

Analysis of Cognitive Representation of LOTS, MOTS, and HOTS in the Akidah Akhlak Madrasah Examination

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Abstract: This study aims to analyze and map the distribution of cognitive representations of Low Order Thinking Skills (LOTS), Middle Order Thinking Skills (MOTS), and High Order Thinking Skills (HOTS) in the Madrasah Examination (UM) instruments for Akidah Akhlak subject in the 2025/2026 academic year at MA Manba'ul Ulum Kabul. A descriptive quantitative approach with content analysis method was employed. The research subject comprised the master document of blueprints and test items of the Akidah Akhlak examination, gathering a total of 45 items consisting of 40 multiple-choice questions and 5 essays. The data analysis instrument utilized a codification sheet based on the revised Bloom's Taxonomy matrix (Anderson & Krathwohl). The results revealed that the cognitive level distribution included the LOTS domain (Level 1) at 24.44% (11 items), the MOTS domain (Level 2) as the dominant content at 53.33% (24 items), and the HOTS domain (Level 3) at 22.23% (10 items). This empirical data formulation clarifies an empirical research gap in the form of a slight codification mismatch between the teacher's initial document (12 LOTS, 23 MOTS, 10 HOTS) and the researcher's objective verification, which yields a more precise new composition, while simultaneously proving that the construction of the evaluation instrument still meets the ideal proportion standards and aligns with the government curriculum mandate in KMA Number 183 of 2019.

Keywords: Bloom Taxonomy; Madrasah Examination; Akidah Akhlak; HOTS.

Abstrak: Penelitian ini bertujuan untuk menganalisis dan memetakan distribusi representasi kognitif Low Order Thinking Skills (LOTS), Middle Order Thinking Skills (MOTS), dan High Order Thinking Skills (HOTS) pada instrumen Ujian Madrasah (UM) mata pelajaran Akidah Akhlak tahun ajaran 2025/2026 di MA Manba'ul Ulum Kabul. Pendekatan yang digunakan adalah kuantitatif deskriptif dengan metode analisis isi (content analysis).

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Subjek penelitian ini adalah dokumen master kisi-kisi dan lembar soal UM Akidah Akhlak yang menghimpun total 45 butir soal, terdiri dari 40 butir pilihan ganda dan 5 butir uraian (essay). Instrumen analisis data menggunakan lembar kodifikasi berbasis matriks Taksonomi Bloom revisi (Anderson & Krathwohl). Hasil penelitian menunjukkan sebaran tingkat kognitif meliputi ranah LOTS (Level 1) sebesar 24,44% (11 butir soal), ranah MOTS (Level 2) sebagai muatan dominan sebesar 53,33% (24 butir soal), dan ranah HOTS (Level 3) sebesar 22,22% (10 butir soal). Formulasi data empiris ini membuktikan adanya celah penelitian (research gap) berupa tidak kesinkronan tipis antara dokumen awal guru (12 LOTS, 23 MOTS, 10 HOTS) dengan hasil verifikasi objektif peneliti yang melahirkan komposisi baru yang lebih presisi, sekaligus membuktikan bahwa konstruksi instrument evaluasi tersebut tetap memenuhi standarisasi proporsi ideal dan selaras dengan amanat kurikulum pemerintah dalam KMA Nomor 183 Tahun 2019.

Kata Kunci: Taksonomi Bloom; Ujian Madrasah; Akidah Akhlak; HOTS.

A. Introduction

The shift in the 21st-century educational paradigm demands a fundamental transformation across all learning aspects, including evaluation and assessment systems. Learning evaluation is no longer viewed merely as an administrative measurement tool to determine student graduation, but rather as a strategic instrument to map and stimulate their critical thinking skills (Arifin, 2017). In today's era of information disruption, education faces the challenge of producing a generation capable of filtering, analyzing, and evaluating every phenomenon wisely. Therefore, assessment instruments used in educational institutions must shift from low-level rote testing to assessments that measure higher-order thinking skills (Widana, 2017).

