

## Developing students' character of discipline, hard work, and cooperation through inquiry learning

**Dra Astalini\*** , Universitas Jambi, Jambi, Indonesia,

**Drs Darmaji**, Universitas Jambi, Jambi, Indonesia,

**Dwi Agus Kurniawan**, Universitas Jambi, Jambi, Indonesia,

**Ahmad Mansur Nawahdani**, Universitas Jambi, Department of Teaching and Education, Jambi, Indonesia,

**Miftahul Zannah Azzahra**, Universitas Jambi, , Jambi, Indonesia

**Sabila Eka Septi** , Universitas Jambi, Jambi, Indonesia

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### Abstract

This study aimed to determine the effect of the application of the inquiry learning model on the character of discipline, the character of hard work, and the character of students' cooperation in learning physics. This study used a mixed type of research with an explanatory design. The sampling technique used in this research is purposive sampling. The study used associative quantitative data analysis techniques with the help of software then followed by interviews that strengthen the results of quantitative data. Based on the results of the Regression test of the inquiry model on the character of discipline, hard work, and cooperation of students in physics subjects, it was found that there was an influence of the inquiry model on the character of discipline, hard work, and cooperation of students in physics subjects in high schools in Jambi and middle schools.

**Keywords:** Character discipline; cooperation character; hard work character; inquiry; physics

## 1. Introduction

Character education is a conscious and systematic human effort to educate and empower students to build their personalities so that they can become individuals who are beneficial to themselves and the environment (Freire, 2021; Husni, 2020). Character education is an educational system that aims to instill certain values in students who have the knowledge, awareness, or willingness and behavior to apply these values (Kristjánsson, 2021; Paul et al., 2020; Villacís et al., 2023). The function of character education is to develop the core potential of students to become human beings who develop kindness, are kind, and behave well (Bamberger, 2021; Waters et al., 2020). Character education is very closely related to character development, the purpose of which is to continuously develop and train one's abilities to improve oneself and lead to a better life (Sarkadi, Casmana, et al., 2022).

Discipline is one of the good habits in people's lifestyles in general (Hoon, 2018; Naum, 2018; Qin et al., 2022). Not only that, some people believe that discipline is one of the keys to success in learning and other things. For that, everyone needs to know all the information about the discipline to apply it in everyday life. The application of discipline has various purposes, one of which is to bring up people who are good at controlling themselves (Hidayati et al., 2020; Lustick, 2017; Fiala, 2024). This can prevent them from acting unplanned and out of control when people rely on rules and try to obey them (Asih & Sunarso, 2020). It can also reduce the social risks that can occur among members of the community (Qin et al., 2022). Therefore, the discipline also aims to create an orderly and peaceful society (Ciampa & Wolfe 2021).

Understanding the character of hard work does not seem to mean hard work, hard work, lack of rest, and extreme fatigue, so it cannot be taken literally (Singh, 2019; Wadu et al., 2021). The importance of hard work is related to a burning spirit as well as the willingness and ability to achieve personal goals that are considered something beyond our capabilities (Howells & Bald, 2022; Saragih et al., 2019). This limit becomes a measure of whether we can work hard on ourselves (Damanik & Sinaga, 2021). For example, I want to be prosperous, but I have feelings of laziness that I can't control, but of course, I can't. Therefore, it is necessary to apply the character of hard work so that students can stop being lazy and have fun later.

Cooperation is an action or attitude taken by several people to achieve one goal or complete one job (Akhtar et al., 2017; Atmadja et al., 2021). Cooperation can also be interpreted as an activity of students who actively work together to achieve certain goals. Cooperation in the positive realm is a value that must be instilled in students to be able to collaborate with any group (Aghajani & Adloo, 2018; Castañer & Oliveira, 2020). So, the learning process that has the potential to be the value of cooperation for students becomes an effort that should be taught in an educational environment. The application of these efforts will occur through a learning process designed and applied by educators in the learning process through an appropriate learning model, namely the inquiry learning model in physics subjects.

