

Cognitive Assessment of Grade 6 Students of Slarang 02 Kesugihan Elementary School on the Material of Diseases Attacking the Movement System with the Ana Test Application

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ARTICLE INFO

Article history:

DOI:

[10.30595/pssh.v25i.1770](https://doi.org/10.30595/pssh.v25i.1770)

Submitted:

July 22, 2025

Accepted:

August 11, 2025

Published:

August 24, 2025

Keywords:

Cognitive Assessment; Ana Test; Learning Evaluation

ABSTRACT

This study aims to evaluate the cognitive assessment of grade VI students at Slarang 02 Kesugihan Elementary School on the material of Diseases that Attack the Movement System using the Ana Test application. Cognitive assessment is an important part of the learning process to determine the level of understanding and mastery of students' concepts of the material being taught. The research method used is quantitative descriptive with 20 grade VI students as research subjects. The instrument used was multiple-choice questions that were developed and analyzed through the Ana Test application to obtain information about the validity, reliability, level of difficulty, discriminatory power, and effectiveness of the question distractors. The results of the analysis showed that most of the questions were in the valid and reliable categories, with a moderate level of difficulty and quite good discriminatory power. These findings indicate that the Ana Test application can be used effectively as a tool in analyzing the quality of questions and assessing student learning outcomes, especially in the material of the movement system. This study recommends the use of technology in learning assessment as an effort to improve the quality of learning at the elementary school level.

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1. INTRODUCTION

1.1 Background

The implementation of the 2013 Curriculum is able to shape students to have high-level thinking skills according to the demands of the times. High-level thinking skills or abbreviated as HOTS are abilities applied in the revised 2013 Curriculum (Prima Kurniawati & Rahmantika Hadi, 2021). One effort to develop students' high-level thinking skills is to use the right assessment so that students can get used to working on high-level thinking skills (Dewi et al., 2020). In an era of increasingly advanced learning, teachers need to fully understand and present assessment concepts that can optimize classroom learning.

Poerwanti's (2012) research found that teachers did not understand and did not implement authentic assessments correctly (Puteri et al., 2023). In developing attitude assessment in elementary schools, a teacher needs to implement effective strategies. Teachers can use various observation techniques routinely to observe student behavior in the context of the classroom and activities outside the classroom (Hasanah & Aminatuz

Zuhriyah, 2023). Authentic assessment is an assessment that uses certain techniques by giving students assignments to empower all students' abilities in the learning process (Wulandari et al., 2018).

Evaluating knowledge and knowing student competencies is the goal of authentic assessment. This assessment can be used to measure all aspects of student abilities, both cognitive, affective, and psychomotor aspects (Novalina Indriyani, 2023). Cognitive assessment is an important tool for evaluating cognitive function in adults and children (Ruffini et al., 2022). The process of learning activities in schools is very important for students' needs.

Elementary school is the first step for students to carry out formal learning (Gunantara et al., 2014). This formal learning is presented well and more creatively in accordance with the development of the times (Prima Kurniawati & Rahmantika Hadi, 2021). One of the learning contents contained in thematic learning in elementary schools is Natural Sciences (IPA). According to Susanto (2013) IPA is one of the main subjects in the education curriculum in Indonesia, including at the elementary school level (Putu et al., 2020).

1.2 Formulation of The Problem

Cognitive assessment is an important part of the learning evaluation process, but there are still variations in its application in the classroom. This mini-research aims to examine the indicators used by teachers in assessing students' cognitive aspects and the extent to which the assessment is able to reflect the expected learning outcomes. In addition, this study also focuses on identifying the obstacles faced by educators in implementing cognitive assessments, both in terms of technical aspects, time, or understanding of the assessment instruments. No less important, students' perceptions of cognitive assessments applied in the classroom will also be analyzed to find out how the assessment is viewed from the students' perspective, whether they feel that they are being assessed fairly, relevantly, and motivating for their learning.

1.3 Research Purpose

This study aims to assess the cognitive level of grade 6 students of Slarang 02 Kesugihan Elementary School in understanding science material, especially the topic "Diseases that Attack the Movement System", by using the Ana Test application as an evaluation tool. In addition, it is also to determine the level of achievement of students' cognitive abilities based on the results of the assessment carried out in the learning process. The mini research study entitled "Cognitive Assessment of Grade 6 Students of Slarang 02 Kesugihan Elementary School on the Material of Diseases Attacking the Movement System with the Ana Test Application" has several important benefits.

Practically, this study can help teachers in obtaining a more accurate picture of the level of cognitive understanding of students on the material of the movement system, especially diseases that attack the human movement system. By utilizing the Ana Test application, the evaluation process will be more efficient and objective, thus facilitating the analysis of student learning outcomes. Academically, this mini research study can be a reference for the development of technology-based assessment methods that are in accordance with the learning needs in elementary schools. In addition, the results of the study can also be used as evaluation material to improve learning strategies and develop more innovative evaluation media in the future

2. LITERATURE REVIEW

2.1 Results of Previous Research

The development of 21st century skills in students will not be successful if the assessment used is not appropriate. Students will not get the right feedback to improve their learning. Learning innovations that are carried out will not be successful if the assessment used is not appropriate. In accordance with today's global challenges, this study develops an ICT-based assessment that not only measures students' cognitive skills, but also develops them. The assessment model was developed by utilizing an Edmodo-based website application.

These assessment features can be accessed via smartphones (Wulan et al., 2018) In the advancement of technology, the test tools used to measure the cognitive aspects of students are trying to use effective and efficient tools with an IT base, the use of applications that support learning is Quizizz (Ahmad, 2021). The Quizizz game is an edu game application developed in the world of education that can be used by teachers so that it can be applied to students who are packaged as attractively as possible (Sri Wahyuni, 2023).