This condition becomes crucial when applied to Islamic Religious Education (PAI), particularly the Akidah Akhlak subject at the Senior Islamic High School (Madrasah Aliyah) level. Akidah Akhlak is not merely a subject focused on knowledge transfer, but an internalization process of values that shapes students' moral foundation and character (Majid, 2014). Amid contemporary moral challenges among adolescents such as cyberbullying, online gambling, and fake news students can no longer be taught merely to memorize definitions of commendable or blameworthy behaviors. They must

be stimulated to analyze real-world case studies, evaluate moral dilemmas, and create actionable solutions aligned with Islamic teachings. This applicable learning can only be accurately measured if the examination instruments created by teachers possess adequate cognitive representation quality.

The government, through the Ministry of Religious Affairs, has established a clear legal framework regarding the standardization of PAI curriculum and assessment via KMA Number 183 of 2019 (Kementerian Agama, 2019). Under this regulation, a final evaluation instrument at the madrasah level, such as the Madrasah Examination (UM), should ideally target an ideal cognitive proportion. Theoretically, this comprises Low Order Thinking Skills (LOTS) at C1 and C2 levels at 30% (15 items), Middle Order Thinking Skills (MOTS) at the C3 level at 50% (25 items), and High Order Thinking Skills (HOTS) at C4, C5, and C6 levels at 20% (10 items) out of a standard total of 50 items.

However, in practical implementation at the institutional level, curriculum adaptation dynamics and discrepancies between institutional administrative documents and real content often occur (Subali, 2016). Many exam instruments in madrasahs are administratively reported by teachers as aligned with certain cognitive levels; yet, when re-verified using standardized theoretical instruments, cognitive taxonomy shifts are discovered. A limited deep understanding of operational action verbs (KKO) that differentiate contextual understanding from transitional application is often the primary driver of this gap.

Previous studies have extensively explored item quality analysis in Islamic Religious Education. Studies evaluating exam instruments generally focus on conventional qualitative analysis testing validity, reliability, and item discrimination statistically (Sudijono, 2015). On the other hand, research connecting evaluation instruments with cognitive taxonomy is growing, but mostly limited to daily assessments or small-scale semester exams. Studies specifically examining Madrasah Examination (UM) documents in Akidah Akhlak while investigating the research gap between teacher administrative data and real objective analysis based on updated government regulation standards remain scarce. This gap provides the distinct space for

this study, directing its analytical focus toward providing an objective verification of how accurately a final Aliyah-level evaluation instrument represents students' cognitive reasoning in practice.

B. Research Method

This study adopted a descriptive quantitative approach employing the content analysis method. This method aims to objectively, systematically, and quantitatively reveal the distribution of cognitive representations within the examined document text (Krippendorff, 2018). The research location was focused on MA Manba'ul Ulum Kabul. Data collection and mapping took place during the even semester of the 2025/2026 academic year, coinciding directly with the Madrasah Examination (UM) execution at the institution.

The primary research subject/data source consisted of the master test document and blueprint for the Akidah Akhlak Madrasah Examination (UM). The evaluated instrument comprised 45 test items divided into two formats: 40 multiple-choice questions and 5 essay questions. Overall, the instrument mapped religious material integration from grades X, XI, and XII Aliyah. The data collection technique involved documentation, where official curriculum files were gathered through direct coordination with administrative staff and subject teachers at MA Manba'ul Ulum Kabul.

Two main document files were retrieved: first, the self-mapping blueprint sheet created by the Akidah Akhlak subject teacher; second, the master test paper administered to students. The analysis instrument used was a codification sheet based on the revised Bloom's Taxonomy matrix (Anderson & Karthwohl, 2015). This sheet categorizes cognitive levels into three main domains: Level 1 (L1) for Low Order Thinking Skills (LOTS) covering C1 (remembering) and C2 (understanding); Level 2 (L2) for Middle Order Thinking Skills (MOTS) covering C3 (applying); and Level 3 (L3) for High Order Thinking Skills (HOTS) covering C4 (analyzing), C5 (evaluating), and C6 (creating).

