storytelling. This situation is exacerbated by the relatively frequent absence of teachers, which means not all learning materials can be delivered appropriately. As a result, the learning atmosphere becomes less engaging, students become easily bored, and learning activity declines. The ultimate impact is seen in the low achievement of learning outcomes, with most seventh-grade students failing to meet the established Minimum Completion Criteria standard of 70.

Faced with these problems, educators are required to select and apply learning models that better suit their students' characteristics and learning objectives. One alternative is the inquiry learning model. This model places students at the center of learning through a series of activities that emphasize critical and analytical thinking skills in seeking and finding answers to the problems posed (Almulla et al., 2023; Kamal et al., 2021; Syahrial et al., 2021). The inquiry approach emphasizes the process of seeking and discovering knowledge, in which the material is not delivered directly by the teacher. However, it is achieved through students' active involvement in the learning process (Heksa, 2020:8). The teacher is positioned as a facilitator who guides students' thinking, directs the process, and models learning methods, rather than as the sole source of knowledge. The teacher provides structure, prompts questions, scaffolds, and provides feedback to make the inquiry process more meaningful and improve learning outcomes (Chen, 2021; Nguyen et al., 2024; Nzomo et al., 2023).

Various previous research findings support the application of the inquiry learning model. Several studies show that the use of the inquiry model improves student learning outcomes (Dantes, 2020; Sahir, 2019; Silaban, 2019; Simbolon, 2020; Widiary, 2020). These findings provide a strong empirical basis for further examining the effectiveness of the inquiry learning model in improving student learning outcomes, particularly in Catholic Religious Education and Ethics Education at the junior high school level.

## **2. Method**

### **2.1 Research Design and Participants**

This study uses a classroom action research design that aims to continuously improve the quality of the learning process through concrete classroom actions (Azizah, 2021; Sanjaya, 2019). The subjects in this study are seventh-grade students who are directly involved in the entire learning process. This class was chosen because it exhibits learning problems, particularly related to low learning outcomes. This condition requires systematic and planned pedagogical intervention. Students were placed as the main subjects to gain an understanding of and improve the ongoing learning process. The action research design is based on Kurt Lewin's cycle model, which consists of four main stages: planning, action, observation, and reflection (Lewin, 1946). These four stages form a cyclical, repetitive process that leads to gradual improvements in learning through reflections on the previous cycle.

### **2.2 Instruments and Data Collection**

Data collection uses observation sheets and learning outcome tests. Observation sheets are used to record the learning process in the classroom, particularly student activities during the implementation of the inquiry learning model. The observation process provides an overview of student engagement, the dynamics of learning interactions, and student responses to the actions taken. Meanwhile, test sheets are used to assess student learning outcomes after implementing learning actions. These tests serve as an

evaluation tool to assess changes and improvements in student learning outcomes resulting from the application of the inquiry learning model. Test result data is used as a basis for the reflection stage to assess the effectiveness of the actions carried out.

The research was conducted in accordance with the stages of classroom action research. In the planning stage, the researcher developed a learning design by applying the inquiry learning model, including preparing learning tools and research instruments. This stage was designed based on the identified learning problems. The action stage was the stage of implementing the learning in the classroom, as per the plan developed. The inquiry learning model was applied directly in the teaching and learning process. Furthermore, the observation stage was conducted concurrently with the action, during which the researcher recorded various aspects of the learning process using observation sheets. The final stage was reflection, analyzing the results of observations and tests to assess the action's success and formulate the necessary improvements for the next cycle.

### 2.3 Data Analysis

The data from the observations were analyzed descriptively to describe the learning process and dynamics during the implementation of the inquiry learning model (Subhaktiyasa et al. 2025). Meanwhile, the test data were analyzed by comparing students' learning outcomes against predetermined mastery criteria. This analysis aims to assess improvements in student learning outcomes as an indicator of the effectiveness of the actions taken. The results of the data analysis serve as a basis for assessing learning success and for designing more appropriate improvement measures.

## 3. Results and Discussion

### 3.1 Results

#### Teacher Activities

Observations of teacher activities during the learning process showed a significant increase between the first and second cycles. In cycle I, the percentage of teacher activities implemented was recorded at 84.78%, while in cycle II it increased to 94.56%. This achievement shows that teacher activities have exceeded the set success indicators. This increase indicates an improvement in the quality of learning management by teachers who also act as researchers. In the second cycle, teachers appeared to be more focused on applying the steps of the inquiry learning model, more consistent in guiding students, and better at systematically managing the learning process. A comparison of the results of observations of teacher activities in cycle I and cycle II is presented in Figure 1.

