



Cognitive Domain Analysis in the Context of the Merdeka Curriculum at Mts Negeri 1 East Lombok

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Abstract

Assessment has the purpose to determine the attainment of educational objectives. There are three domains of assessment: cognitive, affective, and psychomotor. The cognitive domain focuses on assessing knowledge, comprehension, and intellectual thinking. Cognitive assessment tools can be designed through the utilization of authentic assessments, which replicate real-world situations or contexts. Authentic assessment methodologies offer a more precise means of evaluating a student's capacity to apply acquired concepts. This research had the purpose to investigate the development of cognitive assessment instruments within the independent curriculum at MTs Negeri 1 East Lombok. This qualitative research utilized a field-based approach, collecting data through teacher observations and interviews conducted at MTs Negeri 1 East Lombok. The data analysis process included data reduction, presentation, and inference. The outcomes suggested that cognitive domain assessment instruments in the independent curriculum should be in alignment with the learning objectives, integrate various question types, involve students in their development, and provide constructive feedback.

Keywords: Assessment, Instruments, Cognitive

Introduction

Learning is one of the essential aspects of education that plays a vital role in developing and empowering the cognitive domain related to learning objectives focused on thinking abilities, the affective domain related to feelings, emotional value systems, and attitudes, as well as the psychomotor domain oriented towards motor skills or skeletal muscle usage (Magdalena et al. 2020) In the learning process, assessment instruments are crucial to determine the extent of student learning outcomes and the effectiveness of the teaching that has been conducted. Cognitive domain assessment instruments are one type of assessment instrument used to measure

students' ability to comprehend, remember, and apply the concepts taught.(Yaroh 2019)

The purpose of cognitive domain assessment instruments is to develop assessment instruments that are tested for validity, reliability, discrimination, and difficulty level that are appropriate for students' abilities. Cognitive domain assessment instruments can also assist teachers in evaluating the learning process and providing useful feedback to students (Yuberti 2015).

In the development of cognitive domain assessment instruments, several aspects need to be considered, such as assessment objectives, types of assessment

instruments, and the taxonomy of learning objectives. Assessment objectives should be clear and aligned with the competencies to be measured. The type of assessment instrument used should be appropriate for the assessment objectives and the students' abilities. The taxonomy of learning objectives also needs to be taken into account to ensure that the assessment instruments developed can measure students' abilities at various levels.

In the cognitive domain, students' thinking abilities are classified into six stages, ranging from the lowest (C1) to the highest stage (C6). These six stages were initially proposed by Bloom and later refined by Anderson and Krathwohl (Krathwohl 2002), namely: *remembering, understanding, applying, analyzing, evaluating, and creating* (Gunawan and Palupi 2022).

Recalling (Remember) is the effort to retrieve knowledge from memory or past recollections, whether recently acquired or long-held. Remembering is a dimension that plays a crucial role in meaningful learning and problem-solving processes. This ability is utilized to solve various complex problems. Remembering includes recognition and recalling. Recognizing is related to knowing past knowledge related to concrete things, such as birthdates, addresses, and ages, while recalling is a cognitive process that requires quick and accurate recall of past knowledge. Understanding, on the other hand, involves constructing meaning or understanding based on existing knowledge, connecting new information to previously acquired knowledge, or integrating new knowledge into existing schemas in a student's thinking. Students are said to understand when they can construct meaning from instructional messages, including oral, written, and graphic communication, and the material presented. Cognitive processes in the Understanding category include *interpreting, exemplifying, classifying,*

summarizing, inferring, comparing, and explaining.

Applying (apply) is the ability to perform something and apply concepts in specific situations. Applying is related to the dimension of procedural knowledge. It encompasses activities such as executing procedural theory and implementing. At this level, students are required to transform or codify into practical effects, demonstrate, and solve problems (Fauzet 2016). Executing procedures is a cognitive process in which students solve problems and conduct experiments where they already know the information and can precisely determine which procedures should be followed. If students do not know the procedures to be executed in solving a problem, they are allowed to modify the standard procedures that have been established. Implementation occurs when students choose and use procedures for things that are unknown or unfamiliar. Because students are still unfamiliar with this, they need to recognize and understand the problem first before determining the appropriate procedure to solve it. Implementation is closely related to other cognitive process dimensions, namely understanding and creating.

