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From Remembering to Creating: Cognitive Maturity of Islamic Religious Education Postgraduate Students and Its Implications for the SDGs

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Abstract

Objective: Higher Order Thinking Skills (HOTS) constitute a fundamental competency in postgraduate education because they enable students to analyze, evaluate, and generate innovative solutions to complex educational problems. Grounded in the Revised Bloom's Taxonomy, this study aims to examine the cognitive maturity of third-semester Master of Islamic Religious Education students by mapping their cognitive performance across levels C1–C6 in responses to Final Semester Examination questions. **Theoretical framework:** The study is theoretically grounded in the Revised Bloom's Taxonomy, which conceptualizes cognitive development as progressing from remembering (C1) and understanding (C2) to applying (C3), analyzing (C4), evaluating (C5), and creating (C6). **Literature review:** Previous studies have consistently reported that university students tend to demonstrate proficiency at lower cognitive levels while encountering difficulties in higher-order thinking, particularly in analysis, evaluation, and creation. **Method:** This study employed a document and content analysis approach by examining the examination answer sheets of 15 postgraduate students. Each response was systematically coded according to the cognitive processes of the Revised Bloom's Taxonomy, while quantitative descriptive analysis was used to determine the percentage distribution of cognitive levels, supported by qualitative interpretation of students' reasoning, analytical depth, and argument quality. **Results:** The findings reveal that 73% of students remained within lower-order cognitive levels (C1–C3), demonstrating competencies in remembering, understanding, and applying concepts. Only 27% achieved the analytical level (C4), whereas none demonstrated evaluation (C5) or creation (C6). These findings indicate that postgraduate students' cognitive maturity remains below expectations and is influenced by instructional practices emphasizing factual knowledge and procedural understanding rather than analytical, evaluative, and creative thinking. **Implications:** The study implies that postgraduate learning should integrate active learning strategies, authentic assessment, and HOTS-oriented question design to cultivate higher cognitive competencies. Strengthening these dimensions contributes directly to Sustainable Development Goal 4 by improving educational quality and preparing graduates capable of critical reasoning and innovative problem-solving. **Novelty:** The novelty of this research lies in providing an empirical cognitive maturity profile of Islamic Religious Education postgraduate students through systematic examination analysis, offering evidence-based recommendations for redesigning postgraduate instruction and assessment toward higher-order thinking development.

Keywords: higher-order thinking skills, revised bloom's taxonomy, cognitive maturity, islamic religious education, sdgs.

INTRODUCTION

Islam is a religion that motivates humanity to develop intellectually. To foster this intellectual growth, God revealed the first revelation, Surah al-'Alaq, verses 1 to 5. The revelation of these verses about reading was not without purpose or urgency. Rather, there was a greater agenda that God wished to explain [1]. However, this agenda requires in-depth analysis from the reader. Reading requires tools and a strong scientific foundation to ensure clarity of understanding. The first revelation not only presents the importance of reading but also emphasizes the importance of deepening what is read. Understanding a particular reading is impossible without clarity of thought. Clarity of thought will not emerge without the five educational instruments contained in the first revelation.

The five educational instruments are: teachers, students, methods, infrastructure and curriculum [2], [3]. In the context of learning, students can't develop brilliant thinking without the support of educational instruments, one of which is teachers. Teachers who often educate students in higher education are known as lecturers. Lecturers provide motivation, provide examples, present phenomena, and explain theories integrated with various cases, all to improve students' thinking. Moreover, the situation and conditions of this digital era require postgraduate students to possess critical thinking skills, which is one of the four 21st-century skills [4], [5]. It's not a student if he can't think critically. Critical thinking is crucial, given the rapid flow of various types of data in this digital era. Whether it's text, video, voice notes, images, or so on, all require filtering. Without filtering, students will be swept away by a torrent of information that can mislead their minds and disrupt social stability [6], [7]. However, the goal of Islamic education to develop critical thinking is not fully reflected in the thinking capacity of postgraduate students.