The learning model is a framework that provides a systematic explanation for carrying out learning and helps students learn certain things they want to achieve (Ouahi et al., 2022; Sihotang & Hariani, 2021). In other words, the learning model is a general description but still has a specific purpose (Rachmadtullah et al., 2019). The inquiry-based learning model is a process of obtaining and obtaining information through observation and/or experimentation and using critical thinking and logistical skills to find answers or problem-solving regarding questions or problem formulation (Mahanal et al., 2019; Supena et al., 2021). The inquiry learning model in physics subjects needs to be applied as a guide in the design to the implementation of effective learning.

### 1.1 Related research

Previous research that examined the character of student discipline found that the results showed that it could shape students into more focused individuals and make them more understanding of the rules that must be obeyed. If you cannot carry out disciplinary activities, then it is one of the various obstacles. Student creativity and innovation are also beneficial in maintaining the school environment, supported by

extracurricular, co-curricular, and extracurricular activities (Naum, 2018; Quinlan, 2016). However, previous studies have not analyzed the three characteristics of high school students who are influenced by the inquiry learning model in physics subjects. So that this research is an update of previous research by analyzing the effect of the learning model on the character of discipline, the character of hard work, and character cooperation in physics subjects in high school.

This research is in line with previous research where the influence of learning models on student character development is very diverse. Strengthening of several characters is achieved very effectively through positive character-building activities in students and the results of previous research also show that the learning model greatly influences students' character (Amri et al., 2020; Peterson, 2020). So, the current research is an update of previous studies by measuring the effect of the learning model on the character of discipline, the character of hard work, and the character of cooperation in physics learning in secondary schools.

### **1.3 Purpose of the study**

The urgency in this study is to improve the way teachers teach by using the inquiry learning model so that the character of students in learning physics can be better. Novelty in this study is the application of an inquiry learning model that is useful for improving character in the physics learning process. Where this study connects the character of discipline, the character of hard work, and the character of cooperation in learning physics.

This study aims to determine the effect of the application of the inquiry learning model on the character of discipline, the character of hard work, and the character of students' cooperation in learning physics. With these objectives, the researchers formulated research questions, namely:

1. What are the characteristics of discipline, character of hard work, and character of cooperation using the inquiry learning model in physics subject?
2. **How does the application of the inquiry learning model affect the character of discipline, the character of hard work, and the character of cooperation in physics learning?**

## **2. Methods and Materials**

This study uses a mixed type of research with an explanatory design. According to Boivin, (2021), mixed methods research is a combination of qualitative and quantitative research designs (Boivin, 2021). In this study, the amount of data was obtained from distributing questionnaires to students while the data was obtained from interviews with teachers.

### **2.1 Participants**

The population used in this study is a high school in the cities of Jambi and Batanghari. The sample used in this study was 100 students consisting of 50 high school students in the city of Jambi and 50 high school students in Batanghari. The sampling technique used in this research is purposive sampling. The purposive sampling technique is a sampling technique based on certain criteria (Creswell, 2013). The sample criteria used in this study were students who were taking physics lessons and schools that rarely researched the influence of the inquiry model on the character of cooperation, hard work, and discipline in learning physics.

### **2.2 Data collection instruments**

The instruments used in this study were statements given to students and interviews with the teacher. Questionnaire statements and interviews in this study were prepared by the researcher himself. The statement in this study contained 25 statements about the character of cooperation, hard work, and discipline in a valid inquiry learning model using a Likert scale. The Likert scale consists of 4 points with a value of strongly agree 4, the value of agree 3, the value of disagree 2, and the value of strongly disagree 1.

### **2.3 Data analysis technique**

This study uses associative quantitative data analysis techniques with the help of software (SPSS 26), to look for inferential statistics, namely the influence of the inquiry model on the character of discipline, hard work, and student cooperation in physics subjects and descriptive statistics to see the mean value of each school. Regression analysis aims to test whether there is an influence between variables (Sumarno et al., 2022). Then it is continued with questions to strengthen the results of quantitative data. In this study, before testing the hypothesis, the assumptions were first tested in the form of normality, linearity, and homogeneity tests.

