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Perception of Religious Lecturers of Higher Order Thinking Skills and Students' Academic Performance in Online Learning

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Abstract. Higher order thinking skills are an important element in facing the challenges of the 21st century. The application of higher order thinking skills in religious materials has been a significant concern. However, the lack of knowledge about the importance in religious learning has not been widely studied, especially in lecturers perception. This present study examined the lecturers' perceptions of implementing higher order thinking skills and the relevance to student academic performance in online learning. It employed a descriptive quantitative approach and engaged 33 lecturers and 63 students selected using a purposive sampling technique. All respondents who were involved consciously agreed to become research participants. Furthermore, the data collection instrument used a Likert scale consisting of 11 statements, documentation of test questions used in learning, and student learning outcomes. Instrument validation involved two experts with a reliability score above 0.7 and was declared valid. The learning outcomes instrument uses questions at the end of the semester for lecturers in Islamic education courses. Data were analyzed using SPSS 25. The results showed that 65.3% of lecturers applied higher order thinking skills in making question items. However, the document analysis showed contradictory data in which the items were categorized as lower order thinking skills, in line with students' low learning outcomes of 55.56%. These findings indicated a discrepancy between religious lecturers knowledge and higher education expectations for students of religious education programs. This research contributes to the development of higher order thinking skills concept in online learning practices.

Keywords: academic performance; HOTS; lecturer's perception; online learning; religious lecturers

1. Introduction

The skill of applying Higher Order Thinking Skills (HOTS) in learning is very important in the 21st century but there has been confusion among religious lecturers about implementing HOTS in online learning in College (Zhaffar et al., 2021). As stated by Mispani et al. (2021), that the questions in learning in tertiary institutions are not yet HOTS-based so this is a challenge for a lecturer to analyze this situation. Therefore, it becomes a challenge for lecturers to analyze such a situation (Mokhtar et al., 2020; Sekwena, 2023). Purwasih (2020) and Ibrahim et al. (2020) also explained that they have weaknesses in preparing HOTS questions, one of which is the lack of knowledge and low universities' expectations of religious learning materials. Meanwhile, they improve lives and address social, political, and religious issues. Lubis (2018) stated that religious education learning materials are the basis for building good, honest, virtuous, responsible, trustworthy, and disciplined individual characters.

Lecturers should develop HOTS in online learning to make it more exciting and easily understood (Sutarto et al., 2020). The success of online education affects the ability to think, brings up independence, and provides new experiences in ease and flexibility (Alchamdani et al., 2020; Singh & Thurman, 2019). Therefore, students need to be familiarized with HOTS-based learning for more complex life in the future (Sofyatiningrum et al., 2018). Improving HOTS capabilities requires different teaching methods and strategies to transfer information and knowledge easily and quickly (Chun & Abdullah 2019). Several positive impacts of online learning are strongly influenced by the lecturer's HOTS in teaching (Setena et al., 2021; Shah & Udgaonkar, 2018).

Based on previous study, the items of religious education materials in the selection process of college admissions made by lecturers were still categorized as LOTS (Mispani et al., 2021). Therefore, the number of compositions and quality of HOTS questions should be improved to obtain good quality input from religious education study program students. Qualified and globally competitive universities should also have qualified lecturers. This is because the excellent quality of learning can undoubtedly produce outstanding students (Abrori & Nurkholis, 2019). In this highly competitive era, students are expected to think at a higher level to solve a problem in dealing with a complex life in the 21st century (Sofyatiningrum et al., 2018).

Various fields of science, such as biology, chemistry, physics, and mathematics, have developed HOTS-based test questions (Afandi et al., 2019; Njurumana et al., 2020; Sari & Cahyaningtyas, 2020). However, it has not been widely carried out in university religious education study programs. Hamidon et al. (2021) emphasized the importance of understanding HOTS, specifically in teaching verses of the Qur'an, and this did not disclose the creation of question items. In addition, a different argument believes that the improvement can be indicated by the mastery of skills and a deep understanding of learning materials instead of merely by the questions categorized as HOTS (Abdullah et al., 2015). Another study found that educators experienced problems implementing HOTS in religious education (Assaree & Al-Khalidi, 2021; Hakimian et al., 2021; Zhaffar et al., 2021).

Study by Zhaffar et al. (2021) that HOTS is not taught directly in the learning process at Islamic tertiary institutions. The use of learning methods in Islamic tertiary institutions has not been able to build students' critical thinking skills (Abdulbaki et al., 2018; Alghamdi, 2018; Saira et al., 2021). Therefore, this study focuses on the analysis of the suitability of the HOTS skills of religious lecturers and their implications for student learning outcomes. HOTS is a thinking ability that demands creative thinking, being able to express opinions, make analyzes, and convey conclusions. This contrasts with studies conducted by Tamuri (2016) and Hashim et al. (2017) that HOTS learning is proven to be able to improve students' critical thinking skills. Therefore, HOTS abilities are very important for lecturers to be able to develop various concepts and methods in solving learning and assessment problems in Islamic tertiary institutions (Saputra, 2016). For this reason, this study aims to look at the perceptions of religious lecturers about HOTS and their relevance to student academic performance in online learning in tertiary institutions.

