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Analysis Of Online Learning Outcome Assessment Of Mathematics Subjects

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Abstract

Assessment of learning outcomes is an activity to collect information related to student learning outcomes. Assessment of learning outcomes carried out to determine student's mastery of knowledge, skills, and attitudes after learning. There are principles in the implementation of the assessment must be followed in order to obtain an assessment result that is close to the truth. The aim of this study is to describe the suitability of the assessment of learning outcomes carried out by mathematics teacher with the principles of assessment (valid, objective, fair, integrated, transparency, comprehensive & continuous, systematic, based on criteria, accountability), with the 2013 curriculum learning objectives (knowledge, attitudes, and skills), with material, with student abilities, and with assessment time allocation. This research is descriptive research with a qualitative approach. Interviews and document analysis are data collection techniques in this study. Based on interviews, teachers, principals, and students gave the same responses. The results of the research show that the principles of valid, objective, fair, integrated, open, comprehensive & irrational, systematic, criterion-based, and accountable have been properly implemented. The online assessment has been prepared and implemented in accordance with the objectives of both knowledge, attitudes and skills. However, teachers more often use knowledge competency assessment. The online assessment prepared by the teacher is also in accordance with the teaching materials, both the scope and depth of the material. The online assessments are carried out according to students' abilities. The time given by the teacher to students is sufficient to work on the questions and according to the needs of the assessment. Based on the analysis, it turns out that the method/technique of online assessment is the same as offline assessment.

Keywords: assessment; learning outcomes; online

1. Introduction

Assessment of learning outcomes is the final stage of a learning process.Assessment is the collection of evidence/information through measurement, interpretation, description, and interpretation of evidence/information resulting from measurements in the form of grades on report cards (Alimuddin, 2014)Learning outcome assessment is the activity of gathering information related to student learning outcomes (Arifin, 2009). Learning outcome assessment is carried out to determine students' mastery of knowledge, skills, and attitudes in carrying out an activity (Ambiyar & Panyahuti, 2020). Assessment is also used by teachers to make decisions through considerations based on certain criteria. These criteria and considerations are based on the learning objectives to be achieved. Learning outcome assessment activities remedial and enrichment is an example of the decision made by the teacher after doing the assessment.

Teachers must adhere to the principles of learning outcome assessment. The core competencies for subject teachers state that teachers must understand assessment principles, in accordance with the characteristics of the subjects they teach. The principles of learning outcome assessment are the fundamental principles that teachers use to assess learning outcomes. Teachers adhere to these principles to ensure that the assessment results are accurate. Recorded comprehensively.

Regulation of the Minister of Education and Culture of the Republic of Indonesia No. 23 of 2016 concerning Educational Assessment Standards, Chapter IV, Article 5, states that there are 9 principles for assessing learning outcomes that must be followed. These principles are valid, objective, fair, integrated, open, comprehensive and continuous, systematic, criteria-based, and accountable. The valid principle means that the assessment of learning outcomes must be based on information/data that represents the competencies being assessed. Objective means that the assessment of learning outcomes is carried out with clear guidelines and criteria and is not influenced by teacher subjectivity. The fair principle means that the assessment of learning outcomes is carried out without favoring or harming, and without discrimination. The integrated principlemean Assessment and learning activities are an inseparable whole. Open means that the guidelines, assessment criteria, and the basis for assessment are transparent.Arian results can be known by all interested parties. The principle of comprehensiveness and continuity means that the assessment covers all aspects of competence using diverse Continuously applying appropriate techniques. The systematic principle means that the assessment of learning outcomes has been planned and implemented in stages. Criterion-referenced means that the assessment is based on a measure of competency achievement. The final principle is accountability. Accountability means being able to be accounted for.

Teachers must keep up with developments in learning assessment technology. This is because digital technology continues to evolve. This is especially true since the COVID-19 pandemic, where online learning has utilized technology such as computers, laptops, and other devices.*smartphone*is increasingly widespread. The development of digital technology, followed by the pandemic, has made it possible to conduct online learning assessments. Online learning assessments are activities carried out to determine student progress and achievement through various communication media that connect students, teachers, and evaluation tools without face-to-face interaction. The pandemic will surely end, and face-to-face learning will return. However, online assessments are still possible as an alternative when obstacles arise with in-person assessments.

Research conducted by Nugraha in 2017 found that assessment implementation did not comply with the assessment standards in Permendikbud No. 23 of 2016 (Nugraha et al., 2017). Research conducted by Supriyadi in 2022 found that 6 of the 9 assessment principles had not been met (Supriyadi et al., 2022). Based on several studies, it shows that the implementation of assessment principles in the implementation of assessment is still not optimal. Given the importance of applying assessment principles in the implementation of learning outcome assessment, a study is needed regarding the implementation of assessment principles, especially in the implementation of online assessments. This will determine whether the treatment/methods of online and offline assessments are the same. Furthermore, online assessments raise concerns about the increasing possibility of non-comprehensive assessment

implementation. For example, only assessing knowledge competencies. Therefore, an analytical study of learning outcome assessment is needed.

The researcher conducted an interview with the Deputy Head of Curriculum at MTs Surya Buana, Malang City, on March 11, 2022. Based on the interview, the researcher obtained an overview of the implementation of learning and assessment at the school. Teaching and learning activities shifted from face-to-face to online due to the Covid-19 pandemic. MTs Surya Buana, Malang City, utilizes digital technology to facilitate the implementation of teaching and learning activities and assessments. The technologies utilized are Microsoft Teams, Google Forms, and YouTube. Teachers admitted to experiencing some difficulties in monitoring students. Teachers must adjust the implementation of assessments due to changes in teaching and learning activities.