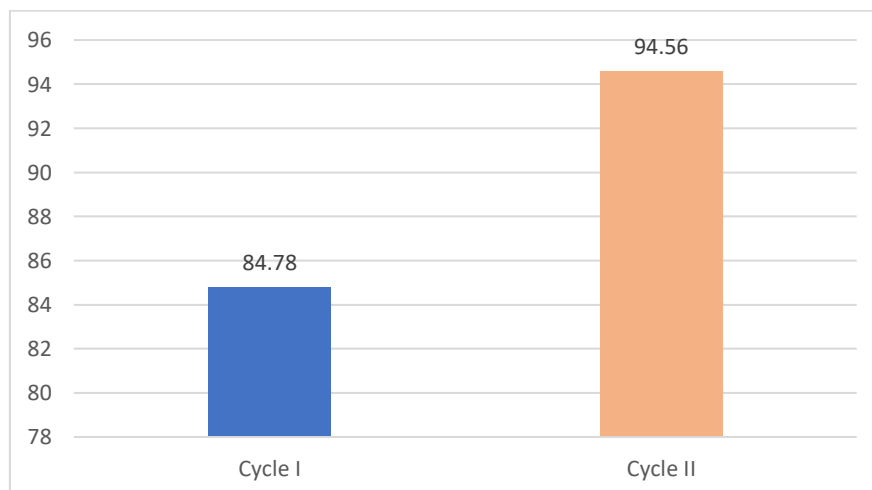


Figure 1. Comparison of teacher activities in cycles I and II

#### Student Learning Activities

Observations of the learning activities of seventh-grade students at Wewewa Barat 1 Public Junior High School also showed progress. In cycle I, the percentage of student learning activities was 56.9%, indicating that student engagement was still relatively low. However, in cycle II, this percentage increased to 82%, so that overall student learning activities could be categorized as very good. This increase reflects changes in student learning behavior during the learning process. Students became more involved in

discussion activities, more courageous in expressing their opinions, and showed greater interest in the learning material. A comparison of student learning activities between cycle I and cycle II is shown in Figure 2.

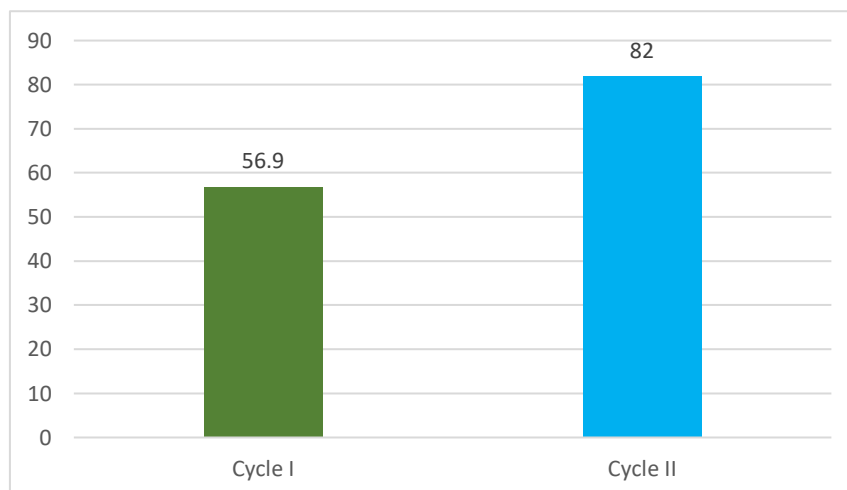


Figure 2. Comparison of student learning activities in cycle I and II

### Student Learning Outcomes

Student learning outcomes were evaluated through written tests at the end of each learning cycle. In cycle I, the analysis showed that only 5 students (33.33%) achieved the Minimum Passing Grade (KKM), while 10 students (66.66%) did not meet the criteria. The average class mastery in cycle I was recorded at 65.33%, indicating that student learning outcomes had not yet reached classical mastery. In contrast, there was a very noticeable improvement in cycle II. A total of 14 students (93.33%) achieved mastery, and only 1 student (6.66%) did not. The average class mastery increased to 89.3%, approaching the established classical mastery criteria of 90%. A comparison of student learning outcomes in cycle I and cycle II is presented in Figure 3. Overall, the results of the actions in cycle II indicate that learning has reached an excellent level.