All data presented to students should not be immediately absorbed mentally, but must first be processed using critical thinking. The process of achieving critical thinking is a lengthy one. It's the same length as a person's educational journey, from kindergarten, elementary school, junior high school, high school, undergraduate, master's, and doctoral studies. If calculated, the time required to become an adult and mature in thought is at least 22 years [8], [9]. The length of the learning process is commensurate with the quality of the results. However, the question is whether every student studying in a postgraduate program definitely possesses the maturity of thought characterized by the ability to analyze and solve problems. This ability, in principle, requires students to study knowledge that will encourage forward-thinking, one of which is studying logic as a means of constructing systematic and rational arguments [10], [11]. There is little research on HOTS that directly links postgraduate students' cognitive outcomes to exam answers, particularly in Islamic religious education.

So that postgraduate students' thinking is mature and adult, apart from having experience that requires thinking, they also receive education based on Brain-Based Learning, compared to learning that relies more on conventional learning patterns [12], [13]. Conventional text-based learning, without allowing for dialogue with the challenges of the times, will simply pile up in the back of your mind. Knowledge is repressed and only released when used in the classroom. Even then, learning is one-way, not two-way. The importance of two-way learning is to provide students with the space to critique texts within a body of knowledge [14], [15]. One opportunity given to postgraduate students is the opportunity to write papers. These papers are presented to students and lecturers. This will reveal how students respond to the papers presented. If questions are asked using thought and combined with literacy findings, the questioning is seen to be of high quality. However, if questions are simply asked without supporting data from literacy, the quality of the questions will be dry and lacking in data [16], [17].

Student literacy has recently declined, as evidenced by various discussions among lecturers when questioning students' intellectual abilities. In one discussion, the lecturers questioned why students' current fighting spirit and reading skills are so unsatisfactory. This

was evident in various classroom discussions. Students were always asking the same questions, as if there were no other students in the class. When their semester-long lectures were reviewed, they were still undecided on their answers [18], [19]. Their answers were still text-based and lacked critical thinking. Their answers were still based on results and readings, not yet the product of thought that combines theory and facts, as well as phenomena integrated and mediated by the power of the mind [20], [21]. This condition needs to be strengthened and clarified through the results of student thinking held at the end of the semester, called the Mid-Term Exam (UTS). The goal is to determine the maturity of students' thinking through their UTS answers. Lectures are not simply about memorizing material, but rather about encouraging students to develop higher-order thinking skills, ranging from analysis, evaluation, and creation, using the revised Bloom's Cognitive Taxonomy [22], [23].

There are two research questions used in this study: first, how is the distribution of students' cognitive process levels in answering mid-term exam questions based on the Revised Bloom's Taxonomy? Second, how is the level of students' thinking maturity reflected through their ability to answer questions at the LOTS to HOTS levels in the mid-term exam? Meanwhile, the researcher listed two research objectives, according to the number of research questions. To map the distribution of students' answers at each level of the Revised Bloom's Taxonomy cognitive process in the mid-term exam. To describe the level of students' thinking maturity through an analysis of their ability to answer low- to high-level questions in the mid-term exam. Therefore, the importance of students' thinking maturity, this study will attempt to explore the level of students' thinking depth as seen from their answers after taking the Final Semester Exam (UTS).

LITERATURE REVIEW

Revised Bloom's Taxonomy

Nothing is eternal in scientific theory; everything will change and shift, including Bloom's Taxonomy, which has undergone slight changes. This revised version of Bloom's theory was developed by Anderson, David R. Krathwohl and his team in 2001 as a modification of the revised taxonomy initiated by Benjamin S. Bloom. The cognitive domain in Bloom's revised theory is divided into two: the knowledge content dimension and the cognitive process dimension. The knowledge dimension consists of factual, conceptual, procedural, and metacognitive [22], [24]. While cognitive processes consist of remembering, understanding, applying, analyzing, evaluating and creating.