Analyzing involves solving a problem by breaking it down into its individual parts, identifying the connections between each part, and understanding how these connections can lead to problems. Analytical skills are a type of ability that is often demanded in school learning activities. Various subjects require students to have good analytical skills. The demand for students to have analytical skills is often considered more important than other cognitive process dimensions such as evaluating and creating. Most learning activities aim to guide students in being able to distinguish between facts and opinions, and draw conclusions from supporting information..

Evaluating is related to the cognitive process of providing assessments based on existing criteria and standards. The criteria commonly used include quality, effectiveness, efficiency, and consistency. These criteria or standards can also be determined by students themselves, whether they are quantitative or qualitative. It's important to note that not all assessment activities fall under the dimension of evaluating, but almost all cognitive process dimensions require assessment. The difference between student-conducted assessment and evaluation lies in the standards and criteria set by students. If the standards or criteria set by students focus on the effectiveness of the results compared to the planning and effectiveness of the procedures used, then what students are doing is an evaluation activity.

Creating refers to the cognitive process of putting elements together to form a coherent whole and directing students to generate a new product by organizing various elements into a different form or pattern than before. Creating is closely related to students' learning experiences in previous sessions. Although creating involves creative thinking processes, it does not entirely influence students' ability to create. Creating here directs students to execute and produce work that can be created by all students. The difference between creating and other cognitive thinking dimensions lies in the fact that in other dimensions such as understanding, applying, and analyzing, students work with information that is already known, whereas in creating, students work and produce something new.

The six stages outlined by Anderson serve as a reference for the development of assessment instruments for the cognitive domain related to students' knowledge abilities. The classification of knowledge levels or stages is adjusted to the characteristics of the students and the depth

of learning that must be mastered or is the learning objective. The application of this taxonomy is emphasized at the higher-order thinking skills (HOTS) level, which ranges from stages C4 to C6.

Cognitive domain assessment instruments can also be developed using authentic assessment, which is an assessment conducted in situations or contexts that resemble real-world situations or contexts. Authentic assessment can provide a more accurate picture of students' abilities in applying the concepts they have learned. In the assessment of the cognitive domain, the assessment instruments used must measure students' abilities objectively and accurately. Well-designed assessment instruments can assist teachers in evaluating the learning process and providing valuable feedback to students (Herawati 2022).

The cognitive domain in assessment instruments in the Independent Curriculum is one of the competency domains that encompass students' abilities in the realm of knowledge and understanding. In the Independent Curriculum, this cognitive domain is a focus in developing students' competencies. Therefore, in lesson planning, teachers need to pay attention to developing students' abilities in this cognitive domain by using teaching strategies that are in line with students' characteristics and the intended learning objectives (Irham 2022).

Method

This research employs a qualitative descriptive research design. According to Sugiyono, qualitative research is a case research method used to observe the natural state of an object, and the theory used should be clear (Sugiono 2015). Qualitative research, in general, can be applied to various subjects, such as studies on community life, history, behavior, functionality, organizations, social activities, and more. The qualitative method aims to answer questions about what and

how an event occurs by reporting the results appropriately (Syarifah et al. 2023). The object of this research is MTs Negeri 1 Lombok Timur. Data collection is carried out through observation and interviews with Islamic Religious Education teachers regarding cognitive domain assessment instruments in the Independent Learning Curriculum. Data analysis involves data reduction, data presentation, and drawing conclusions.

Results and Discussion

Cognitive domain instruments are tools or methods used to assess an individual's cognitive abilities, such as thinking, comprehension, knowledge, analysis, synthesis, evaluation, and critical thinking skills in a specific context. These instruments can take the form of tests, quizzes, questions, or other assessment tools specifically designed to measure the level of understanding and cognitive abilities of individuals (Krathwohl 2002). Typically, these instruments consist of a series of questions or statements that require individuals to engage in thinking and analysis to provide accurate answers.