Researchers also conducted interviews with several eighth-grade students in Mathematics. Students reported experiencing difficulties operating Microsoft Teams for learning and assessment during their initial use. Based on the interviews, researchers learned that some students' learning outcomes often fell short of the minimum completion criteria. In Mathematics, 75/100 is the minimum completion criterion. Some students lacked understanding of the questions presented. Students felt bored while working on assignments.

The interview results raised several questions. How is online learning assessment implemented in mathematics? Are there any differences between online and offline assessment methods? Do teachers adhere to learning assessment principles when implementing online assessments? Therefore, it is necessary to analyze online learning assessment based on learning assessment principles.

Unlike previous research, this article discusses the analysis of learning outcome assessments in accordance with the assessment principles in online assessments. This way, it can be seen whether online assessment techniques are the same as offline assessments. The purpose of this analysis is to describe the suitability of the implementation of online learning outcome assessments by eighth-grade mathematics teachers at MTs Surya Buana with assessment principles, with the learning objectives of the 2013 curriculum (knowledge, attitudes, and skills), with the material, with student abilities, and with the assessment time. Good learning outcome assessments are able to record student competencies well. Therefore, the analysis was conducted to assist teachers in efforts to improve the quality of online learning outcome assessments.

2. Method

Researchers use this type of descriptive research in studies. This descriptive research focuses on explaining the research object presented based on the facts and as they are.Researchers use pin degeneration qualitative on this study. Qualitative approach that Isth process of researching and understanding by creating complex portraits, examining verbal expressions, detailed reports from respondents, and conducting studies in unengineered situations (Creswell & Poth, 2016). Interviews and documentation studies is a data collection technique in this study. Researchers determine respondents using techniques purposive *sampling*. The sampling technique that takes into account certain reasons as consideration is called the sampling technique. *Purposive sampling*(Sugiyono, 2013)*Purposive sampling This* is done by adjusting the sample to the population size without any differences so that it is representative of the population to obtain saturated data.*Purposive sampling*suitable for

qualitative research that does not generalize (Sugiyono, 2013). Interview respondents were 1 8th-grade mathematics teacher, 1 principal, and 4 8th-grade students. Subjects were selected using the following criteria: 1) involvement in 8th-grade mathematics learning activities in the 2021/2022 academic year; 2) involvement in online learning outcome assessment activities in 8th-grade mathematics in the 2021/2022 academic year; 3) students were selected based on classes with the same level. These criteria were used to be representative of the population. The research guidelines were based on assessment principles analyzed by Ahmad Mustopa et al. (Mustopa et al., 2021). Data were collected using the guidelines in the following table:

Table 1.1 Research Instrument Guidelines

Code	Aspect	Indicator
PP1	Valid	Based on information/data that represents the competencies being assessed.
PP2	Objective	Based on clear guidelines and criteria; Not influenced by the subjectivity of the assessor.
PP3	Fair	Neither profitable nor detrimental; Treat students without discrimination.
PP4	Integrated	Inseparable from learning activities.
PP5	Open	All interested parties know the guidelines, evaluation criteria, and decision withdrawal policy.
PP6	Comprehensive and continuous	Assess all aspects of competency (knowledge, attitude, skills) using diverse appropriate techniques; Assessment is carried out continuously.
PP7	Systematic	The assessment is carried out in planned;

		Assessment is carried outwith gradually.
PP8	Molded criteria	based on the criteria/measures of competency achievement that have been set.
PP9	Accountable	The mechanisms, procedures, techniques and results of the assessment can be accounted for.

2.1.1. Data analysis

Researchers used the Miles and Huberman model as a data analysis technique. The data analysis began with data collection, data reduction, data presentation, and drawing conclusions. Interview results became the primary data, which were then strengthened by document analysis. The interview results and documentation analysis were reduced by sorting and filtering the disorganized data into more organized ones. Data reduction means simplifying and sorting the main points to focus on the essentials and identifying themes and patterns (Sugiyono, 2013). The reduced data was then presented using narrative text. Conclusions were drawn based on the presented data.

The technique for checking the validity of data uses a credibility test (*credibility*). Researchers used diligent observation and triangulation to test the validity of the data. Researchers conducted diligent observation by reading literature such as books, previous research results, and related documents, then comparing them with the collected research results. The triangulation used by researchers in this study was source triangulation. Source triangulation was carried out by comparing information or answers from various sources and collected data. These answers were compared to draw conclusions.

3. Results and Discussion

3.1 Result

Mathematics teachers, principals, and eighth-grade students were the primary data sources for collecting information regarding online learning outcome assessments. One mathematics teacher, one principal, and four students provided information regarding the implementation of online learning outcome assessments in the 2021/2022 academic year. Based on data collection activities,on, researchers obtained the following results:

PP1. Authentic

Based on interviews and document analysis, it was discovered that mathematics teachers measure student learning outcomes using a variety of techniques. Teachers adapt assessment techniques to the needs and abilities being measured. The effectiveness of assessment techniques is also a consideration when selecting assessment types, techniques, and instruments.

Teachers assess knowledge competency using written tests. These include essays and multiple-choice tests. Oral tests, such as questions and answers, are also used during lessons. Written tests are more frequently used for assessment.