## 2.4 Research procedure

Before researching, the researcher first conducted research in the form of questionnaires and interviews that would be used. Next, the researcher submitted an application for permission to conduct research at the target school, after obtaining permission the researcher distributed questionnaires to students and conducted interviews with teachers at the intended school. The results of the distribution of the questionnaire will then be tested to obtain quantitative data and interviews to obtain conclusions as a result of qualitative data. After getting the results of quantitative and qualitative data, then connecting the two to get an overall conclusion.

## 2.5 Ethical consideration

The study complied with all relevant ethical standards that apply to research involving human subjects. Both the in-person and online interviews were voluntary for the students.

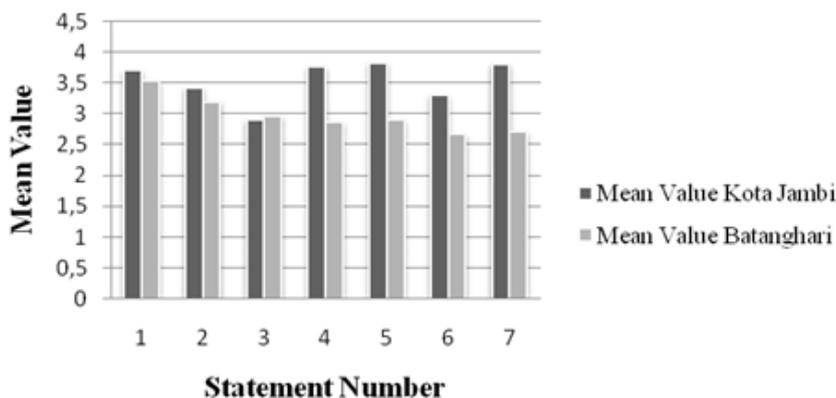
## 3. Results

In the following, descriptive statistical results are presented in the form of the mean value of the variables of discipline, hard work, and student cooperation in physics subjects at high schools in Jambi and Batanghari high schools.

The description of the character of student discipline in physics subjects is as follows (Figure 1):

**Figure 1**

*The mean value of student discipline character in physics subjects*



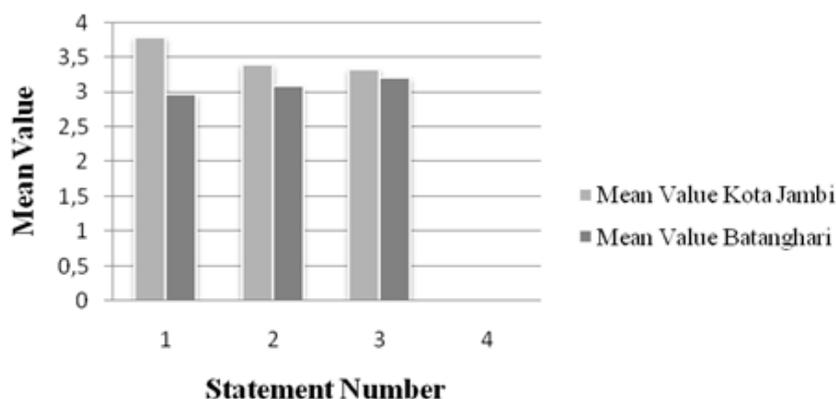
Based on the diagram describing the character of students' discipline in physics subjects at high schools in Jambi and Batanghari high schools, it can be seen that in statement 1 the mean value in high schools in Jambi is 3.7 while in high schools it is 3.52. In statement 2, the mean value at the high school in Jambi is 3.42 while at Batanghari High School it is 3.19. In statement 3, the mean value in high school in Jambi is 2.92 while in Batanghari high school it is 2.96. In statement 4, the mean value in high school in Jambi is 3.76 while in Batanghari high school it is 2.86. In statement 5 the mean value in high school in Jambi is 3.82 while in Batanghari high school it is 2.9. In statement 6, the mean value in high school in Jambi is 3.3, while in Batanghari High School it is 2.66. In statement 7 the mean value in high school in Jambi is 3.8 while in

Batanghari High School it is 2.7.