The purpose of using cognitive domain instruments is to measure the extent to which individuals have developed thinking and comprehension abilities in a specific field. The results of these instruments can provide information about the level of knowledge, thinking skills, and analytical abilities of individuals in relevant contexts (Sudjiono 2013). By using cognitive domain instruments, educators and researchers can better understand the cognitive abilities of individuals, identify their strengths and weaknesses, and evaluate the effectiveness of specific teaching approaches or programs. The development and use of cognitive domain instruments are crucial in educational research and learning evaluation because they aim to understand and enhance individual cognitive abilities

and provide valuable information for better educational decision-making.

It can be concluded that cognitive domain instruments are tools for measuring an individual's thinking and comprehension abilities. Their purpose is to evaluate the level of understanding, analysis, synthesis, evaluation, and critical thinking skills of individuals. The use of these instruments aids in identifying individual strengths and weaknesses and supports better educational decision-making. These instruments can take the form of tests, quizzes, or questions specifically designed to measure cognitive abilities of individuals..

Assessment in the Independent Curriculum

In the Independent Curriculum, learning assessment or assessment is conducted in the form of formative assessment and summative assessment. Formative assessment is carried out at the beginning and/or during the learning process, while summative assessment is conducted at the end of the learning process..

Diagnostic assessments are typically conducted at the beginning of the learning process. Subject-relevant teachers or mentors at the school can carry out this evaluation. Cognitive and non-cognitive diagnostic tests are part of this diagnostic assessment. Diagnostic assessments are used to identify students' deficiencies in acquiring specific subjects or skills and the reasons behind them. Komalawati (Komalawati 2020) states that the purpose of this assessment is to gain further insights into the topics students are facing and the elements contributing to them. The results of diagnostic tests can serve as the basis for providing appropriate actions or interventions related to students' deficiencies.

By understanding students' specific weaknesses, teachers can design teaching strategies that meet their individual needs, provide additional support, or arrange suitable learning experiences. Diagnostic

tests help gain deep insights into students' learning conditions and enable teachers to provide targeted assistance to enhance students' understanding and achievements. The characteristics of diagnostic tests are as follows: 1) Diagnostic tests generally have low variability, meaning that the questions posed tend to be specific and focused on the competencies or materials to be tested; 2) diagnostic tests are not intended to assess students but rather focus on detecting students' learning difficulties. Diagnostic tests are used to identify areas where students are experiencing difficulties and investigate possible contributing factors; 3) in diagnostic tests, interpreting test results becomes a crucial part of the process; 4) analysis of the sources of errors or student learning difficulties becomes important; 5) Supply reasons questions are a type of question that requires students to provide answers explaining the reasons or justifications behind their responses. Nasution (Nasution 2022) reveals that cognitive diagnostic assessment and non-cognitive diagnostic assessment have different objectives. Cognitive diagnostic assessment aims to: 1) Identify the competencies mastered by students; 2) Adjust classroom instruction to the average competencies of students; 3) Provide remedial classes or additional learning for students with competencies below average. Meanwhile, non-cognitive assessment aims to: 1) Determine the psychological and socio-emotional well-being of students; 2) Understand activities during remote learning; 3) Understand the family background of the student; 4) Understand the social interactions of the student; and 5) Identify the learning style, character, and interests of the student..

Formative assessment aims to collect information about any difficulties students may encounter during the teaching and learning process. Additionally, teachers can utilize formative assessment to assist

students in identifying their strengths and areas for growth. These assessments enable teachers to provide feedback or comments to students and enhance the learning experience (Arlen et al. 2023). Formative assessment can be conducted both before and during the learning process. To ensure whether students are ready to engage with the instructional material and achieve the intended learning objectives, formative assessment is carried out at the beginning of the learning process. Initially, formative assessment is focused on meeting the teacher's needs in designing the instruction.