Teachers assess skill competency using demonstrations and simple projects. Performance is based on the results of exercises and presentations of how to do the work via *meeting* Based on these activities, teachers claim to be able to assess students' skills through the calculation process in solving problems. Simple projects, such as those on circles, involve discovering the origin of the value of phi (π) through experimentation and observation.

Teachers assess attitude competencies through observation techniques, self-assessment, and peer assessment. Teachers observe visible aspects such as religious attitudes, discipline, responsibility, and self-confidence. Teachers observe religious attitudes during group prayer. Teachers also observe students' politeness through their communication. Teachers also observe honesty through students' work. Teachers observe discipline through on *time Students*' participation in learning and assignment submissions is assessed. Teachers observe students' sense of responsibility through their commitment to completing assignments and how they utilize opportunities to improve their answers. Self-confidence is assessed through question-and-answer sessions and when students are asked to explain their answers to assignments.

PP2. Objective

Teachers create assessment guidelines. They create assessment guidelines based on the syllabus and lesson plans. They identify competencies by reviewing indicators as a reference. Therefore, assessment procedures and criteria are clear. Assessment history shows that teachers assign grades based on student responses. Assessment results are reported based on student abilities, without being influenced by external factors such as emotional connections.

PP3. Fair

Based on interviews, it was found that teachers conduct assessments based on the actual situation. They strive to be fair in their assessments by consistently observing student activity. They treat students equally. No student receives special treatment based on background, social status, gender, ethnicity, religion, or other factors.

Teacher please Students can dispute grades if there are errors. Students can communicate this via WhatsApp message.explain well and politely.

PP4. Integrated

Math teachers consistently conduct assessments during online learning activities. Questions and answers and observations are conducted throughout the learning process.

Teachers also consistently assess by providing practice questions at the end of the lesson. Practice questions are provided during online learning activities. *Video conference*, LMS (Microsoft Teams), and inserting it into learning videos.

PP5. Open

It is known that mathematics teachers consistently coordinate with homeroom teachers, the principal, parents, and students. The principal stated that mathematics teachers are always transparent in the design, implementation, and reporting of assessments. This is evidenced by weekly coordination meetings with the principal on Thursdays. At these meetings, teachers submit reports, including assessments of knowledge, attitudes, and skills. The principal also signs monthly and semester report cards. This ensures the principal is aware of the design, implementation, and results of assessments. Teachers are also transparent with homeroom teachers, as they are required to report assessments to them.

Based on the interview results, it was discovered that parents received transparency regarding learning outcome assessments through monthly and semester report cards. These were distributed through video *conference* and *drive thru.*The results can also be accessed by parents with *log in through* the SIABA portal (Matsasurba Academic Information System), using each student's National Student Identification Number (NISN). Math teachers will also communicate important information to parents via WhatsApp messages. This way, parents can stay informed about their child's progress.

Teachers deliver learning contracts at the beginning of the semester. These contracts outline the guidelines, assessment criteria, and the basis for decision-making, as well as the assessments for knowledge, attitudes, and skills. Teachers sometimes also provide the weighted scores for each exam question. Teachers are also known to distribute graded exam results. Teachers consistently provide feedback by commenting on student work. In addition to comments, teachers review practice/exam questions during the exam.*meeting online*. The teacher told him his mistake Were, so that students can improve.

PP6. Comprehensive and Continuous

Mathematics teachers assess all aspects of competency. They assess knowledge through daily assignments, daily tests, and Q&A sessions during lessons. They assess attitudes through observation, self-assessment, and peer assessment. They assess skills through performance, simple projects, and how students learn. *Step by step Students* answer questions. Based on the interview, the teacher assesses all the material that has been taught.

Teachers conduct assessments regularly and periodically. Students receive assignments at each meeting. Daily tests are administered after completing a chapter. However, online learning faces time constraints, so daily tests are sometimes conducted flexibly.

Teachers consistently link current assessment results to previous ones, particularly when assessing attitudes. Furthermore, teachers use previous assessment results to determine whether improvements should be made or new material should be moved on.

PP7. Systematic

Teachers always create assessment plans. Assessment plans are prepared at the beginning of the semester and submitted to the class.*workshop* and work meetings. Teachers establish assessment objectives, techniques, instruments, guidelines, and rubrics in the assessment plan. They also plan the time for each assessment.

Teachers always consider the time allocated for completing the work and the difficulty level of the questions. If time is limited, the calculations in the questions are simplified. Teachers also prepare questions for MGMP activities.

Teachers always provide information to students regarding the timing of daily tests, PTS, and PAS. Teachers also distribute question outlines to students. Related Information implementation The test was also notified to students via Ms. Teams, the previous meeting via video *conference*, and Whatsapp.

Teachers assess from low to high proficiency. Document analysis revealed that teachers first develop and provide easy practice questions, then, as students gain mastery, assign more complex ones. In practice, teachers tend to reorder core competencies to accommodate and consider the complexity of the material.

PP8. Criteria-Referenced

Teachers prepare assessments based on the syllabus and lesson plans. The syllabus and lesson plans serve as a reference for assessment. Based on an analysis of the lesson plan documents and questions, researchers obtained the following results:

Table 2.2 Correlation of Objectives with Assessment Questions

Core Competencies:KI3. Understanding knowledge (factual, conceptual, and procedural) based on curiosity about science, technology, art, culture related to visible phenomena and events.
Basic competencies: 3.1 Making generalizations from patterns in number sequences and object configuration sequences
Objective: (1) Through question and answer activities, students can determine the next term of a number sequence by generalizing the previous number pattern, (2) Through guided discovery activities, students can recognize various types of number sequences and generalize number sequence patterns.