2.2 Hypothesis

The hypothesis in this study is based on the assumption that the use of the Ana Test application can provide an objective and measurable picture of the cognitive level of grade 6 students of Slarang 02 Kesugihan Elementary School on the material of diseases that attack the motor system. By using a descriptive quantitative method, this study tests the assumption that most students can achieve a good level of cognitive understanding after learning, as reflected in the results of the assessment using the Ana Test application. Therefore, the

hypothesis proposed is that through the use of the Ana Test application, it can show valid and accountable cognitive assessments of students from moderate to high.

2.3 Mini Research Framework

The mini research study aims to evaluate the cognitive abilities of 6th grade students of Slarang 02 Kesugihan Elementary School in understanding the material on diseases that attack the motor system using the Ana Test application. Cognitive assessment is focused on the knowledge aspect which includes understanding concepts, recognizing symptoms, and efforts to prevent diseases in the motor system.

The method used in the study is a descriptive quantitative method, with a data collection approach through objective tests developed in digital form using the Ana Test application. The test results are analyzed to determine the level of mastery of the material by students, as well as to identify patterns of errors that often occur. The study is expected to provide a real picture of the level of students' understanding of the material on the motor system and become a basis for developing more effective learning strategies in the future.

3. RESEARCH METHODS

3.1 Research Design

This study uses a descriptive quantitative approach with an evaluative approach to the results of multiple-choice tests developed and processed by teachers through the Ana Test application. The purpose of this study was to determine the results of students' cognitive assessments using the Ana Test application on the material "Diseases that Attack the Movement System" in grade 6 of Slarang 02 Kesugihan Elementary School.

3.2 Participant

The study was conducted at Slarang 02 Kesugihan Elementary School, Cilacap Regency, Central Java. The study was conducted in the even semester of the 2024/2025 school year, namely in April 2025. The population in this study were all sixth grade students of Slarang 02 Elementary School, totaling 20 students, consisting of 4 female students and 16 male students. Because the number of students was less than 100, this study used a total sample (total sampling), namely all sixth grade students were used as samples.

Table 1. Participant Demographics:

No	Gender	Amount	Percentage
1	Male	16 student	80 %
2	Female	4 student	20 %

3.3 Instrument

For cognitive tests, researchers compiled 10 HOTS-based multiple-choice questions according to the material "Diseases that Attack the Movement System". The questions were then uploaded to the Ana Test application. Students worked on the questions using Android devices online. The test results were immediately summarized by the Ana Test system in the form of scores and item analysis. Documentation was carried out to collect data on school profiles, student names, learning devices, and screenshots of test results from Ana Test. Then interviews were conducted with fellow teachers to determine perceptions of the use of Ana Test in learning evaluation.

The instrument in this study was cognitive test questions based on Ana Test. The question grid was arranged based on the KD (Basic Competency) indicators from the Independent Curriculum/Education Unit, emphasizing cognitive levels C1–C6. For the distribution of scores by analyzing the distribution of student scores based on categories (low, medium, high). Item analysis used the Ana Test application feature when looking at the validity, level of difficulty, and distinguishing power of the questions. Interpretation of the results by drawing conclusions based on quantitative data to describe the level of mastery of the material in students.

4. RESULTS AND DISCUSSIONS

In this mini research study, the researcher aims to assess the cognitive level of grade 6 students of Slarang 02 Kesugihan Elementary School in understanding science material, especially the topic "Diseases that Attack the Muscular System", by using the Ana Test application as an evaluation tool. The use of the Ana Test application in student assessment shows a number of significant advantages, especially in measuring higher order thinking skills (HOTS). The results of the study showed that the Ana Test application is not only able to present cognitively challenging questions, but also allows for the calculation of students' average scores automatically and accurately.

This makes it easier for educators to analyze learning outcomes quantitatively. In addition, the reliability of the assessment produced through Ana Test is relatively high, meaning that the consistency of the test results is very good and reliable. The features in this application support an objective and efficient

evaluation process, thus strengthening its role as a modern evaluation tool in the world of education. The Ana Test application has proven to be an innovative solution in supporting the learning process that emphasizes the development of students' critical and analytical thinking skills. To better understand the significance of the results of this mini-research, a comparison with previous research can be used as a reference.

Previous research conducted by (Puteri et al., 2023) also examined the use of the Ana Test application for the reliability of the use of the Ana Test application. The results of the study showed that empirical validity was carried out to determine the level of reliability of the assessment instrument developed. Empirical validity was obtained from the results of the analysis of question items using ANATES version 4.09. An assessment instrument is said to be valid if it has empirical validity that is in accordance with experience. Based on the analysis of the questions carried out, it can be said that this high-level thinking ability assessment instrument is valid based on its empirical validity (Dewi et al., 2020).

5. CONCLUSIONS

The Ana Test application is a very useful tool in analyzing the results of quantitative learning evaluations. Based on data obtained through the Ana Test application, it is known that the average student score is 80 with a standard deviation of 1.78, which indicates that the spread of scores is relatively small and the majority of students have achievements close to the average. The correlation coefficient of 0.42 indicates a moderate relationship between the two variables analyzed, namely between test results and other factors such as student attendance or activity.

Meanwhile, the test reliability of 0.59 indicates that the test has moderate consistency in measuring student competency, but there is still room for improvement so that the test results are more stable and reliable. With the statistical features it has, Ana Test helps educators or researchers conduct objective and comprehensive evaluations of the quality of instruments and learning outcomes.

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