



# Development of Affective Assessment Instruments (Attitude Toward Physics) with Peer and Self Assessment Techniques to Grow Attitudes of Responsibility and Cooperation of High School Students

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**Abstract:** This study aims to develop an assessment instrument (Attitude Toward Physics) with Peer and Self Assessment Techniques to Grow an Attitude of Responsibility and Student Cooperation towards learning physics. The research method used is development research. The research design is in the form of a 4-D model developed by Thiagarajan (1994) with stages that include define, design, develop, and dissemination. Test the validity of the instrument using content validation carried out by the validator. Analysis of the reliability of the instrument using the Alpha Cronbach formula. The validation results from the validator state that the affective assessment instrument (Attitude Toward Physics) with Peer and Self Assessment Techniques to Grow Students' Attitudes of Responsibility and Cooperation towards learning physics is feasible to use.

**Keywords:** Affective Assessment Instrument; Attitude Toward Physics; Peer and Self-Assessment

## Introduction

Learning is a process of developing knowledge, skills, or attitudes of each student. With the learning carried out, students can increase their knowledge both in terms of skills and attitudes (Astalini et al., 2019). In physics learning, attitudes are needed, especially when students do practicum and discussion (Anggraeni et al., 2020). In the learning process, of course, there is an assessment. Where with these assessments can help teachers in seeing the development of students and can also make evaluations for students.

Assessment is an activity of assessing the qualitative nature of something that has been measured Erdemir (2009). Kahveci (2015), said that the aspect of attitude is part of human behavior, where attitude is something that stands out and is needed in relationships, then the aspect of attitude is considered necessary to be assessed. Affective assessment is an

assessment of the behavioral tendencies of learners as a result of education, both inside and outside the classroom.

Self-Assessment and Peer Assessment are authentic assessment techniques that can be used to measure student attitudes (Sulistiyono, 2019; A'izzah et al., 2017). Self-assessment is given to students because it is proven to be able to influence the positive nature of students in learning (Kousa et al. 2018; Nuroniyah, S. 2018; Olusola & Rotimi, 2012). Likewise, peer assessment aims to provide feedback to students so that they can improve attitudes and ways of learning (Isjoni, A. 2012; Nadrah et al. 2017). Self-assessment and peer assessment will foster an attitude of responsibility and cooperation among students. According to Alimen (2009), states "Cooperation is an activity in groups to work on or complete a task together", cooperation usually occurs through interaction between group members and having the same goals to be achieved together. Whereas

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Sawyer (2017), states that the attitude of learning responsibility includes the attitude or behavior of a person to carry out his duties and obligations, which should be done, towards himself and others and the surrounding environment. From the statements of experts, it is shown the importance of assessment techniques in fostering responsibility and cooperation (Kurnia, 2018). Where with cooperation, students can interact well with each other in completing the tasks in the given learning, as well as the responsibility of making students more responsible for what they say to peers (Barco et al., 2018).

The focus of this research is to measure how the influence of learning physics on student attitudes, both in the learning process and practicum. Based on observations at Madrasah Aliyah AL-Muhajirin Pandan in learning to prioritize character education for students. However, there is still a need for development or innovation in attitude assessment, especially in physics lessons. Attitude instruments have not been so applied, because they are still based on cognitive. There is no special instrument for attitude assessment. For this reason, the researchers developed a self-assessment and peer assessment instrument that was appropriate, reliable and effective in measuring students' attitudes towards learning physics.

## Method

Research on the development of affective assessment was carried out at Madrasah Aliyah AL-Muhajirin Pandan with research subjects in class X and XI MIA as many as 15 students in class X MIA and 16 in class XI MIA. The research method used is research with a 4-D model developed by Slavin (2011), with stages including define, design, develop, and destination.

Data collection techniques in the form of documentation, observation and questionnaires. Documentation and observations were carried out to obtain the initial data of the study. Questionnaires were used to obtain the final data of the study. The analysis used is in the form of instrument validity test, reliability test, and effectiveness. The validity test carried out is in the form of content validation by the instrument validator. And reliability using Cronbach's Alpha formula.

In making self and peer assessment questionnaires, it is necessary to have a questionnaire grid. The questionnaire consists of 9 questions related to self-assessment and 13 questions related to peer assessment as shown in Table 1.

**Table 1.** Student self and peer assessment questionnaires

Aspect	Indicator	Number of questions	No item
Self-Assessment (Responsibility)	Understanding the rights and obligations of self as a student	4	1,2,3,4
	Doing tasks without being asked either at home, school, or the surrounding environment	2	5,6
	Take an active role in learning	3	7,8,9
Peer Assessment (Cooperation)	Willing to accept responsibility	6	1,2,3,4,5,6
	Easy to help friends	2	7,8
	Respect other people's opinion	3	9,10,11
	Appreciate the work of others	2	12,13

## Result and Discussion

In analyzing the data a feasibility analysis of the developed instrument. The assessment instrument that has been made is validated by the validator to obtain its feasibility before being tested. Validation was given by three teachers who were continuing their master's degree in physics education. The validation results from the three validators stated that the assessment instrument was valid, so it was feasible to use.

The reliability of the instrument is said to be reliable if the instrument is steady (fixed) in accordance with reality even though the measurements are taken at different times. The results of the reliability of the assessment instrument are 0.62 means that the affective assessment instrument developed is reliable. The trials conducted on students of class X MIA obtained an average of 77% on the responsibility aspect of students and on class XI MIA an average of 80% was obtained. It

can be seen that in class X, students judge themselves to be responsible for the learning process, however. With the assessment of responsibility can make students better in the learning process, because they know that their attitude is assessed. In class XI students are better because they understand the assessment of their attitudes in learning. According to the expert's statement, namely the importance in fostering responsibility and cooperation so that they interact well with each other in completing tasks in learning.

Based on observations in the learning of students who were initially in class X, they were still lacking in the learning process in the form of cooperation and responsibility. Many students still often rely on their friends who are considered smart to complete group assignments and practicums. But after they know that their attitude is also assessed, the students slowly change their habits.

## Conclusion

The conclusion obtained is that the development of affective assessment instruments with self and peer assessment techniques is declared feasible and can be used to foster an attitude of responsibility and cooperation of students in physics lessons. The reliable assessment instrument is 0.62 so that the instrument can be used to foster an attitude of responsibility and cooperation of students. And the assessment development instrument is effective in fostering an attitude of responsibility and cooperation of students.

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