Indicator	Question
Determine the next term of a number sequence by generalizing the previous number pattern.	One number after the pattern 4, 10, 8, 14, 12, 18, … is ….
Find the nth pattern of an object configuration pattern	Here's a matchstick arrangement pattern. The number of matchsticks in the 8th pattern is...
Know the various number lines	The sum of the first five terms of a geometric sequence is 121. If the ratio is 3, then the first term of the sequence is
Generalizing number sequence patterns	The last digit of the number 4 2021 is ….
Core Competencies:TO.4 Trying, processing, and presenting in the concrete realm (using, analyzing, assembling, modifying, and making) and the abstract realm (writing, reading, calculating, drawing, and composing) in accordance with what is learned at school and other sources that have the same point of view/theory.	
Basic competencies: Resolved problems related to patterns on the number line and object configuration line	
Objective: Through problem solving activities, students can solve problems related to object configurations and number patterns.	
Indicator	**Question**
Resolve issues related to object configuration patterns	Bricks 10 cm high will be stacked upwards as shown in the image to form a gate to the house. If a pair of gates are to be built, each 4 meters high, the number of bricks required is...
Solving problems related to number patterns	In the hall there are 25 seats in row 1. Each subsequent row has 3 seats added to the seat in front of it. The hall has 8 rows of seats, how many seats are there in the hall…

PP9. Accountable

Teachers are accountable for assessments, as evidenced by monthly and semester report cards. For certain matters, teachers also provide personal explanations to parents regarding student progress. Teachers use a holistic scale with a minimum competency criterion (KKM) of 75 for grading.

3.2 Discussion

Compliance of Online Learning Outcome Assessment with Assessment Principles

Valid

In the Big Indonesian Dictionary (KBBI), "sahih" means true or valid. In assessment principles, "sahih" means data is taken based on the competency being measured. Teachers need to use various techniques to obtain valid data. The accuracy of the assessment method significantly influences the validity of the assessment results (Nurjannah, 2019). This means that if a teacher wants to determine a student's ability to apply formulas, a written test is the appropriate technique. If the teacher uses an oral test, the desired objectives cannot be achieved because the assessment technique and the assessment objectives are irrelevant.

Based on the results of interviews and document analysis, teachers considered and used various techniques to obtain data reflecting assessment competencies. Teachers assessed knowledge competencies using written and oral tests. The written tests consisted of essays and multiple-choice items. The objective of essay tests is to organize what has been learned by presenting it in written form (Rosyidi, 2020). Answering math problems requires a sequential calculation process. Therefore, teachers use essay tests to determine the flow of students' work in obtaining answers. This allows teachers to determine the extent to which students understand the concepts. Essay tests are suitable for assessing complex learning outcomes (Putri et al., 2022). Assessments are conducted through assignments and daily tests via Microsoft Teams and learning videos on YouTube. Students submit their answers by photographing the written answers on paper and then sending them via the menu.*assignments.*Oral tests are conducted through questions and answers during learning activities through*video conference Students*' abilities and knowledge levels can be seen through oral tests because they are conducted face-to-face (Elis Ratna Wulan & Rusdiana, 2015). Assessment of student knowledge using written tests, oral tests, and assignments is also carried out in offline assessments (Alimuddin, 2014).

Students' skills are assessed by teachers using portfolios, performance, and simple projects togetData that reflects these abilities. Portfolio assessment is a collection of information that shows the development of student abilities over a certain period and is collected continuously. This information can include student work, test results (performance/simple projects), or other information relevant to the demands of learning objectives (Asrul et al., 2015). Teachers also observe skills through student calculation flows. Teachers can monitor student skills through these assessment techniques.

Attitudinal competency is the ability related to attitudes and values (Asrul et al., 2015). Teachers assess attitudinal competency using observation, self-assessment, and peer assessment techniques. Observation techniques are assessment techniques that use the senses directly or indirectly. Observation techniques are carried out continuously using guidelines containing indicators of observed behavior (Asrul et al., 2015). Teachers observe things that are visible, such as religious attitudes, discipline, responsibility, and self-confidence. Teachers observe religious attitudes during group prayer. Teachers also observe students' politeness through their communication. Teachers also observe honesty through students' work. Teachers observe discipline through*on time*whether or not students participate in learning (*video conference*) and assignment submission (LMS). Teachers observe students' sense of responsibility through their commitment to completing assignments and how they utilize opportunities to improve their answers. Self-confidence is observed through question-and-answer activities and when students are asked to explain their answers to assignments.

Objective

Objective assessment means that the assessor uses clear criteria and procedures as the basis for the assessment, thus avoiding subjectivity. Objective assessment will provide accurate or nearly accurate information about the object of assessment (Agustiningsih, 2015). Therefore, teachers must always act according to reality without being influenced by subjective interests. The purity of the assessment will be damaged if the assessment...mixedwith subjective elements (Fitrianti, 2013).