The description of the character of students' hard work in physics subjects is as follows (Figure 2):

**Figure 2**

*The mean value of students' hardworking character in physics subjects*

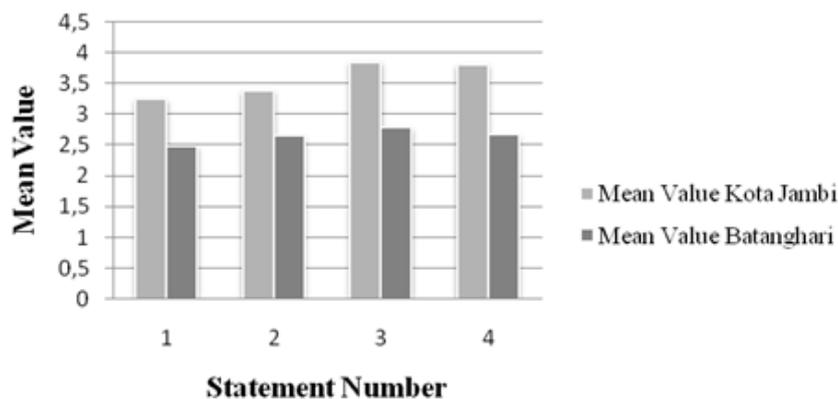


Based on the diagram describing the character of students' hard work in physics subjects at high schools in Jambi and Batanghari high schools, it can be seen that in statement 1 the mean value in high schools in Jambi is 3.78 while in high schools it is 2.96. In statement 2, the mean value in high school in Jambi is 3.38 while in Batanghari high school it is 3.08. In statement 3, the mean value in high school in Jambi is 3.32 while in Batanghari high school it is 3.2.

The description of the character of student cooperation in physics subjects is as follows:

**Figure 3**

*The mean value of student collaborative character in physics subjects*



Based on the diagram describing the character of student cooperation in physics subjects at SMA Jambi and SMAN Batanghari, it can be seen that in statement 1 the average value of SMA in Jambi is 3.24 while in SMA it is 2.48. In statement 2, the average score at SMA in Jambi is 3.38 while at SMA Batanghari is 2.64. In statement 3, the average value of SMA in Jambi is 3.84 while in SMA Batanghari is 2.78. In statement 4, the average score at SMA in Jambi is 3.8 while at SMA Batanghari is 2.66.

In testing this hypothesis, the test performed is a regression test. The regression test aims to determine the effect of the inquiry model on the character of discipline, hard work, and cooperation of students in SMA in SMA Jambi and SMA Batanghari.

The results of the regression test of the inquiry model with the character of discipline, hard work, and student cooperation in high school physics subjects at Jambi State High School and Batanghari High School are

as follows (Table 1):

**Table 1**

*Description of the Inquiry Model Regression Test on the Character of Discipline, Hard Work, and Student Cooperation in High School Physics Subjects at Jambi State High School and Batanghari High School*

School	Model	Character	Sig.
Jambi City High School	Inquiry Learning Model	Discipline	0.025
		Hard work	0.037
		Cooperation	0.023
Batanghari City High School	Inquiry Learning Model	Discipline	0.039
		Hard work	0.032
		Cooperation	0.024

Based on Table 1 Regression test of the inquiry model with the character of discipline, hard work, and student cooperation on physics subjects at Jambi City Senior High School and Batanghari Senior High School obtained a significance value  $< 0.05$ , it can be said that there is an influence of the inquiry model with character discipline, hard work, and cooperation of students in physics subjects at Jambi City High School and Batanghari High School.