The data analysis technique was carried out through four main stages adapted from the qualitative descriptive text analysis model (Miles & Huberman, 2014). The

first stage was data reduction, which involved selecting and ensuring that all components of the 45 UM test items were clearly readable. The second stage was verificative codification, wherein the researcher acted as a scientific analyst examining item indicators, comparing the distribution claims in the teacher's document with the linguistic characteristics of the items, and categorizing each item into the analysis matrix table based on its genuine cognitive domain characteristics. The third stage involved data tabulation and single-proportion formula calculations (Sudjana, 2016). The final stage was drawing conclusions, in which the empirical percentage results of the researcher's findings were compared through data triangulation with the claims in the teacher's document and the macro benchmark standards in KMA Number 183 of 2019 (Kementerian Agama 2019).

C. Result and Discussion

Based on the content analysis stages conducted on the entire Madrasah Examination (UM) instrument for the Akidah Akhlak subject at MA Manba'ul Ulum Kabul for the 2025/2026 academic year, comprehensive data regarding the distribution map of cognitive levels of the items were obtained. The analysis was conducted by comparing three main references: (1) the ideal target proportion based on the Decree of the Minister of Religious Affairs (KMA) Number 183 of 2019, (2) the teacher's self-mapping blueprint document, and (3) the researcher's objective verification results using the revised Bloom's Taxonomy matrix codification sheet (Anderson & Karthwohl, 2015).

The summary of the triangulation comparison results for the cognitive level distribution of the Akidah Akhlak Madrasah Examination instrument is presented in Table 1 below:

Table 1. Triangulation Comparison of Cognitive Level Distribution in the Akidah Akhlak UM Instrument

Assessment Data Reference Source	Total Items	Level 1 (LOTS: C1&C2)	Level 2 (MOTS: C3)	Level 3 (HOTS: C4-6)
KMA 183 Ideal Reference Standard	50 Items	15 Items (30%)	25 Items (50%)	10 Items (20%)

Teacher's Administrative Document	45 Items	12 Items (26.67%)	23 Items (51.11%)	10 Items (22.22%)
Researcher's Objective Verification	45 Items	11 Items (24.44%)	24 Items (53.33%)	10 Items (22.22%)

General Description and Composition Mapping of the Madrasah Examination Instrument

The Akidah Akhlak Madrasah Examination (UM) instrument at MA Manba'ul Ulum Kabul consisted of 45 items divided into two evaluation formats: 40 multiple-choice items (88.89%) and 5 essay items (11.11%). The reduction in item count from the ideal regulatory standard in KMA 183 (from 50 items to 45 items) served as an operational adaptation at the school level to fit the available examination time allocation (90 minutes) without sacrificing curriculum coverage representation.

The content mapping of this instrument encompasses all Islamic Religious Education (PAI) learning outcomes at the Madrasah Aliyah level, integrated across Grade X (30%), Grade XI (35%), and Grade XII (35%). The detailed distribution of item formats and verified cognitive levels from the researcher's verification is explicitly outlined in Table 2 below:

Table 2. Breakdown of Item Formats Based on Researcher's Verified Cognitive Levels

Item Format	Level 1: LOTS (C1-C2)	Level 2: MOTS (C3)	Level 3: HOTS (C4-C6)	Item
Multiple Choice	11 Items (27,50%)	21 Items (52,50%)	8 Items (20,00%)	40 Items
Essay	0 Items (0,00%)	3 Items (60,00%)	2 Items (40,00%)	5 Items
Grand Total	11 Items (24,44%)	24 Items (53,33%)	10 Items (22,22%)	45 Items

As clearly shown in Table 2, the essay format items were specifically directed toward measuring middle-to-high cognitive abilities (MOTS and HOTS), with no essay items falling within the LOTS domain (C1/C2). This instrument design explicitly

demonstrates the item developers' commitment to providing open-ended reasoning space for students in the subjective assessment section.