Based on research findings, teachers consistently develop assessment plans. These plans contain procedures and criteria that serve as assessment guidelines. Assessment guidelines are used to avoid subjectivity (Lesmono et al., 2012). Assessment guidelines are designed based on core competencies (KI), core competencies (KD), indicators, and learning objectives in the lesson plan. To ensure objective assessment, teachers must utilize various forms of evidence of student work and behavior using a variety of assessment tools (Irhamni, 2019). Therefore, teachers also plan various assessment techniques within their assessment plans. Assessment history shows that teachers assign grades based on student responses. Assessment results are reported based on student abilities, without being influenced by external factors such as emotional connections. Thus, teachers have effectively implemented the principle of objectivity.

Fair

Students do not come to school with the same identity. The principle of fairness means that no student is advantaged or disadvantaged in assessment due to differences in background, religion, ethnicity, culture, customs, social status, or gender. Teachers must understand that every student deserves equal learning and assessment opportunities (Kusainun, 2020).

Based on interviews, teachers strive to be fair in assessments by consistently observing student activity. Teachers conduct assessments based on the actual situation, based on

assessment guidelines. Students are given equal opportunities in assessments. For example, all students have the opportunity to improve their grades. Teachers also provide students with the opportunity to challenge grades if errors occur. Teachers facilitate this through*personal chat*Students can communicate this well and politely. Students also acknowledge that teachers treat students equally and do not give special treatment to students based on background, ethnicity, social status, or gender. Differences in assessment results are only caused bydifferenceThe learning outcomes competencies achieved by students (Warsah & Habibullah, 2022). Thus, no party feels disadvantaged.

Integrated

AssessmentAssessment is an inseparable component of the learning process. Assessment is integrated into the education system because it is a crucial component of learning (Kusainun, 2020). Based on research findings, teachers conduct assessments during and after learning. Based on interviews, teachers conduct Q&A sessions to determine students' understanding of the material just presented. Furthermore, teachers conduct observations during the learning process via the Learning Management System (LMS). Assessments at the end of learning are used to train students' ability to apply the material taught. Teachers always provide assessments at the end of learning in the form of assignments. Teachers can review the extent to which students have mastered the material, thus identifying weaknesses in both students and their teaching (Irhamni, 2019).This allows teachers to immediately correct these weaknesses.

Open

The principle of transparency means that assessment procedures, assessment criteria, and the basis for decision-making are accessible to all stakeholders. These stakeholders include homeroom teachers, principals, students, and their parents. This aligns with Kusainun's opinion that assessments must be made public by the principal and fellow teachers, and that assessment procedures must be clearly communicated to students and their parents (Kusainun, 2020)

Based on the research results, mathematics teachers consistently coordinate with the principal. Coordination meetings are held once a week. At the coordination meetings, teachers report on their assessment activities. Teachers also report their assessments to their homeroom teachers. These reports are used by homeroom teachers to complete their report cards. Subsequent monthly and semester report cards are also included.signedby the principal. With this activity, the principalknow how the plan, implementation, to the evaluation results.

Math teachers also coordinate with students' parents. Parents receive transparency regarding student learning outcomes through monthly and semester report cards. Parents can also view student learning outcomes through the school's academic information system. Math teachers will also communicate important information to parents via WhatsApp, including student progress and assessment challenges such as students who haven't submitted

assignments. This way, parents contribute to the smooth running of the assessment process. Furthermore, parents can closely monitor their children's progress.

Based on interviews, teachers have been transparent with students in the assessment process. They always provide a learning contract at the beginning of the semester, so students know the assessment criteria and procedures. Sometimes, teachers also provide the score weighting for each test question. Teachers consistently provide feedback.givecomment on student work and discuss practice/test questions again during*meeting online.*This allows students to understand the reasons for their grades. Both those being assessed and those using the assessment results have the right to know the assessment process and guidelines, ensuring that all parties can accept the assessment results (Warsah & Habibullah, 2022).

Comprehensive and continuous

In mathematics, the knowledge domain is indeed more dominant. However, teachers must not neglect the attitudes and skills domains. The realization of the principle of comprehensiveness and continuity is by conducting assessments across all aspects of competency regularly and continuously over time. Effective assessment is an assessment that is able to collect various information about students' knowledge and actions related to knowledge, attitudes, and skills competencies using various forms of instruments according to the conditions, learning objectives, and assessment criteria (Karmana, 2013). According to research by Leni Fitrianti, assessment is carried out continuously, namely carrying out assessments at the beginning, middle, and end of learning (Fitrianti, 2018).

Based on the research results, teachersevaluateaspects of knowledge, attitudes, and skills. Teachers assess knowledge competency through daily assignments, daily tests, and Q&A sessions during learning. Teachers assess attitude aspects through observation. Observations are conducted during virtual meetings, both through*video conference*, LMS, and WhatsApp. In addition, teachers sometimes use self-assessment and peer assessment. Teachers assess skills through demonstrations, simple projects, and observation.*step by step*Students answer questions. The teacher presents all the material in the instrument.assessment. Although in online learning the teacher reduces the number of questions, all questions still represent each material.

Teachers conduct assessments regularly and periodically. At the beginning of a lesson, teachers conduct a question-and-answer session to assess students' prior knowledge. Midway through the lesson, teachers conduct assessments through observation. At the end, teachers conduct another question-and-answer session to check students' understanding. Students always receive assignments at the end of each session. Daily tests are conducted regularly, usually after completing a chapter. However, in online learning, teachers face time constraints, so sometimes daily tests are conducted flexibly. If there is insufficient time to conduct the daily test for a particular chapter, it is integrated into the midterm assessment.

