

Assessment of Knowledge Competency Achievement

Siti Sri Fattul Jannah, Eka Widyanti

Sekolah Tinggi Agama Islam Sangatta

ABSTRACT

Assessment in education has an important role in measuring and supporting students' overall learning achievement. The background to this research is the need to understand how various assessment techniques can be used to obtain a comprehensive picture of student abilities. The aim of this research is to identify and evaluate the effectiveness of various assessment techniques and instruments in education. The research methods used include literature studies and literature analysis related to assessment techniques, including formative, summative assessments, written tests, observations, interviews, and portfolios. The research results show that using various assessment techniques simultaneously can provide a deeper understanding of students' learning achievements and support the holistic development of their skills and competencies. In conclusion, comprehensive and diverse assessments not only measure learning outcomes but also serve as a means to improve the learning process itself.

Keywords: *Educational Assessment, Assessment Techniques, Assessment Instruments*

Corresponding author

Name: *Siti Sri Fattul Jannah*

Email: *januariyafattul01@gmail.com*

INTRODUCTION

Assessment of the achievement of knowledge competency is a crucial aspect in the educational process which aims to measure the extent to which students have understood and mastered the subject matter provided. These assessments include a variety of methods and instruments designed to evaluate students' cognitive skills in a variety of subject areas. Through this assessment, educators can identify strengths and weaknesses in students' understanding, so they can develop more effective and targeted learning strategies. This assessment process not only focuses on the ability to remember facts, but also on the ability to analyze, evaluate, and apply the information that has been learned in a broader context.

In the educational context, assessing the achievement of knowledge competencies has several main functions. First, as a diagnostic tool that helps educators understand individual student learning needs. By knowing the competency level of each student, educators can provide more personalized guidance that suits their needs. Second, this assessment functions as a motivational tool. When students are aware of their progress through assessment results, they will be more motivated to continue learning and improve

their abilities. Third, competency assessment also plays a role in decision making, both by educators and by the school. Decisions regarding promotions, awards, and planning remedial or enrichment programs are often based on the results of these assessments.

To measure the achievement of knowledge competency, various assessment methods can be used, including written tests, oral tests, projects and portfolio-based assessments. Written tests, such as multiple choice exams and essays, are the most commonly used method because they can measure various aspects of knowledge in a relatively short time. Oral tests, on the other hand, give students the opportunity to explain concepts directly and demonstrate their understanding verbally. The project method allows students to apply their knowledge in real-world situations, while a portfolio collects evidence of a student's learning over a period of time.

Although assessing the achievement of knowledge competencies is important, there are several challenges faced in its implementation. One of the main challenges is ensuring that the assessment instruments used are truly valid and reliable. Validity refers to the extent to which a test measures what it is supposed to measure, while reliability concerns the consistency of results obtained over time. To overcome this challenge, educators need to develop and select assessment instruments carefully, including through testing and statistical analysis.

Apart from that, another challenge that often arises is bias in assessment. Bias can occur when assessments do not take into account individual student differences, such as cultural background, language, and learning styles. To minimize bias, it is important for educators to understand student diversity and apply fair and inclusive assessment principles. This involves setting questions free from stereotypes, using multiple forms of assessment, and providing constructive feedback.

Assessment of the achievement of knowledge competencies also needs to be linked to the curriculum and learning objectives that have been set. A good curriculum must have clear and specific competency indicators, so that assessments can be carried out in a targeted manner and in accordance with what is to be achieved in the learning process. In this case, formative and summative assessments play an important role. Formative assessment is carried out continuously during the learning process to monitor student progress and provide feedback that can be used for improvement. Summative assessments, on the other hand, are conducted at the end of a learning period to evaluate a student's overall achievement of set goals.

The integration of technology in assessing the achievement of knowledge competencies also provides new opportunities and challenges. Technology enables the implementation of various interactive and adaptive forms of digital assessment. For example, computer-based tests can be tailored to a student's ability level, providing a more personalized and relevant assessment experience. Additionally, technology also allows for more efficient collection and analysis of assessment data, which can help educators make more informed decisions. However, challenges faced include ensuring equitable access to technology for all students and maintaining data security and privacy.