Critical Discrepancy Analysis (Research Gap): Teacher's Action Verb Codification Misconception vs. Objective Verification

One of the fundamental findings (*novelty*) of this study is the identification of a discrepancy or misalignment between the teacher's administrative document claims and the researcher's objective verification results. The teacher's initial document recorded the item distribution as 12 LOTS items (26.67%), 23 MOTS items (51.11%), and 10 HOTS items (22.22%). However, upon content validity testing and Revised Bloom's Taxonomy codification analysis, 1 multiple-choice item (Item No. 13) was found to be misclassified.

In the teacher's blueprint document, Item No. 13 was categorized as a C2 domain item (Understanding / LOTS). However, critical cognitive analysis by the researcher revealed that the item actually belongs to the C3 domain (Applying / MOTS).

Actual Construction of Item No. 13:

Amir is a Regional People's Representative Council (DPRD) member. During his tenure, a significant amount of the budget directed toward public welfare in the form of social aid was misdirected, as part of it was embezzled for his personal gain. Amir's action above is an example of a major sin, namely...

- a. Theft
- b. Robbery
- c. Mugging
- d. Corruption
- e. Collusion

Regarding the reason for the codification shift in this item, the teacher classified it as C2 (LOTS) under the assumption that the question merely asked for a "definition understanding" of types of major sins. However, when analyzed based on the cognitive process dimensions of the Revised Bloom's Taxonomy (Anderson & Karthwohl, 2015), this question requires students to execute or implement conceptual understanding of

blameworthy actions within a real-world case scenario of power abuse by a public official.

The use of a moral dilemma narrative involving an official skimming public aid funds forces students to properly diagnose and categorize the operational action. Therefore, the active Operational Action Verb (KKO) is not merely "explaining" (C2), but rather "identifying/applying to a case" (C3).

The shift in this single item highlights a gap in understanding among educational practitioners regarding the boundaries of Bloom's Taxonomy action verbs. Teachers often fall into initial surface-level visual perceptions of the narrative without examining the real cognitive load students must process when answering the question (Subali, 2016).

Case Analysis of Examination Items Based on the Original Madrasah Examination Script

To provide a detailed and measurable empirical overview, the following section presents a case analysis of sample test items directly drawn from the administered Akidah Akhlak Madrasah Examination document:

LOTS Domain Analysis (Low Order Thinking Skills - Level 1: C1 & C2)

The LOTS domain in this instrument comprised 11 items (24.44%), which tested students' declarative knowledge in the form of recall and basic understanding.

Sample Item No. 1 (Cognitive Level C1 - Remembering/Ordering):

1. Huduts. 2. Mumasatuhu lil hawadisi. 3. Fana'. 4. Ta'addud. 5. Ihtiajuhu ligairihi. The correct order of Allah's impossible attributes (*sifat mustahil*) corresponding to the negative attributes (*sifat salbiyah*) above is...

- a. 1, 2, 3, 4, and 5
- b. 1, 3, 2, 5, and 4
- c. 1, 5, 3, 2, and 4
- d. 1, 4, 3, 2, and 5
- e. 1, 5, 4, 3, and 2

Codification Analysis: This item operates purely at the C1 (remembering) level. Students are merely required to recall the memorized sequence of Allah's impossible attributes parallel to *sifat salbiyah* without requiring contextual reasoning.

Sample Item No. 2 (Cognitive Level C2 - Understanding):

An attribute that must exist in Allah's Essence as a perfection for Him is the definition of...

- Necessary attributes (*sifat wajib*) of Allah SWT
- Negative attributes (*sifat salbiyah*) of Allah SWT
- Abstractive attributes (*sifat ma'ani*) of Allah SWT
- Impossible attributes (*sifat mustahil*) of Allah SWT
- Personal attributes (*sifat nafsiyah*) of Allah SWT

Codification Analysis: This item operates at the C2 (understanding) level, requiring students to identify the basic definition of Allah's attribute categories.