2. Literature Review

2.1. The Implementation of HOTS in Higher Education

HOTS includes logic, reasoning, analysis, evaluation, creation, problem-solving, and judgment (Brookhart, 2010). In addition, it requires thinking skills that are not merely recalling, restating, or referring (Widana, 2017). Students are expected to possess these skills in the 21st century, and improving HOTS can be accomplished by educators through creating appropriate assessment instruments (Hanifah, 2019). Gong et al. (2020) stated that students' learning motivation directly impacts their computational thinking skills in the classroom. These include creativity, algorithmic thinking, cooperation, critical thinking, and problem-solving. In contrast, Di et al. (2019) reported that students' motivation does not affect HOTS in an intelligent classroom environment.

The importance of HOTS has been emphasized by policymakers, educators, and the general public (Abosalem, 2015; Elfeky, 2019). Based on the analysis of previous study, Hwang et al. (2018) identified three HOTS abilities of problem-solving, critical thinking, and creativity. Problem-solving involves identifying problems, gathering and analyzing relevant information, and implementing appropriate solutions. Critical thinking covers the ability to analyze information objectively, think clearly and rationally, and make reasoned judgments. Meanwhile, creativity deals with the capability to create new objects and develop innovative ideas by elaborating, refining, analyzing, and evaluating the existing ones.

The cognitive process dimensions are divided into six levels based on Revised Bloom's Taxonomy, namely remembering, understanding, applying, analyzing, evaluating, and creating (Anderson & Krathwohl, 2001). Brookhart (2010) categorized the process of analyzing as breaking down information or objects into several parts and making connections between each piece and the overall structure. Evaluating is defined as making judgments based on criteria and standards, namely quality, effectiveness, efficiency, and consistency. The final level of cognitive process dimensions is creating, which entails assembling pieces to make a cohesive or functional whole. The details can be seen Figure 1.

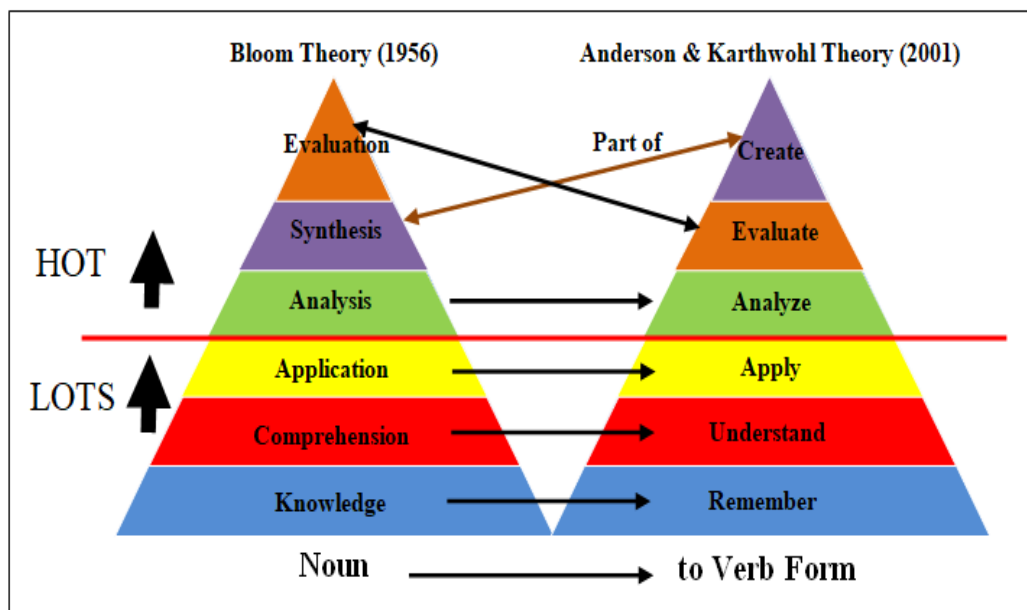


Figure 1. Modifications made based on the Cognitive Levels in the Revised Bloom's Taxonomy (Yoke et al., 2021)

2.2. The Urgency of Perception in Learning

Perception is the process of a person's assessment of a particular object, which is considered to see, integrate, and evaluate physical and social objects as something good (McDonald, 2011). In humans, perception describes how sensory stimuli are interpreted into organized experiences. Therefore, it is a complex process in which a person utilizes information from the surrounding (Al-Naim et al., 2023).

The teacher's perception affects the learning process and student motivation. In capturing information and events, it is influenced by factors of objects and events (Qiong, 2017). Perception in learning affects the memory system and is influenced by beliefs that are believed (Afandi et al., 2018). Additionally, it arises because everyone has the sense to penetrate surrounding objects and events. Perception can influence people's way of thinking, working, and attitudes because they have to adjust attitudes, thoughts, or behaviors in acquiring information from their environment. The teaching and learning process is undoubtedly the same age as humans on earth.