### 3.1 Results of interviews with teachers

Interviews were conducted by researchers on physics subject teachers at high schools in Jambi and Batanghari high schools. The results of interviews with physics subject teachers can be seen in the following table 2:

**Table 2**

*Results of interviews with physics subject teachers*

No.	Question	Interview result
1	The effectiveness of using the inquiry learning model in the classroom	Learning with the inquiry model in the classroom is effective because it is guided directly by the teacher who teaches in the class. Students are also enthusiastic about participating in the learning process with the inquiry model.
2	Character discipline, hard work, and cooperation of students in physical subjects when participating in classroom learning with the inquiry model	The character of students' discipline in the inquiry learning model will be obtained when completing the assigned tasks on time. The character of hard work and cooperation is obtained when the task completion process is carried out openly.
3	The effect of the inquiry model on the character of students' discipline, hard work, and cooperation in physics subjects	There is a good influence between the inquiry learning model and the character of discipline, hard work, and student cooperation. with inquiry-based learning, students will work on the use of time in completing the given task, besides that students can work hard and complete the given task.

## 4. Discussion

Character formation in Indonesia needs serious attention because of the influence of the globalization era (Marini et al., 2018). The teacher is the keyword to realize character education. Teachers as people who are trusted and imitated by students must provide examples of strong character. This will be a strong basis for a teacher to shape the character of his students. Building character through physics education means

integrating character education into physics lessons.

The character of students' discipline in physics subjects in high school has different results. From the test results with the average value that has been obtained, the disciplined character of high school students in Jambi City is superior to the disciplined character of students in Batanghari High School. Strengthening the character of students' discipline in learning through the example of the teacher and starting with the teacher first (Baehaqi & Murdiono, 2020).

The character of students' hard work in physics subjects in high school has different results. From the test results with the average value that has been obtained, the character of the hard work of students in high school in Jambi is superior to the character of hard work of students in Batanghari High School. The character of student cooperation in physics subjects in high school has different results. From the test results with the average value that has been obtained, the cooperative character of students in high school in Jambi City is superior to the cooperative character of students in Batanghari High School.

The current learning method or learning model can be used as an effort to support student success in learning. One of the learning models that can be used in the classroom learning process is the inquiry learning model. The inquiry learning model can develop intellectual abilities as part of students' mental processes (Setyawan et al., 2020). The inquiry learning model applied by the teacher in the classroom affects the student's character. The characters in question are the character of discipline, hard work, and cooperation of students in physics subjects at high schools in Jambi and Batanghari high schools. This is evidenced by the test results in Table 1, namely the results of the regression test with a significance value of less than 0.05.

Based on interviews conducted with subject teachers, it was found that the use of the inquiry learning model in the classroom was effective and students were also enthusiastic about participating in the learning process. The inquiry model can foster the character of student discipline, work, and cooperation which can be seen when students are on time in completing assignments from the teacher, besides that students will also work hard and study hard to get answers and complete assignments given by the teacher. In this way, the inquiry learning model affects the character of students' discipline, hard work, and cooperation. According to Kadek Suartama et al., (2020), an inquiry learning strategy is needed to overcome the weaknesses of students' abilities in using their thinking skills in solving problems and working on their initiative (Kadek Suartama et al., 2020).

Instilling a disciplined character first starts in the family, namely the parents, and then in the school environment, namely the teacher (O'Byrne et al., 2022). The long-term impact when someone has a disciplined character will make him a person who obeys the rules and is more focused. Students need to have a disciplined character so that they live in an orderly manner (Lubis & Wangid, 2019). The implications of this research are in the form of evaluation materials for teachers of the physics learning process that is carried out using the inquiry learning model. The model of applying inquiry learning is expected to be able to build the character of discipline, hard work, and student cooperation.

## 5. Conclusion

Based on the regression test of the inquiry model on the character of discipline, hard work, and cooperation of students in physics learning in high schools in Jambi, it can be said that there is an influence between the learning model and the character of discipline, hard work, and student cooperation. Where the influence leads to a positive thing.

The limitation of this research is that it only discusses 3-character indicators, namely discipline, cooperation, and hard work. Therefore, the researcher recommends that teachers be able to apply the learning process using the inquiry learning model. So that with the application of the inquiry learning model, students can play an active role and participate in the learning process, especially in learning physics. Students who play an active role in the learning process are expected to hone the character of discipline, hard work, and cooperation. Researchers recommend research that can create a learning atmosphere that is not

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monotonous, one way is by applying the inquiry learning model.

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