



Literature Review: Action and Reaction of the Inquiry Learning Model on Students' Attitudes and Characters Against Physics Learning

Astalini^(✉), Darmaji, Dwi Agus Kurniawan, Sabila Eka Septi, Ahmad Mansur Nawahdani, and Miftahul Zannah Azzahra

Universitas Jambi, Jambi, Indonesia
astalinizakir@unja.ac.id

Abstract. This study aims to determine the need for a modification of the action reaction model of inquiry learning as a form of improving students' attitudes and character towards learning physics. In this study, the researcher used literature study research with qualitative descriptive research methods through literature studies that examined the implementation of action-reaction inquiry learning models in an effort to improve student attitudes. This literature study research is sourced from scientific articles, journals, and research documents relevant to this research. Some of the criteria in the search for articles are about the inquiry learning model, physics learning, student characteristics, attitudes and character of students. The literature study was carried out by tracing the publications of articles between the years 2012–2022 indexed by sinta or scopus. Then perform an analysis of several articles and relevant documents obtained. Next, draw conclusions and evaluate previous research on the implementation of the action-reaction model of inquiry learning. The results of this study indicate that the study of literature regarding the implementation of action and reaction in the inquiry learning model has not been fully implemented optimally, because learning activities are still teacher-centered. Whereas the 2013 curriculum revision of the implementation of learning should be student-centered in order to create dynamic communication. So we need a modification of the reaction of the inquiry learning model as a form of improving the attitudes and character of students towards learning physics. The successful application of the reaction reaction model of inquiry learning requires the role of students and students. It is hoped that future researchers who want to measure the attitudes and character of students towards learning physics should modify the learning model with different elements to determine the effectiveness of the learning model in improving attitudes and students towards learning physics.

Keywords: Action Reaction · Learning Model · Attitude · Character

1 Introduction

Education is a tiered process and an effort to approach the perfection of science. Education is a process that is carried out continuously to get a provision in the future [1, 2]. One of the main goals of education is to develop potential and better educate individuals [3, 4]. Education is related to the learning process carried out by educators and students [5, 6]. One of the learning processes related to natural phenomena and phenomena in everyday life is physics learning.

Physics learning is learning science that studies objects and their movements and their benefits for humans [7, 8]. Learning physics is a theory that describes various natural phenomena and finds the relationship between the facts. The purpose of learning physics is to master concepts and principles and have the skills to develop knowledge and self-confidence as a provision to continue education at a higher level and develop science and technology [9, 10]. Physics learning can be reviewed through activities such as experiences, observations and experiments based on the attitudes and character of students.

Based on research by [11] the attitudes and character of the participants are indicators in determining the success of students in participating in the physical learning process. So, to determine the success of student learning can be viewed from the attitudes and character of students. Attitude is the tendency of a person's behavior when studying academic matters. Character is the individual aspects or qualities of students consisting of interests, attitudes, learning motivation, learning styles, thinking skills, and initial abilities [12]. The attitude and character of students can be improved properly if the selection of learning models is successful in accordance with the teaching and learning process in the classroom.

The learning model is a framework used to carry out learning that is systematically arranged to achieve learning objectives involving syntax guidelines, social systems, reaction principles and support systems [13]. One of the learning models is the inquiry learning model. But in the inquiry learning model there are still shortcomings, namely only focusing on the cognitive domain that prioritizes knowledge [14]. The implementation of reaction reactions in problem solving based learning includes the roles and relationships of students with students in detail at each stage of learning. However, the reaction actions that have been implemented have not accommodated the improvement of attitudes and characters contained in physics learning.

One of the learning models is reaction action. In this context, the reaction reaction describes the power of the students, the interaction between the staff of the students, and the expected target [15]. The principle contained in the pattern of reaction interactions is the interaction carried out by students and educators for the success of the learning process. Therefore, the essence of action and reaction in the inquiry learning model is how educators make students active in interacting with educators.

Selection of the learning model in inquiry Based on the results of research from (Suryanti et al., 2019) stated that the inquiry learning model is suitable to be used in changing the activities and attitudes of students. The learning model in the inquiry is chosen for a learning pattern that is student-centered and leads to active learning, innovative, creative, fun, meaningful and productive in order to balance the role of

students. One of the efforts to balance the role of student and student staff and create dynamic communication in the learning process can be through reactions.

The success of the learning process in schools cannot be separated from the ability and creativity of students in modifying learning models that are student-centered, and oriented to active student involvement [16]. In addition, one of the efforts to deal with the differences in the characteristics of students requires a modification of the action-reaction model of inquiry learning that is adapted to the learning environment and learning objectives. Thus, researchers are interested in studying the Learning “Implementation of Action Reaction Inquiry Model on Students’ Attitudes and Characters towards Physics Learning”. This study aims to determine the need for a modification of the action reaction model of inquiry learning as a form of improving students’ attitudes and character towards learning physics.

2 Method

This research is a literature study research with qualitative research methods through a literature study that examines the implementation of learning reaction actions in queries in an effort to improve students’ attitudes. This literature study research is sourced from scientific articles, journals, and research documents relevant to this research. The focus of this research is the implementation of the action-reaction model of inquiry learning. Some of the criteria in the search for articles are about the inquiry learning model, physics learning, student characteristics, attitudes and character of students. The literature study was carried out by tracing the publications of articles between the years 2012–2022 indexed by sinta or scopus. Then perform an analysis of several articles and relevant documents obtained. Next, draw conclusions and evaluate previous research on the implementation of the action-reaction model of inquiry learning.