HOTS (Higher Order Thinking Skills)

HOTS essentially refers to higher-order cognitive thinking skills—including critical thinking, reflective thinking, creativity, problem-solving, and decision-making—often associated with the higher levels of RBT (analyze, evaluate, and create). This concept is crucial in modern education because it enables students to not only “memorize” facts but also to process, manipulate, and apply knowledge in real-world situations, discover new solutions, and intelligently evaluate and make decisions [25], [26].

In the educational literature, many researchers use RBT to evaluate the presence or distribution of HOTS levels in exam questions, assignments, or evaluations. For example, studies analyzing exam questions or textbooks show that many questions are still at a low level, indicating that HOTS has not been optimally implemented [27], [28].

HOTS is considered important, especially in higher education, because students are expected to develop from just basic knowledge to critical, analytical, creative, and reflective thinking skills that are relevant for problem solving, research, and real-life applications in professional life [29], [30]. According to the study, the Revised Bloom's Taxonomy is a relevant framework for measuring students' thinking maturity. Meanwhile, HOTS serves as a measure of the quality of learning outcomes in higher education institutions; however, the

effectiveness of HOTS implementation can only be measured through direct analysis of student responses, not solely from question design.

METHODOLOGY

This research involved 15 students in the third semester of the 2025/2026 academic year, majoring in Islamic Religious Education at the Muhammadiyah University of Tangerang (UMTA) postgraduate program. The number of fifteen students was chosen because it covers the entire population of the class being studied and allows for extensive cognitive mapping. Third-semester students are considered capable of mature thinking because they have attended lectures for three semesters. This research method uses document analysis (content/document analysis) of students' mid-term exam answers.

All answer sheets are collected as primary data, then each answer is coded based on the cognitive level in the Revised Bloom's Taxonomy from the lowest level (C1 - Remember, C2 - Understand, C3 - Apply) to the highest level (C4 - Analyze, C5 - Evaluate, C6 - Create). After coding is done, the data is analyzed qualitatively to determine the quality of students' answers, such as the depth of argument, originality of solutions, or structure of thinking, especially for answers that fall into the HOTS (Analyze Create) level. This approach is in line with the methods used in similar studies that examine the composition of questions or answers based on HOTS and the Revised Bloom's Taxonomy [31]. To maintain the validity of data interpretation, cognitive levels are coded consistently using Revised Bloom's Taxonomy indicators.

RESULTS AND DISCUSSION

This study examines 15 students' thinking when answering mid-term exam (UTS) questions. Students' answers will be explored and reviewed using Bloom's taxonomy cognitive approach, ranging from remembering, understanding, applying, analyzing, evaluating, and creating. Furthermore, researchers will assess the students' level of thinking maturity through mid-term exam questions ranging from LOTS to HOTS.

1. Research result

The thinking abilities of all students in answering exam questions are not the same. Some can answer questions at levels C1 to C3. Others are able to answer using C4 to C6. It is also possible that some have only reached levels C1 and C2. Therefore, this study will explain students' abilities in answering mid-term exam questions. When expressing their thoughts, it will be clear to what level postgraduate students have progressed. And on the other hand, have postgraduate students reached the HOTS or LOTS level of thinking? Because of the six mid-term exam questions, almost all of them are at the HOTS level. The first problem formulation that will be explained is related to students' thinking levels based on Bloom's theory. More details are presented below in table form.