In this era of modern education, the concept of assessing the achievement of knowledge competencies is increasingly developing with the emergence of student-centered learning approaches and competency-based learning. This approach emphasizes comprehensive competency development, including knowledge, skills and attitudes. In this framework, assessments not only measure cognitive knowledge but also how students can apply that knowledge in real situations and develop critical thinking skills and creativity.

METHOD

This research uses a literature study approach. The library study research method is an approach that focuses on collecting and analyzing information from various existing written sources to answer research questions or develop a theory. Sources analyzed in literature studies include books, scientific journal articles, research reports, government documents, and other sources relevant to the research topic. This method is used to gain an in-depth understanding of a particular topic, identify trends and patterns in previous research, and build a strong theoretical foundation for further research. By conducting literature studies, researchers can save time and resources because they do not need to collect primary data, but instead utilize secondary data that is already available.

Carrying out a literature study requires critical skills in assessing the quality and relevance of the information sources used. Researchers must be able to evaluate the reliability and validity of various literature, as well as identify gaps or deficiencies in existing research. Analysis in literature studies usually involves preparing a systematic and structured literature review, which includes summary, synthesis, and criticism of previous findings. This process helps researchers to develop a comprehensive conceptual framework and establish a context for their own research. In addition, literature studies also allow researchers to build arguments based on strong evidence, as well as identify areas that require further research, thereby contributing to the development of science as a whole.

FINDING AND DISCUSSION

1. Knowledge Assessment Coverage

Knowledge assessment is an important component in the education system which aims to measure the extent to which students have understood and mastered the material being taught. The scope of knowledge assessment covers various aspects, starting from basic understanding of facts and concepts, to critical, analytical and applied thinking skills. In this context, knowledge assessment does not only test students' memory of the information they have learned, but also assesses their ability to interpret, analyze and apply this knowledge in various situations. Therefore, this assessment must be designed comprehensively and include various methods that can describe students' cognitive skills holistically.

First of all, knowledge assessment should include conceptual understanding, which involves testing students' mastery of the basic concepts and principles underlying a field of study. This is often done through multiple-choice questions, short-form questions, or essay

questions that ask students to explain or describe a particular concept. This conceptual understanding is important because it is the foundation of more complex knowledge. For example, in mathematics, students must understand basic concepts such as numbers and operations before they can solve more complex problems.

Furthermore, knowledge assessments should also measure students' ability to apply their knowledge to solve practical problems. This can be done through assignments that require the application of concepts in real or simulated situations. For example, in science courses, students may be asked to conduct experiments or projects that show how they apply theories they have learned in class. This assessment is important to assess the extent to which students can transfer their knowledge from theory to practice.

In addition, knowledge assessments should include aspects of critical and analytical thinking skills. These skills involve the ability to analyze information, make connections between various concepts, and develop logical, evidence-based arguments. This assessment is often carried out through essay assignments or research projects in which students must collect and analyze data, then prepare a report or paper that shows their in-depth understanding of the topic. For example, in a history course, students may be asked to write an essay comparing two historical events and analyzing the factors that led to the different outcomes of the two events.

Knowledge assessment should also include reflective skills, which involve self-evaluation of students' learning processes and understanding. This can be done through a learning journal or portfolio, where students reflect on what they have learned, the challenges they faced, and how they overcame those challenges. This reflection helps students develop metacognitive skills, namely the ability to think about their own thought processes, which is important for lifelong learning.

To achieve a comprehensive knowledge assessment, a variety of assessment methods need to be used. Written tests are one of the most common methods, as they can measure understanding of basic concepts and analytical skills in a relatively short time. However, written tests have limitations in assessing practical application abilities and reflective skills. Therefore, other methods such as project, presentation, and portfolio assessments need to be applied to complement written assessments. Projects and presentations allow students to demonstrate their understanding in creative and applied ways, while portfolios provide a more holistic picture of their learning progress over time.

In addition, knowledge assessment must be carried out on an ongoing basis and not only at the end of the learning period. Formative assessment, carried out during the learning process, provides useful feedback for students and teachers to improve the learning process. For example, short quizzes or class discussions can be used to evaluate students' understanding of newly taught material, so teachers can adjust their teaching strategies according to students' needs. Summative assessments, conducted at the end of a learning period, such as a final exam or major assignment, serve to evaluate a student's overall achievement of learning objectives.