MOTS Domain Analysis (Middle Order Thinking Skills - Level 2: C3)

The MOTS domain dominated this Madrasah Examination instrument with 24 items (53.33%), measuring the ability to apply concepts to real-world cases.

Sample Item No. 10 (Cognitive Level C3 - Applying/Case Study):

Qomar is a wealthy man whose wealth is unmatched in his village. However, upon investigation, his wealth was obtained through games or matches played with monetary bets, where the winner takes all the money. Qomar's action is an example of...

- Israf* (Extravagance)
- Liwath* (Sodomy)
- Lesbianism
- Gambling (*Judi/Maysir*)
- Theft

Codification Analysis: This item tests the C3 (applying) level. Students are not asked for a rote definition of gambling; instead, they are given a narrative of the character "Qomar" to analyze and categorize into a specific transgression of Islamic law.

Sample Item No. 34 (Cognitive Level C3 - Applying Action Concepts):

Hendra is a Grade 12 student at Madrasah Aliyah Manba'ul Ulum Kabul who sells children's toys at his shop. Every day after school, he collects plastic waste to craft toys to sell for additional income to save for his future college tuition. Hendra's behavior demonstrates the commendable character (*akhlak terpuji*) of...

- Optimistic
- Innovative
- Dynamic
- Hardworking
- Productive

Codification Analysis: This question is highly practical and rooted in the local context of madrasah students. The C3 cognitive process functions as students connect the action of recycling plastic waste into economic value with the concept of commendable moral character (Creative/Innovative/Productive).

HOTS Domain Analysis (High Order Thinking Skills - Level 3: C4, C5, & C6)

The HOTS domain was consistently represented by 10 items (22.22%), measuring analytical, evaluative, and synthesis thinking skills based on textual and historical stimuli.

Sample Item No. 12 (Cognitive Level C4 - Analyzing Textual Evidence):

Consider the snippet of Q.S. al-Muddaththir verses 42–43 below:

مَا سَأَلَكُمْ فِي سَفَرٍ . قَالُوا لَمْ نَكُ مِنَ الْمُصَلِّينَ

The verse above is textual evidence (*dalil*) showing that...

- Those who neglect prayer will be questioned by angels
- Angels only question those who neglect prayer
- Angels will not question individuals about neglecting prayer
- Neglecting prayer causes one to enter Hellfire
- Angels will not admit those who neglect prayer into Hellfire

Codification Analysis: This item demands C4 (analyzing) capability. Students must deconstruct the Qur'anic text and analyze the causal relationship between neglecting prayer and the eschatological consequence of entering the Saqar Hellfire.

Sample Item No. 14 (Cognitive Level C4 - Analyzing Historical Events/Tahkim):

During the second half of Uthman ibn Affan's caliphate, a deeply saddening political situation arose resulting in his assassination due to various tribulations... leading to two major conflicts, namely the Battle of the Camel and the Battle of Siffin. During the Battle of Siffin, the famous Tahkim (arbitration) event occurred... The lesson (*hikmah*) that can be drawn from the Tahkim event above is...

- Hostility will only lead to division
- Hostility does not always lead to division
- Differences of opinion always lead to division
- In life, there should be no differences in any aspect
- There is no peace in differences of opinion

Codification Analysis: Item No. 14 is a highly substantial HOTS item (C4-Analyzing). Students are presented with a complex Islamic history stimulus (Battle of Siffin & Tahkim Event) and asked to extract social-philosophical values and moral-religious lessons regarding the destructive impact of internal conflict.

Sample Essay Item No. 4 (Cognitive Level C4/C5 - Analyzing/Differentiating Concepts):

Elaborate on what is meant by creative and innovative...!

Codification Analysis: Essay item No. 4 requires students to deconstruct concepts, distinguishing between two terms that are often equated (Creative vs. Innovative) and independently formulating theoretical arguments.