Table 1. Student Thinking Level

No.	Student ID	Level Cognitive	Student Ability Based on Answers
1	Student 1	C1-C3	The answer focuses on the general overview and doesn't explain the method. Therefore, the core of the question isn't clearly answered. The answer only states and partially explains it.
2	Student 2	C1-C3	The mid-term exam answers are still focused on revealing what students understand. The answers are only stated, not analyzed.
3	Student 3	C1-C3	The midterm exam answers are just bullet points. These points are only explained, not analyzed.
4	Student 4	C1-C3	The answer is brief, a little over a page and a half long. The key points raised in the question aren't

			answered clearly and concisely. At first glance, the answer seems a bit lazy.
5	Student 5	C1-C3	The UTS answers were partly answered using general points and did not touch on answers that had analytical power.
6	Student 6	C1-C3	The mid-term exam answers only touch on the general overview aspect, and have not been analyzed in an analytical manner.
7	Student 7	C1-C3	The answers are bullet points, and some of them are general in nature. The amount of paper used to answer the questions is only a little over one and a half pages.
8	Student 8	C1-C3	The mid-term exam answer sheet takes up less than one and a half pages, and the answers are still general in nature.
9	Student 9	C1-C3	The midterm exam answers are almost six pages long, but the answers to the questions still quote expert opinions, without analyzing them.
10	Student 10	C1-C4	The midterm exam answers were four pages short. The student admitted that the answers were the result of his own analysis.
11	Student 11	C1-C4	The midterm exam answers are nine pages long. They not only cite and explain, but also analyze.
12	Student 12	C1-C3	All the mid-term exam answers were in the form of points, totalling less than four pages.
13	Student 13	C1-C4	The midterm exam answers are only two pages long. Despite being two pages long, they are quite analytical.
14	Student 14	C1-C3	The midterm exam answers are four and a half pages long. All answers are bullet points.
15	Student 15	C1-C4	Two and a half page answer. There's already an analysis.

In general, the research results show that the majority of postgraduate students excel at lower-level thinking skills (C1–C3) and have no achievements at the evaluation and creation levels (C5–C6). The results suggest that higher education does not automatically guarantee more advanced thinking skills. Based on the mapping above, students' ability to answer HOTS-weighted questions can be explained by the fact that the 15 students used as the research sample generally have many similarities in Bloom's Taxonomy levels. Only a few have different levels. Four (27%) students are at levels C1-C4, and 11 (73%) students are at levels C1-C3. From a HOTS perspective, third-semester postgraduate students in the Islamic Religious Education Master's program still have little HOTS-level thinking.

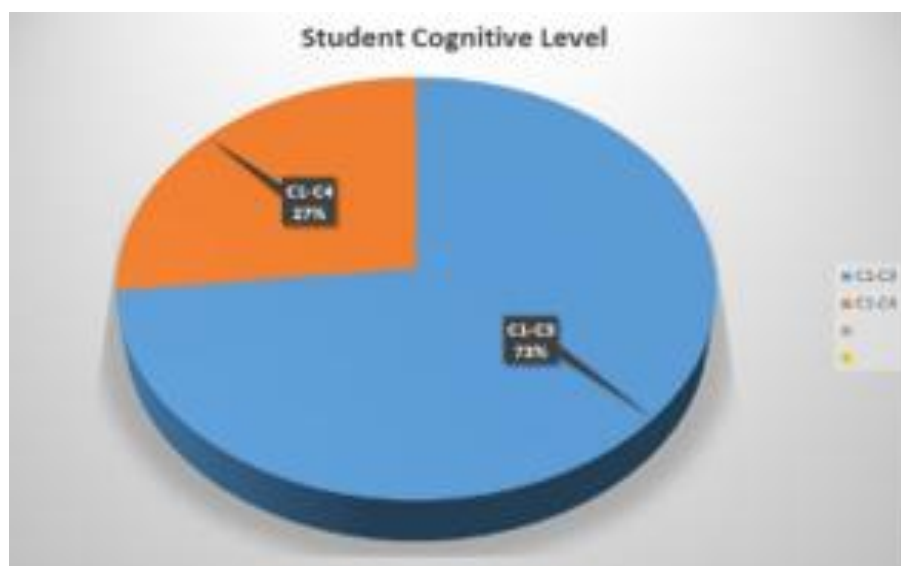


Figure 1. Student Cognitive Level

2. Discussion of Research Results

Based on the results of a mapping study of third-semester Master of Islamic Education students, only four of the 15 students had thinking skills ranging from memorization to analysis (C1-C4). Meanwhile, the thinking maps of 11 students were at the C4 level. This means that 73% of students' thinking was at the C1-C3 level. In many cases, student learning and lectures at universities often do not address aspects of analysis, evaluation, and creation. This learning environment ultimately leads to students being uncritical and unable to think complexly. This is because lecturers have not yet provided many challenges to encourage higher-order thinking (HOTS) [32]. This is because the learning environment has not or has not consistently used active learning methods.