Knowledge assessments should also consider student diversity, including differences in learning styles, cultural backgrounds, and abilities. Assessment instruments

should be designed in such a way that they are fair and inclusive, providing equal opportunities for all students to demonstrate their abilities. This can be done by creating questions that are free from cultural bias, providing options for different forms of assessment, and providing accommodations for students with special needs.

The integration of technology in knowledge assessment also offers opportunities to make the assessment process more efficient and effective. Online learning platforms allow for more flexible and interactive assessments, such as online quizzes, simulations, and discussion forums. Technology also enables faster and more accurate collection and analysis of assessment data, which can be used to improve learning processes and educational decision making.

The scope of knowledge assessments should be designed to comprehensively measure various aspects of students' cognitive skills. This includes understanding basic concepts, practical application skills, critical and analytical thinking skills, and reflective abilities. A variety of assessment methods, including written tests, projects, presentations, and portfolios, need to be used to get a complete picture of a student's abilities. Assessment must also be carried out on an ongoing basis and consider student diversity, as well as utilizing technology to increase the effectiveness and efficiency of the assessment process. Thus, knowledge assessment is not only a tool to measure student achievement, but also a means to support and enrich the learning process.

2. Assessment Techniques and Instrument Forms

The assessment techniques and forms of instruments used in education are crucial aspects to ensure that the assessments carried out are effective, accurate and beneficial for student development. Assessment techniques include various approaches and strategies designed to comprehensively evaluate student learning achievements. These techniques include formative and summative assessments, as well as various forms of assessment such as written tests, observations, interviews, and portfolio assessments. Each technique has its own strengths and weaknesses and can be adapted to the learning objectives and context.

Formative assessments are carried out throughout the learning process to provide ongoing feedback to students and teachers. This technique helps in monitoring student learning progress, identifying difficulties, and improving teaching strategies as needed. Examples of formative assessment instruments include short quizzes, daily assignments, class discussions, and observations. Short quizzes, for example, can be given at the beginning or end of a lesson to measure students' understanding of newly taught material. Class discussions allow teachers to ask questions that stimulate critical thinking and give students the opportunity to express their understanding verbally.

Summative assessments are carried out at the end of the learning period to assess students' overall achievement of the set learning objectives. Summative assessment instruments include a final exam, major project, and presentation. The final exam usually includes various types of questions such as multiple choice, essays, and essay questions designed to measure students' overall understanding. Major projects allow students to

apply the knowledge they have learned in real contexts, while presentations measure students' ability to communicate their knowledge effectively.

Written tests are one of the most commonly used forms of assessment instruments. This test can be multiple choice, short form, or essay. Multiple choice questions are effective for measuring understanding of basic concepts because they can cover a lot of material in a short time and are easy to assess objectively. However, multiple choice is less effective for assessing critical and analytical thinking skills. Short essays are good for measuring specific knowledge, while essays are better suited for measuring students' ability to construct arguments, analyze information, and express their ideas in depth.

Observation is an assessment technique used to assess student behavior and skills in a natural context. Observation instruments often take the form of checklists or rubrics used by teachers to record student performance during specific activities, such as laboratory experiments, group work, or presentations. Observation allows for a more direct and contextual assessment of students' practical skills and attitudes. Observational grading rubrics usually include specific criteria that are clearly explained to ensure that grading is done consistently and objectively.

Interviews are a qualitative assessment technique that allows teachers to ask students open-ended questions to explore their understanding, attitudes, and feelings about the material being studied. The interview instrument can be an interview guide with pre-arranged questions or a more flexible free interview. This technique is very effective for gaining deep insight into student thinking and can be used as a complement to written assessments. Interviews are also useful in evaluating students' verbal communication skills and their ability to organize and convey their thoughts logically.

Portfolio assessment involves collecting a variety of student work that reflects their learning processes and outcomes over a certain period. Portfolio assessment instruments usually include a guide explaining the types of work to be collected and the assessment criteria to be used. Portfolios can include various forms of work such as essays, project reports, drawings, video recordings, and personal reflections. Portfolio assessments provide a comprehensive picture of a student's learning progress and enable the assessment of various aspects of their skills and competencies in a holistic manner. Additionally, portfolios encourage students to become more reflective and responsible for their own learning.