Teachers always relate current assessment results to previous ones, especially when assessing attitudes. For example, a teacher may conduct an observation and find that a student's results are lacking.responsible. However, as time goes by, students canresponsible. Therefore, teachers use values thatthe bestbecause students have progressed. Furthermore,

teachers use previous assessment results to determine whether improvements are needed or new material can be moved on. Teachers integrate various assessment techniques to achieve comprehensive results.

Systematic

The systematic principle means that assessment must be planned and carried out according to established steps. Assessment should begin with mapping. Teachers identify and analyze core competencies (KD) and indicators for achieving them. The results of this analysisimplemented for determineassessment techniques, instruments, and assessment time (April, 2019)Thus

Mathematics teachers carry out assessments systematically. It is known that mathematics teachers always prepare lesson plans (RPP) before lessons. The RPP is used as a reference for assessment. Teachers plan the assessment process by creating an assessment plan. The assessment plan contains:aboutassessment guidelines, assessment instruments, assessment grids, assessment rubrics, and assessment media. Mathematics teachers participate in MGMP activities to develop assessment questions. The level of difficulty of the questions is also an important concern for teachers. Teachers adjust the level of difficulty of the questions to the allocated time. If time is limited, the calculations in the questions are made simple. Teachers also plan the time for each assessment. Teachers always inform students of the test schedule. Teachers also distribute test grids to students. Based on these data, it can be seen that teachers always carry out assessments with good preparation.

Based on document analysis, it is known that teachers compile and provide easy practice questions first, then when students have mastered them, they give more complex questions. In practice, teachers tend to reverse the core competencies to adjust and consider the complexity of the material. Sometimes, material in chapter 1 already uses calculations in chapter 5. Therefore, chapter 5 is prioritized, followed by chapter 1. Therefore, teachers sometimes do not follow the system's order to adapt to the conditions. Thus, it can be concluded that the assessment is truly directed and planned.

Molded criteria

Criterion-referenced means that the assessment is carried out based on the measure of competency achievement. In the assessment thatmouldedBased on the criteria, students are declared competent not by comparing them to the achievements of other students, but by comparing them to the established completion criteria. KI, KD, indicators, and learning objectives are the criteria for measuring competency achievement in assessment. These objectives are structured in the lesson plan (RPP). Teachers use these objectives as a reference for assessment. Based on research results, teachers always prepare lesson plans before implementing learning. Teachers create assessment instruments according towithThe objectives outlined in the lesson plan. Based on document analysis, researchers found a correlation between the objectives in the lesson plan and the assessment instruments.

Accountable

The principle of accountability means that the assessor must be able to account for the assessment, including the mechanisms, procedures, techniques, and results. Assessment accountability can be met if the assessment is conducted based on the assessment principles outlined above (valid, objective, fair, integrated, open, comprehensive and continuous, systematic, and criteria-referenced). Based on the discussion above, the teacher has conducted the assessment based on these principles. Therefore, the teacher meets the accountability aspect.

Teachers use assistancesystemComputers use this to qualitatively describe quantitative assessment results. Teachers simply enter grades, and the system then interprets them. Teachers are accountable for the assessment, as evidenced by monthly and semester report cards. For certain matters, teachers also personally explain student progress to parents. Teachers have a benchmark for determining grades, using a holistic scale with a minimum competency criterion (KKM) of 75. Therefore, if parents/students have questions, teachers can be accountable because there is a basis for determining student ability descriptions.

Alignment of Online Learning Outcome Assessment with Learning Objectives

Learning objectives serve as a reference for assessment. Learning objectives describe the expected learning outcomes for students after completing learning activities. Misalignment of assessments with learning objectives can result in assessment results that do not reflect the achievement of learning objectives (Bloom, 2010).

Based on research findings, teachers consistently develop learning objectives. They use these objectives as the basis for designing assessments. Assessment instruments are aligned with the learning objectives. The following demonstrates the alignment of assessments with learning objectives:

Knowledge competency is a competency that includes mental activities such as memory or knowledge and understanding. Based on the 2013 curriculum, the goal of knowledge competency is to understand knowledge (factual, conceptual, and procedural) based on curiosity about science, technology, art, and culture related to visible phenomena and events. In the number pattern material, the learning goal of knowledge competency reads, "through question and answer activities, students can determine the next term of a number sequence by means ofgeneralizeprevious number patterns". These learning objectives contain aspects of conceptual knowledge (generalizenumber patterns) and the cognitive process of analyzing (determining the next term). The question on the assessment instrument reads "the number represented by α in 1,6,α,22,33,46,... is". The learning objective includes cognitive level C4. The instrument also includes questions with cognitive level C4, namely analyzing "α" in a number sequence. To answer this question, students must determine the relationship between the numbers in the sequence. According to the revised Bloom's Taxonomy, analyzing means breaking down a problem orobject into the elements and determine the relationship of those elements (Bloom, 2010).

Based on the questions used by the teacher to conduct the assessment, it can be seen that the level of knowledge is C4-C6. The level of knowledge assessed is at the HOTS level (*Higher Order Thinking Skill*). For example, there are 10 questions on the daily review questions. Six among themcontains cognitive level C4, namely analyzing. Two questions contain cognitive level C5, namely evaluating. The other two questions contain cognitive level C6, namely creating.