Summative assessment can be used by teachers as a final result to measure student growth and determine final grades (Nasution 2022). To ensure that all learning objectives are met, summative assessment needs to be conducted. Summative assessment is carried out after the learning process is completed and is taken into account in the assessment calculations at the end of the semester, academic year, or grade level. After the completion of summative assessment, a direct and informative report on student progress and achievements is provided. This report contains important information about the character and abilities achieved by students as well as possible follow-up methods. After conducting summative assessment, progress reports and student learning achievements are provided, which are simple and informative, offering valuable information about the character and competencies acquired by students and strategies that can be implemented for follow-up activities.

The implementation of assessment in the Independent Curriculum follows five principles (Mujiburrahman, Kartiani, and Parhanuddin 2023):

1. Assessment conducted is an integral part of the learning process.
2. Assessment is planned and carried out according to its assessment functions.

3. Assessment must be conducted with proper planning.
4. Student progress reporting should be easy and informative.
5. The results of assessments are used as a reflective material for students, teachers, and parents..

In line with what has been discussed above, Setyawan and Masduki in Nasution (Nasution 2022) identify five principles of assessment in the School Empowerment module: 1) assessment is an integral part of the teaching and learning process, facilitating learning and providing information as a reflection for teachers, students, and parents; 2) assessments designed should align with predetermined objectives; 3) assessments are created to be fair, valid, and reliable, providing comprehensive information to teachers, students, and parents regarding progress in learning achievements and decisions on next steps; 4) assessments are designed in the form of tasks, instruments, and techniques that align with predetermined learning objectives; 5) student learning progress reports should be simple and informative, serving the purpose of enhancing and ensuring the quality of learning. Furthermore, Budiono and Hatip (Budiono and Hatip 2023) state that assessment in the Independent Curriculum is grounded on two principles: 1) the design of flexible learning that adapts to the changing times. Changes, especially in the field of education, need to be addressed with flexible learning models; 2) the diversity of contexts in our country, which presents both challenges and opportunities for the education sector. Therefore, instructional design needs to be carried out to ensure that educational outcomes align with the needs of the community.

In the implementation of the Independent Curriculum, assessments conducted should be based on eight assessment paradigms, namely: 1) Application of a growth mindset; 2)

Integrated assessment, which is carried out in an integrated manner with learning that encompasses attitudes, knowledge, and skills; 3) Flexibility in the timing of assessments, which depends on the teacher's discretion in determining when to conduct assessments; 4) Flexibility in determining the types of assessments, enabled by the differentiation in the Independent Curriculum, including process differentiation, content differentiation, and product differentiation, allowing teachers to choose the appropriate assessment types for the topics taught; 5) Wide-ranging use of assessment techniques and instruments, encompassing a wide variety. Some common assessment techniques include observation, performance evaluation, and oral and written tests; 6) Impartiality in setting achievement standards for learning objectives, allowing for variation among schools in formulating these criteria. Each school has the freedom to establish achievement criteria for learning objectives that align with their goals and learning pathways.

By considering the characteristics of learning objectives, learning activities, and assessments conducted, each school can develop criteria that are suitable for their own needs and context. This provides flexibility in evaluating student achievement and ensures the alignment between the objectives of learning activities and the assessments used. 7) Flexibility in processing assessment results: Data processing can take the form of numbers (quantitative) and narratives (qualitative), and 8) flexibility in determining promotion criteria: Each school and teacher are given the flexibility to determine promotion criteria that refer to progress reports, achievement reports, Pancasila Student Profile Strengthening Project (P5) activities, student portfolios, extracurricular activities, and attendance levels.

Assessment Instruments in the Cognitive Domain in the Independent Curriculum

The Independent Curriculum provides a diverse range of options regarding assessment instruments that can be used. Teachers can choose the instruments that are suitable for assessment. Teachers are given the freedom to use and create instruments for assessing students. As stated by Kusdiah, a teacher at MTs Negeri 1 Lombok Timur, the entire process of assessment and question creation is entrusted to the teacher. The teacher forms a small group in a particular area to develop questions in line with learning outcomes. The common question formats used include multiple-choice, complex multiple-choice, true-false, and essay questions. When designing assessment instruments, it is essential to consider the level of cognitive complexity you want to achieve. You can use Bloom's taxonomy as a reference. Bloom's taxonomy organizes cognitive levels into six levels, ranging from lower to higher levels.