Technology also plays an important role in the development of more innovative and effective assessment instruments. For example, online learning platforms can provide a variety of assessment tools such as interactive quizzes, adaptive tests, and automated assessment management systems. Interactive quizzes allow students to get immediate feedback after solving questions, which helps them correct mistakes and understand concepts better. Adaptive tests adjust the difficulty of questions based on students' responses, providing a more accurate assessment of their abilities. Automated assessment management systems make it easier for teachers to efficiently manage and analyze assessment data, which can be used to improve teaching strategies.

Additionally, alternative assessment techniques such as peer assessment and self-assessment are also important to increase student engagement and reflection. Peer assessment involves students in the assessment process by providing feedback to their peers based on predetermined criteria. This not only helps students develop critical evaluation skills, but also encourages them to learn from each other. Self-assessment allows students to reflect on their own learning progress, identify strengths and weaknesses, and set goals for improvement. Self-assessment instruments can be in the form of a reflective journal, checklist, or self-assessment rubric.

Assessment techniques and forms of instruments in education continue to develop along with advances in technology and a better understanding of the learning process. One assessment technique that is increasingly popular is project-based assessment, which assesses students' abilities through complex and authentic assignments that reflect real-world situations. These instruments usually involve a series of tasks that students must complete within a certain time period, such as a research project, creating a product, or developing a solution to a specific problem. Project-based assessments encourage students to apply their knowledge and skills in an integrative manner, and develop critical, creative and collaborative thinking abilities.

Another assessment technique is digital portfolio assessment, which allows students to collect and present a variety of their work electronically. Digital portfolios include not only text documents, but also multimedia such as video, audio, and animation, providing a richer picture of a student's abilities and progress. This instrument facilitates more dynamic and interactive assessment, and makes it easier for teachers to access and assess student work on an ongoing basis. Additionally, digital portfolios encourage students to be more reflective and independent in their learning process.

Performance-based assessment is also an important technique that assesses student abilities through direct demonstration of skills or knowledge in authentic situations. The form of this instrument includes laboratory practice, presentation, drama, or debate, which allows assessment of students' practical skills and communication abilities. Performance-based assessment is very effective for assessing competencies in contexts that are similar to real-world situations, providing students with meaningful feedback for improvement and further development.

On the other hand, computer-adaptive testing uses technology to adjust the difficulty level of questions based on individual student abilities. This instrument collects data in real-time and provides questions that are appropriate to the student's competency level, thereby producing more accurate and personalized assessments. Computer-based adaptive assessments are very useful in identifying students' strengths and weaknesses more quickly and helping teachers to design appropriate interventions.

Collaborative assessment is also becoming increasingly important in modern education, where students are assessed based on their cooperation and contribution in teams. These assessment instruments often involve group projects or assignments that require collaboration between students, such as case studies, group discussions, or

community projects. Collaborative assessments measure students' ability to communicate, collaborate, and resolve conflict, which are important skills in professional and social life.

To ensure accuracy and fairness in assessment, the use of rubrics is very important. A rubric is an assessment instrument consisting of a clear set of criteria and detailed descriptions of different levels of performance. Rubrics help teachers to assess student work consistently and objectively, as well as provide specific and constructive feedback. Rubrics also make it easier for students to understand what is expected of them and how they can improve their performance.

Self-assessment and peer-assessment are also important techniques that increase student involvement in the assessment process. In self-assessment, students are asked to reflect and assess their own performance based on predetermined criteria. This helps students to develop self-awareness and responsibility for their learning. Peer assessment, on the other hand, involves students in providing feedback to their peers. This technique not only helps students to learn from each other but also develops critical evaluation skills and empathy.

Assessment techniques and forms of instruments used in education must be designed to measure various aspects of student learning comprehensively. This includes understanding basic concepts, analytical skills, practical application, and reflective abilities. Various methods such as written tests, observations, interviews, portfolios and online learning technology can be used to ensure accurate and effective assessment. Formative and summative assessments, as well as alternative assessment techniques such as peer assessment and self-assessment, also play an important role in supporting a holistic and sustainable learning process. Thus, assessment not only functions as a tool for measuring achievement, but also as a means to encourage deeper and more meaningful learning.