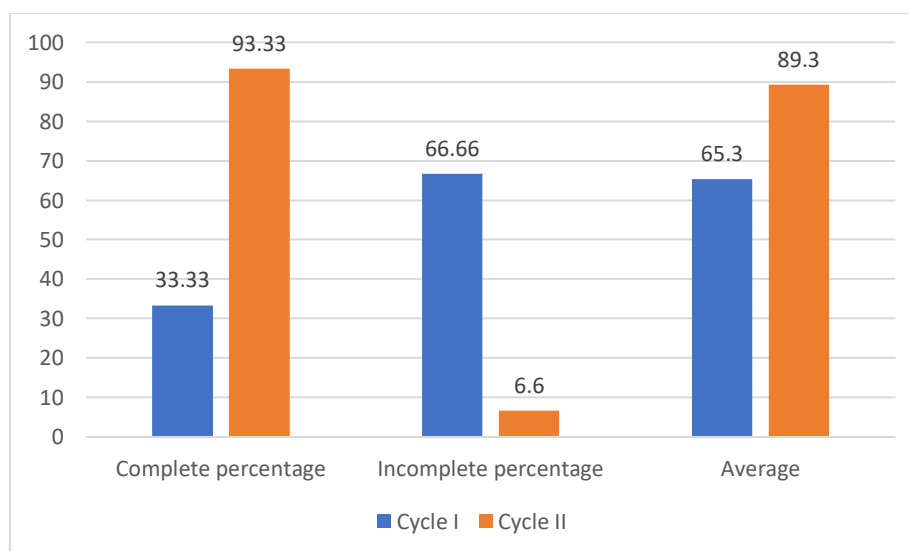


Figure 3. Comparison of student learning outcomes in cycle I and II

### 3.2 Discussion

The study's results indicate that applying the inquiry learning model can improve the quality of the learning process and outcomes in Catholic Religious Education and Ethics. The increase in teacher activity in the second cycle reflects the increasingly optimal role of teachers as learning facilitators. Teachers no

longer focus on delivering material in a one-way manner but are more involved in guiding students to discover knowledge through questioning, discussion, and reflection on learning outcomes.

The increase in student learning activities also reinforces the finding that the inquiry model encourages more active student involvement. Nguyen et al. (2024), Sutiani et al. (2021), and Xie et al. (2022) reported that students can effectively follow the stages of inquiry learning, especially when there is intense interaction between teachers and students through question-and-answer sessions, discussions, and joint evaluations. This interaction appears to have developed further in the second cycle, when students began to become accustomed to a learning pattern that demanded activity and independence.

The increase in student learning completeness in cycle II shows that the inquiry learning model is effective in helping students understand the learning material. This finding supports the findings of Aco 2021, Chen 2021, Kaçar et al. 2021, and Sutiani et al. 2021, which confirm that the use of the inquiry model can increase students' interest and attention in learning, thereby positively impacting learning outcomes. The inquiry model in Catholic Religious Education and Ethics learning helps students more deeply understand the uniqueness of God's image, as they are directly involved in exploring and discussing its meaning.

There was a change in student learning behavior during the implementation of the inquiry learning model. Students became more enthusiastic, asked more questions, and began proposing hypotheses and expressing their opinions. This condition aligns with Sani's (2013:95) view that inquiry learning provides opportunities for students to construct their own knowledge through the exploration of ideas, the discussion of hypotheses, the making of predictions, and the revision of their understanding based on learning experiences. However, applying the inquiry learning model also presents several challenges. In the early stages, students still experience confusion with group division and are not yet fully accustomed to independent problem-solving. Students who are more capable in group discussions tend to dominate, while those who appear passive tend to remain passive. This condition requires the teacher to provide clarification so that students can draw the correct conclusions. Guided inquiry learning requires more complex classroom management, careful planning, and more time, mainly when students are not yet accustomed to this learning approach (Chengere et al., 2025; Mamun et al., 2023).

#### **4. Conclusion**

This study shows that the application of inquiry-based learning improves the quality of the learning process and outcomes in Catholic Religious Education and Ethics in Grade VII at Wewewa Barat 1 Public Junior High School. The findings indicate that inquiry-based learning improves teachers' teaching practices and increases students' active involvement in the learning process. This model encourages learning in a more dialogical, reflective, and student-centered manner, aligning with the demands of 21st-century learning. The results of the study confirm that inquiry-based learning strengthens innovative pedagogical practices, particularly in fostering learning values, character, and understanding of faith. The application of the inquiry model provides students with space to think critically, express opinions, and build understanding independently through interaction and discussion. These findings are relevant to decision-making aimed at improving the quality of learning, encouraging active participation, and independent learning among students. However, this study has limitations that warrant attention. The research was conducted within specific classes and schools with limited subject offerings, using a classroom action research design to improve local learning practices. Further research is needed to examine the application of inquiry-based learning across diverse educational settings, at different educational levels, and with other methodological approaches. Further studies could also explore the long-term impact of the inquiry model on students' affective aspects, character, and value formation.

#### **Conflict of Interest**

The authors declare no conflict of interest.

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