The learning objectives of attitude competencies in the 2013 curriculum include spiritual attitudes and social attitudes. Spiritual attitude competencies are to respect and internalize the teachings of one's religion. Social attitude competencies are to respect and internalize honest, disciplined, responsible, caring (tolerance, mutual cooperation), polite, and self-confident behavior in interacting effectively with the social and natural environment within the scope of their social interactions and existence. The learning objectives of the attitude domain in the lesson plan are, "through a series of learning activities, students are able to apply religious and disciplined attitudes." In the learning objectives, the aspects to be assessed are religious (spiritual) and discipline (social). This is in line with the observation aspects in the teacher's journal. These aspects are: 1) starting learning with prayer (spiritual), 2) being on time in submitting assignments (social), 3) completing assignments as well as possible (social).

The teacher assesseslevelstudents' affective starts fromthe lowestto the highest through observation. In Bloom's taxonomy, the affective level consists of acceptance, responsiveness, assessment, organization, and characterization (Bloom, 2010). Based on interviews, the first level, namely acceptance (A1), is observed by observing student behavior and attention during learning. Responsiveness (A2) is observed through student activeness in learning and student discipline in submitting assignments. Assessment (A3) is observed through student work results. Whether students work independently or copy their friends' work. Organization (A4) and characterization (A5) are observed throughout the entire learning process so that values are consistently embedded, resulting in changes in behavior and shaping student personality.

The learning objectives of the skills competency in the 2013 curriculum are Trying, processing, and presenting in the concrete realm (using, analyzing, assembling, modifying, and making) and the abstract realm (writing, reading, calculating, drawing, and composing) in accordance with what is learned in school and other sources that are the same in terms of perspective/theory. The learning objectives of the skills competency in the circle material read "conducting experiments to find the value of phi (π)". The assessment is also in accordance with the objectives, namely providing experimental tasks:

Figure 1. Experimental assignment

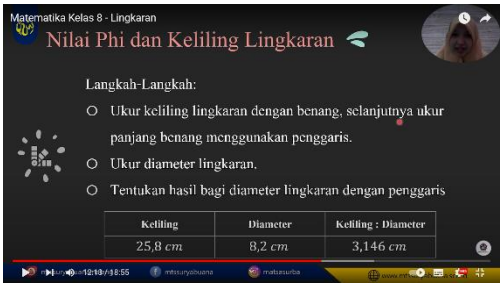


Figure 2. Explanation of the experimental assignment

Thus, students are able to try (concrete domain: using measuring tools) as well as process and present (abstract domain: writing and calculating measurement results) to find the value of phi (π). After that, students present their method through*online meeting*Based on these activities, teachers admitted that they could assess skills through the students' calculation flow in solving problems.

Teachers conducted assessments in the knowledge domain more frequently. According to teachers, this was due to time constraints during online learning. Furthermore, teachers found assessments in the knowledge domain easier to conduct during online learning. Teachers conducted online assessments in accordance with the learning objectives mentioned above, using the same treatment and techniques as in-person assessments.

Conformity of Online Learning Outcome Assessment with Learning Materials

After formulating the learning objectives, the teacher then collects materials as a basis for achieving these objectives. To find out whetherobjectiveTo achieve this, teachers must create instruments that test students' mastery of the material. Test/exam materials should be aligned with the test material and competency achievement targets through the material being taught.

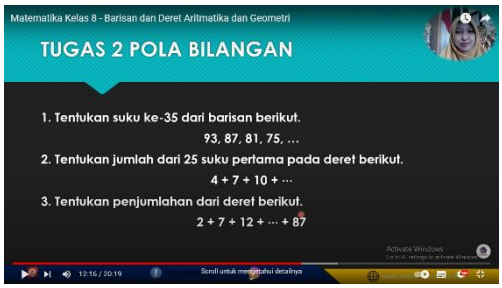
Based on the interview results, students admitted to having difficulty working on the practice/test questions. The following are excerpts from the interviews: "It's difficult because some of them are outside the material or I just don't understand." "It's quite difficult because I'm not fast enough at calculating." "There are some questions that are in line with what was taught, and there are some that need to be revised."understood"It takes a while to get it done", "Sometimes it's difficult, maybe because I don't really understand the material being explained."

Based on the research results, the teacher used several questions with principle-based material. The questions were as follows: "The following is a matchstick arrangement pattern. The formula for the number of matchsticks in the nth pattern is..." Furthermore, the teacher also used more procedural material in the assessment.

Teachers conduct contextual assessments by connecting the questions to topics familiar to students, such as everyday life examples. Here's one such question: "A student pays a school

development donation in installments. The first installment is Rp 400,000.00, and subsequent installments are Rp 50,000.00 less than the previous installment. What is the amount of the seventh installment to be paid?"