In the Independent Curriculum, cognitive domain assessment instruments are not only required for summative assessment but can also be used in diagnostic assessment and formative assessment. The aim is to determine the extent to which students comprehend the subject matter concepts that will be or have been taught. Because the cognitive domain is an area related to knowledge, understanding, and intellectual thinking. In the context of education, the cognitive domain encompasses students' abilities to recall information, grasp concepts, apply knowledge, analyze, evaluate, and generate new ideas.

Assessment of the cognitive domain in the Independent Curriculum is conducted using assessment instruments that align with the competency levels within the cognitive domain. These assessment instruments may include written tests, oral tests, assignments, and other assessment techniques. The

following are some considerations to be taken into account in assessing the cognitive domain in the Independent Curriculum:

1. Assessment should be conducted authentically and in accordance with the competency levels in the cognitive domain to be assessed.
2. Assessment instruments should be designed in such a way that they can measure students' abilities accurately and objectively.
3. Assessment instruments should encompass all competency levels in the cognitive domain, namely remembering, understanding, applying, analyzing, evaluating, and creating.
4. Assessment should be carried out periodically and integrated with the learning process.
5. Assessment results should be used to improve the learning process and enhance students' competencies..

In assessing the cognitive domain in the Independent Curriculum, teachers need to consider students' characteristics and use assessment instruments that are appropriate for the competency levels in the cognitive domain to be assessed. Furthermore, assessments should be conducted periodically and integrated with the learning process to ensure that learning objectives are achieved, and students' competencies are enhanced. The following are strategies that can be employed when designing assessment instruments for the cognitive domain:

1. Stay focused on learning objectives: Ensure that every question you ask is relevant to the learning objectives you aim to achieve. Questions should guide students to think at an appropriate cognitive level.
2. Use a variety of question formats: In addition to multiple-choice

questions, try using essay questions, case studies, or short-answer questions to assess various cognitive levels.

3. Involve students in question creation: Involving students in the creation of questions can help them understand the expected cognitive level. Ask them to design questions according to the Bloom's taxonomy they have learned.
4. Provide constructive feedback: After students answer questions, offer clear and constructive feedback to help them understand where they stand in terms of cognitive levels and how to improve their understanding..

Conclusion

Assessment in the independent curriculum is generally divided into three categories, namely diagnostic, formative, and summative assessments. These three assessments are inseparable from the assessment of the cognitive domain, which is related to students' knowledge and understanding. The assessment instruments for the cognitive domain are conducted authentically in accordance with the competencies possessed by students, can measure objectively, encompass all levels in Bloom's taxonomy, are integrated with learning, and aim to enhance students' competencies. Assessing the characteristics of students in the cognitive domain is a crucial consideration in its development, ensuring that it can achieve the learning objectives that have been established.

Assessment is an integral activity within the learning process. It is conducted to seek evidence or a basis for evaluating the achievement of learning objectives. The design of assessment in Islamic Religious Education (PAI) and Civic Education (BP) at SMP 9 Mugi is carried out in a structured manner, starting from planning, implementation, data analysis, data

interpretation, and follow-up. The types of assessment conducted by PAI and BP teachers at 9 Mugi include Diagnostic Assessment, Formative Assessment, and Summative Assessment. Diagnostic assessment is conducted prior to determining learning objectives and instructional modules, with the aim of understanding students' learning characteristics, strengths, and weaknesses. Formative assessment is the type of assessment that teachers emphasize the most because the results of formative assessments are highly useful in improving the ongoing learning process. Subsequently, teachers conduct summative assessments to ensure the achievement of the overall learning objectives.

As an essential component within the learning cycle, teachers are expected to possess the ability, willingness, and commitment to carry out their professional duties. The teacher's capacity to utilize various forms of assessment, not limited to written tests alone, in the effort to gather information about their students' development is highly necessary. This is to ensure that the information or feedback derived from assessments regarding students' abilities becomes richer and more beneficial in the subsequent instructional design process.

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