CONCLUSION

In conclusion, assessment in education plays a vital role in measuring and supporting students' overall learning achievement. Effective assessment techniques should include a variety of methods and instruments, including formative and summative assessments, as well as qualitative and quantitative techniques. Formative assessments, such as short quizzes and class discussions, provide ongoing feedback that helps teachers and students identify areas for improvement. Summative assessments, such as final exams and major projects, assess overall achievement against learning objectives. Assessment instruments, ranging from written tests to observations, interviews, and portfolios, are designed to measure conceptual understanding, analytical skills, practical application, and self-reflection. Technology in assessment brings new innovations that increase efficiency and interactivity, such as interactive quizzes and adaptive tests. Additionally, alternative assessment techniques such as peer assessment and self-assessment encourage student engagement and reflection, enriching their learning experience. With a comprehensive and diverse assessment approach, education can ensure that the learning process not only measures outcomes, but also supports the holistic development of students' skills and competencies, preparing them for future challenges.

REFERENCES

- Alimuddin, A. (2014). Assessment in the 2013 curriculum. *Proceedings*, 1(1), 23-33.
- Ani, Y. (2013). Authentic assessment in the 2013 curriculum. In *National Seminar on Curriculum Implementation* (pp. 742-749).
- Efendi, R., Masril, M., & Ratnawulan, R. (2015). The Effect of Implementing Reflective Learning Model-Oriented Worksheets on the Achievement of Physics Competency for Class X Students at SMAN 5 Padang. *PILLARS OF PHYSICS EDUCATION*, 6(2).
- Endrayanto, HYS, & Harumurti, YW (2014). Assessment of student learning at school. PT Kanisius.
- Endrayanto, HYS (2019). Performance appraisal techniques: To assess skills. PT Kanisius.
- Idris, MM, & Asyafah, A. (2020). Authentic Assessment in Islamic Religious Education Learning. *Journal of Islamic Civilization Studies*, 3(1), 1-9.
- Jeprianto, J., Ubabuddin, U., & Herwani, H. (2021). Assessment of assignment knowledge in learning at school. *Munaddhomah: Journal of Islamic Education Management*, 2(1), 16-20.
- Jh, T.S. (2018). Development of web-based e-modules to increase the achievement of physics knowledge competencies in high school static and dynamic electricity material. *WaPFI (Physics Education Forum)*, 3(2), 51-61.
- Kurniati, N., & Khaliq, A. (2019, September). Assessment of attitudes, knowledge and skills in 2013 curriculum-oriented English language learning. In *Taman Siswa Bima National Seminar* (Vol. 1, No. 1, pp. 309-316).
- Rusdiana, H., Sumardi, K., & Arifiyanto, ES (2014). Evaluation of learning outcomes using authentic assessment in the subject of refrigeration system electricity. *Journal Of Mechanical Engineering Education*, 2.
- Salamah, U. (2018). Assurance of the quality of educational assessment. *EVALUATION: Journal Mustopa, A., Jasim, J., Basri, H., & Barlian, UC* (2021). Analysis of Educational Assessment Standards. *Journal of Educational Management*, 9(1), 24-29. *Islamic Education Management*, 2(1), 274-293.
- Sani, RA (2022). Authentic assessment. *Literary Earth*.
- Setiadi, H. (2016). Implementation of assessment in the 2013 Curriculum. *Journal of educational research and evaluation*, 20(2), 166-178.
- Sudradjat, S., & Amyar, F. (2020). PKM Competency Test in Accounting Skills at Bogor City Development Vocational School. *Journal of Unity Dedication Community Services*, 1(1), 37-42.
- Teluma, M., & Rivaie, H.W. (2019). Evaluation. *Pgri West Kalimantan Province and Yudha English Gallery*.
- Waizah, N., & Herwani, H. (2021). Assessment of written knowledge in the 2013 curriculum. *Tafkir: Interdisciplinary journal of Islamic education*, 2(2), 207-228.