Based on the research results, the teacher developed assessment instruments based on the material presented. The scope and depth of the assessment materials aligned with the learning material. In the learning video, the teacher explained the material on sequences and number series. At the end of the learning video, the teacher provided practice questions. The questions were:



Picture 3. practice questions

To solve this problem, students must first understand the types of number patterns by looking at the characteristics and features of number rows/series. In the videolearningThe teacher has explained rows and series and their differences. The explanation is as follows:

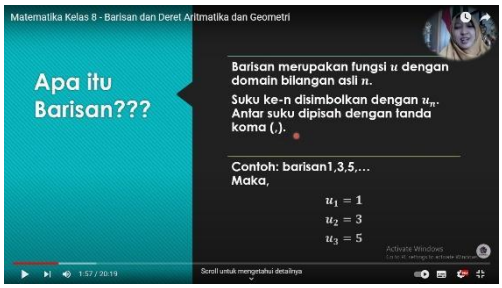


Figure 4. Explanation of sequence material

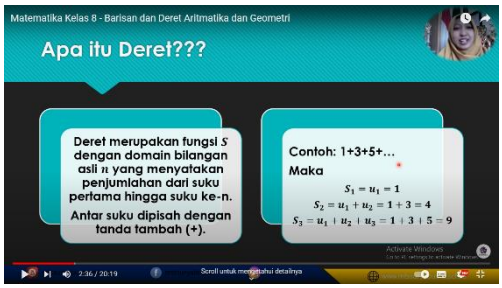


Figure 5. Explanation of series material

Students can know the characteristics of rows and rows based on the explanation. So, students can find out if the pattern in the question is a row or a row. After students know the

type of number patterns, students look for relationships between numbers. If the relationship between the numbers has been obtained, the student can determine the solution formula. The teacher explains the solution formula as follows:

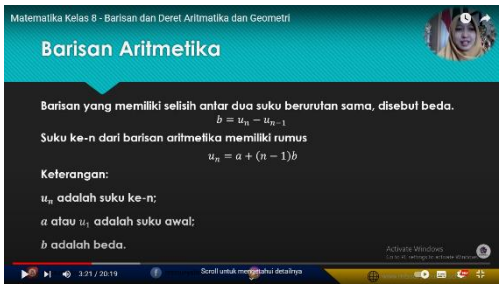


Figure 6. Explanation of types of arithmetic sequences

In the instructional video, the teacher also explains how to solve similar problems. The explanation is as follows:

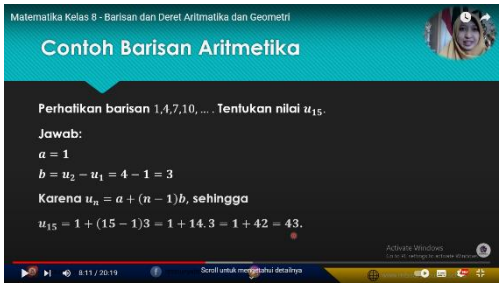


Figure 7. Example of arithmetic line solution

Researchers concluded that teachers composeinstrumentThe assessment is in accordance with the material taught in the lesson plan. This is also the same as for offline assessments. This is in line with Eryk's opinion, which states that good questions should address the material being measured according to the indicators (Setiawan, 2020). Therefore, the difficulties experienced by students do not stem from questions that are outside the scope of the teaching material. This is supported by students' statements that the questions given by the teacher are in line with the material taught.

The Suitability of Online Learning Outcome Assessment with Student Abilities

One of the pedagogical competencies of teachers is the ability to deeply understand students. Teachers who understand their students' potential, abilities, and characteristics will act appropriately and wisely according to the situation and conditions (Dikdas, 2021). Teachers who understand their students' abilities will provide exercises, assignments, and other assessments appropriate to their abilities and developmental stage. Based on this understanding, teachers are able to explore methods, techniques, andinstrumentaccurate and creative assessment.

Based on interviews, teachers stated that it is more difficult to understand students' abilities and characteristics in online learning. However, teachers constantly strive to find out by observing each student. Overall, teachers perceive students' ability to grasp learning material to be moderate. Therefore, teachers always adjust the difficulty level of questions to suit the students' abilities. This is also done in offline assessments. If only to assess concepts, the calculation is kept simple. The important thing is that students understand how to solve the problem. Assessment techniques and methods are also adjusted to suit student abilities and the situation. Assessments are conducted using an LMS. Generation Z is characterized by a close relationship with technology. Therefore, it is notneedlong time for students to adapt to online assessments.

The Compliance of Online Learning Outcome Assessment with Time Allocation

Time allocation in assessments is an estimate of how long students will have to complete the questions. Questions must have an identity, including a time allocation. Teachers allocate time according to the number and difficulty of the questions. Based on research results, teachers assigned six essay practice questions with a 12-hour time allocation. According to researchers, the time allotted was sufficient to complete the six questions. Students also reported that the time allotted was sufficient.

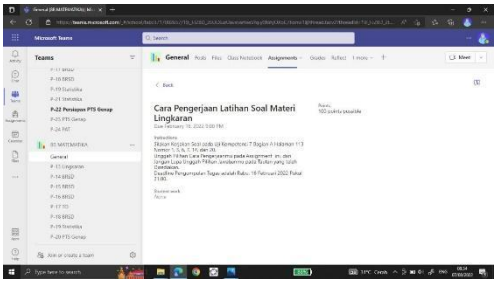


Figure 8. Detailed assessment information

4. Conclusion

Application of the principles-principleAssessments by mathematics teachers were carried out effectively. Online assessments were designed and implemented in accordance with the objectives of assessing knowledge, attitudes, and skills.However, teachers more often use knowledge competency assessments. Teachers use the learning objectives in the lesson plan as a reference in planning techniques andinstrument accurate assessment. The online assessment prepared by the teacher has also been in accordance with the teaching material. The scope and depth of the material is the teacher's attention in planning instrumentAssessment. Online assessments are conducted by math teachers according to student abilities. Teachers understand the characteristics of each class, so the difficulty level of the questions is adjusted accordingly. Teachers provide sufficient time for students to work on

the questions and meet assessment needs. Analysis shows that online assessment methods are similar to offline assessments.

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