3 Results and Discussion

In the learning and learning process, an educator consciously or unconsciously will create his own space during the process [17]. Students in the learning process require high concentration, application, and acceptance of information. Therefore, independent learning and conducive interaction between students and educators need to be realized, so that students feel comfortable and study with high concentration. Independent learning is not only for concentration but also makes students able to solve their own problems. Because basically a lesson does not always have to educate but can also be searched for by yourself based on the material provided by educators and student learning in capturing the material being taught.

The inquiry learning model is a learning model that requires students to carry out the process of finding knowledge independently through investigation, search, exploration and directing students to conduct experiments or research to solve something or find out a knowledge material being studied. The essence of the inquiry learning model is for students to think scientifically and critically, so that students will be more active in identifying problems, processing, and formulating the best solutions in solving problems [18]. Through the learning model in the query, students find solutions to the problems

given by the students actively, logistically, and creatively by following the specified steps including clarification, ideas, evaluation and selection, implementation. According to [19] the characteristics of the inquiry learning model are:

1. The strategy in the questionnaire on student activities is maximally to find and find, meaning that the approach in the inquiry places students as learning subjects.
2. All activities carried out by students are directed to find and find out for themselves from something in question, so that it is hoped that it can foster an attitude of confidence that is in the approach to the inquiry. The staff is placed not as a source of learning, but as a facilitator and motivator of participant learning.
3. The purpose of using inquiry learning strategies is to develop intellectual abilities as part of the mental process.

The inquiry learning model can provide students with various ways to solve their own problems through their findings, where students will be able to analyze the material in depth and help students process the information that has been obtained. The inquiry learning model provides problems that exist in real life as a context for students to practice intelligent and critical thinking, and can learn to understand a problem and analyze how to solve the problem appropriately [20]. Furthermore, the existence of these various problems will make students try to connect the knowledge that has been faced.

The inquiry learning model strives for students to be able to think logically, rationally, critically, carefully, honestly and effectively. In addition, they are able to solve problems by understanding the problem, making plans for solving the problem, solving the problem by re-checking the steps that can be taken. [21] Through the application of the learning model in the inquiry, students will participate in learning activities, think systematically, be able to design an invention, think and be realistic, effective well, and able and develop ideas. Therefore, the inquiry learning model is an alternative to innovative learning models, because of the learning that makes students independent to increase knowledge, eliminate doubts, or solve problems.

The inquiry learning model has several advantages, namely: There is an increase in memory and understanding of learning material by students, because the knowledge or information they get is based on their authentic learning experience when they (students) find their own answers to their own questions when learning process. A deep understanding by students of the learning material also makes it easier for them to apply the application to new situations. The learning model in the inquiry improves students' skills in solving problems in new and different situations that they may encounter in the future [22]. As a result of inquiry, students become learning and accustomed to dealing with new problems encountered. They also have special skills to solve these problems.

The weaknesses of the inquiry learning model are: Problems with the time allocated. If students and students are not so used to implementing the inquiry learning model, then there is a high possibility that time cannot be managed properly. Searching and gathering information can take a long time or even much longer than if the students directly inform students about the information. God to the students to immediately notify will cause the inquiry learning model whose implementation does not work well. It takes patience for students to refrain from telling directly [23]. Given the opportunity and more time to learn independently and manage the learning process, so that students get used to it and student time will be a big problem in the implementation of this learning model.

Action is a description of the role and relationship between educators and students built in the inquiry learning model. Reaction describes a hierarchical relationship between students and students, where both have different roles. Action reactions in the learning model can be observed when there is interaction between students and students. The interaction describes the communication pattern used during learning. Generally, social interactions that occur reciprocally between student staff, as well as students and students [24]. Implementation of the action reaction model of inquiry learning with learning to students. The role of students is an activity that describes how to train to treat and respond to students. Educators act as mentors, facilitators, motivators and mediators.

As mentors, educators as a place to ask questions when students experience difficulties, and direct students to be able to independently overcome these problems. As facilitators and motivators, educators have a role as providers of information related to learning resources, literature, and so on in order to be able to prepare sufficient material and initial knowledge [25] Then, motivate and encourage students to be enthusiastic in learning activities. Mediator, the student staff acts as an intermediary if there are differences of opinion in the discussion so as to gain new understanding. Factors that influence the academic success of students are attitudes and character.

A person's attitude is always related to the interaction between two or more people, the person's attitude is visible [26]. Attitudes and characters are expressions or actions of a person in responding to something in learning. There are subjects and objects in attitudes and characters. Attitudes and character develop in learning which is expressed in the same way and is done repeatedly. Students who have low attitudes and characters tend to be less interested in thinking-oriented activities presented by educators to solve problems, so that students are not communicative in the learning process in class. Thus, learning activities with a scientific approach based on investigation and self-discovery are suitable to be used to improve the attitudes and character of students.

4 Conclusion

Based on the literature study regarding the implementation of reactions, it can be said that the reaction action in the learning model was not fully implemented optimally, because learning is always teacher-centered. Whereas the 2013 curriculum revision of the implementation of learning should be student-centered in order to create dynamic communication. The successful application of the reaction reaction model of inquiry learning requires the role of students and students. In addition, the reactions applied have not accommodated the improvement of students' attitudes and character in learning physics at school.

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