Or perhaps the lecturers aren't serious about exploring and continuing to learn to enlighten students through a learning process that offers intellectual challenges. The question-making process also requires attention, so students don't just answer by stating the questions. This means the questions are at the Low Order Thinking Skills (LOTS) level. This is further reinforced by the fact that many lecturers in the field construct questions using the LOTS method. Therefore, it's understandable that higher-order thinking skills still fall short of expectations [33], [34]. It's important to consider that students should be given frequent practice solving HOTS-level problems, starting with analysis, evaluation, and creation. This needs to be encouraged, not just once or twice, but with increased intensity so that students become accustomed to higher-order thinking skills [35], [36].

In HOTS instruments, students are not only required to "know/remember" but also to organize information, evaluate, reason, and create solutions or arguments. Many students struggle to formulate answers at levels such as analysis or creation, such as problem structuring, argumentation, and originality, so they revert to "safe" methods: memorizing or explaining definitions. This is observed in research showing that even with HOTS questions, many students fail to meet the analysis, evaluation, or creation indicators [37], [38]. In another context, the lack of student competence in high-level thinking skills is closely related to the lack of integration of the lecture process that motivates critical thinking and self-regulated learning [39], [40]. Therefore, lecturers inevitably have to increase their capacity to handle high-level thinking. If students aren't accustomed to it, they won't be able to think at the HOTS level. The achievement of the SDGs, particularly quality education (SDG 4), is directly influenced by the HOTS skills of graduate students. If students lack sufficient evaluation and creativity skills, they may be unprepared to contribute to solving complex socio-religious issues.

CONCLUSION

Based on the results of mapping students' cognitive abilities in answering midterm exam questions, it appears that most students are at levels C1–C3, namely remembering, understanding, and applying. Only 27% of students were able to reach level C4 (analyzing), while the other 73% were still at a lower-order thinking pattern. This indicates that the higher-order thinking (HOTS) skills of third-semester students in the Master of Islamic Education Postgraduate program are still very limited. Student answers tend to be descriptive, in the form of points, and do not yet display a deep analytical structure. This condition indicates that students are not accustomed to thinking critically, constructing complex arguments, or conducting independent analysis of the given academic problems. The lack of HOTS achievement is closely related to the learning process and question design that do not consistently demand analytical, evaluation, and creative skills. The learning environment is not based on active learning, resulting in students not being trained to organize information critically or create original solutions. Furthermore, most lecturers still construct questions at the LOTS level, so students are accustomed to answering normatively and repetitively. As various studies have shown, students' low HOTS skills generally arise from a lack of integration of critical learning, insufficient HOTS practice, and minimal support for developing self-regulated learning. Therefore, improving the quality of learning and HOTS-oriented assessment design is an urgent need to enable students to develop at a higher level of thinking and meet the demands of 21st-century education. This study contributes to critical reflection on postgraduate assessment practices and emphasizes that HOTS-based learning must be transformed so that Islamic education can address the challenges and sustainable development of the 21st century.

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Author Contribution

Asep Abdurrohman designed this research, developed a theoretical framework, and led the analysis. Marzuki contributed to the methodological design and interpretation of data. Asori Mukhtarom supports the literature review and finalization of research writing results. All authors review and approve the final manuscript.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this article. This research was conducted independently, with no financial, institutional, or personal relationships that could affect the objectivity, interpretation, or presentation of the findings reported.

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