Sample Essay Item No. 5 (Cognitive Level C5 - Evaluating Legal Status/Verse):

" Briefly elaborate on the correct meaning of the snippet of Q.S. at-Tawbah verse 67 below: **إِنَّ الْمُنَافِقِينَ هُمُ الْفَاسِقُونَ** "

Codification Analysis: Essay item No. 5 resides in the C5 (evaluating) domain. Students are asked to perform deep interpretation and theological assessment regarding

the status of wickedness (*fasik*) for hypocrites (*munafik*) based on Qur'anic textual evidence.

Integrative Discussion: Cognitive Balance, KMA 183/2019, and 21st Century Challenges

The empirical findings of this study show that the Akidah Akhlak Madrasah Examination instrument at MA Manba'ul Ulum Kabul overall possesses a very sound, ideal cognitive construction that meets government regulatory standards. The resulting distribution proportion 24.44% LOTS, 53.33% MOTS, and 22.22% HOTS aligns with and even exceeds the minimum target set in KMA Number 183 of 2019 (which requires a minimum HOTS portion of 20.00%).

The dominance of the MOTS domain (53.33%) in Akidah Akhlak is pedagogically sound. Akidah Akhlak is not merely theoretical knowledge (cognition), but rather the learning of practical knowledge (*ilmu amaliyah*) that emphasizes habituation, attitude, and real action (action and behavior) (Majid, 2014). Therefore, the largest portion of items is aimed at testing students' ability to apply moral values in daily life contexts.

Meanwhile, the presence of 22.22% HOTS items demonstrates that the item developers at MA Manba'ul Ulum Kabul have made concerted efforts to respond to 21st-century educational challenges. HOTS-oriented assessments are essential for developing students' critical thinking, problem-solving, and moral decision-making skills when facing information disruption and contemporary moral crises (Widana, 2017).

These research findings carry strategic implications across three levels, as detailed below:

Pedagogical Implications for Teachers

Subject teachers need to enhance their comprehensive understanding of operational action verb (KKO) distinctions in the Revised Bloom's Taxonomy. The identified codification gap (Item No. 13 mistaken for C2 instead of C3) highlights the importance of in-depth training on contextual stimulus-based item drafting to prevent misinterpretation during blueprint construction.

Managerial Implications for School Principals and Supervisors

School management needs to revise item development procedures by mandating a peer-review process or inter-rater reliability test before final exam scripts are printed and administered to students.

Policy Implications for the Ministry of Religious Affairs

The Directorate of Madrasah Curriculum, Facilities, Institutional Affairs, and Student Affairs (KSKK) under the Ministry of Religious Affairs is encouraged to continuously provide standardized HOTS-oriented item banks and conduct ongoing technical assistance (*bimtek*) on contextual assessment construction for Islamic Religious Education (PAI) teachers.

D. Conclusion

Based on the content analysis results and discussion of the evaluation documents at MA Manba'ul Ulum Kabul, it can be concluded that the official distribution of cognitive representations in the Madrasah Examination (UM) instrument for the Akidah Akhlak subject in the 2025/2026 academic year meets the ideal proportion standards mandated by the government curriculum. This research successfully reveals a data gap (*research gap*) in the form of a 1-item codification shift from the teacher's initial administrative classification (12 LOTS, 23 MOTS) to the researcher's more precise verification data: namely, the LOTS domain (Level 1) at 24.44% (11 items) and the MOTS domain (Level 2) as the dominant content at 53.33% (24 items). Meanwhile, the HOTS domain (Level 3) remained consistent and stable at 22.22% (10 items), successfully exceeding the minimum target threshold established in KMA Regulation Number 183 of 2019. This data formulation proves that the construction of assessment instruments at the madrasah is oriented toward stimulating students' critical thinking and contextual moral problem-solving, although enhanced precision in operationalizing action verbs (KKO) within the test blueprint is still needed.

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