2.3. Online Learning and Religious Education in Higher Education

Online learning is an experience in a synchronous or asynchronous environment, utilizing devices such as cell phones, laptops, and internet. In addition, students can be anywhere to learn and interact with instructors and other students (Singh & Thurman, 2019). Online education requires several elements, including (a) video conferences with students, (b) discussions with students, (c) a good internet connection, (d) accessible learning, both on mobile phones and laptops, (e) watchable learning recordings, and (f) students' feedback that can be achieved and assignments that can be taken (Basilaia, 2020).

Implementing online learning is a new experience that provides convenience and flexibility for higher education students who do not necessarily come to campus (Alchamdani et al., 2020). Online education emerged as a solution amid the pandemic, making this model qualified and important (Affouneh et al., 2020). Online teaching and learning methods can provide good quality education (Carey, 2020).

E-learning has weaknesses in communication between students and educators, in which direct contact and human touch are lost (Littlefield, 2018). Users might face technical difficulties that hinder and decelerate teaching and learning (Favale et al., 2020). In addition, online education has various obstacles, including (1) insufficient internet network access that makes communication and instructions unclear, (2) different economic conditions for the provision of internet quotas for inhibiting student participation in attending online lectures, and (3) excessive workload that decreases students' concentration (Alchamdani et al., 2020).

In addition, lecturers also play an important role in improving the quality of learning. This role aims to improve intellectual development which includes mentality, attitude, personality, and skills in implementing learning (Rahayu et al., 2022). Teaching is the act of a person who provides skills, knowledge, and examples. In teaching and learning, lecturers explain the topic taught using a simple method. Likewise, a good lecturer gives explanations that students can comprehend and should select good teaching techniques.

Policies on online learning stimulate religious education study program educators to adapt and innovate in preparing the process by selecting and designing learning models and using appropriate, effective, and efficient media (Indrawati, 2020). In the learning process, strategies and methods play an essential role in making activities run effectively and efficiently (Gafur et al., 2021). In integrated Islamic education, religious online learning strategies include expository, inquiry, contextual, and comparative models. Among them are the Self Organized Learning Environment (SOLE) and Project-Based Learning (Dahmayati et al., 2021). Online learning conditions cope with different challenges and characteristics compared to face-to-face. Furthermore, teachers' professionalism in managing the process is demonstrated (Rahayu & Kejora, 2022).

Religious education is a conscious effort to improve and enable students to understand religious teachings properly and correctly, ultimately making religion a way of life (Nurdin et al., 2022). In higher education, religious instruction is vital to creating a mentally and spiritually strong generation applying science, art, and technology (Sastramayani & Sabdah, 2016). In addition to actualizing mastery, it is also aimed at realizing the value of religious understanding in daily life, such as responsibility, discipline, honesty, and maintaining friendship to bring out an open mind for students and lecturers (Hambali & Asyafah, 2020; Rahim, 2018). Online religious learning in universities can run well by engaging educators, students, learning methods,

teaching materials, and learning facilities. These components are interrelated to achieve learning objectives (Gafur et al., 2021).

3. Methods

3.1. Research Design

The current study design was quantitative, incorporating a descriptive method to describe, explain, predict, or control the investigated phenomenon associated with statistical or numerical data (Airasian, 2012; Behforouz et al., 2023). The object was the application of HOTS in the religious education study program through the perspectives of lecturers and students. This research has been approved by the research ethics commission at the research and community service institute at UIN Raden Fatah Palembang with a registration number B-400/Un.09/PP.06/11/2022.

3.2. Participants

The subjects were lecturers with the following characteristics: (1) actively teaching in the religious education study program, (2) possessing the status as the Permanent Lecturer, and (3) comprehending HOTS-based learning. Meanwhile, students involved as study participants actively participated in lectures in the religious education study program. They also attended the courses taught by the lecturers engaged as participants. Accordingly, they were selected using a purposive sampling technique, namely a deliberate choice considering the participants' qualities. It was a non-random sampling technique without requiring a theory underlying the number of participants. In other words, studies could decide what they needed to know and then started looking for people who could and were willing to provide information based on their knowledge or experience (Etikan, 2016). This sampling method does not require researchers to get a definite number of subjects at the beginning of the research data, so that the number of subjects selected according to the characteristics is justified as a representative sample. The subjects involved in this study totaled 96 people consisting of 33 lecturers and 63 students.

3.3. Data Collection and Technique

The data collection instrument employed to reveal lecturers' perceptions of HOTS administered 11 modified statements taken from Wilson and Narasuman (2020) in the form of a Likert scale. The instrument was approved by the subject, both lecturers and students, and distributed via Google Form with five answer choices, namely strongly disagree, disagree, somewhat disagree, agree, and strongly agree. Furthermore, it had a reliability score above 0.7 and a validity test involving two experts declaring it valid. Documentation of question items was utilized to uncover the use of HOTS in learning, and these items were identified based on the Revised Bloom's Taxonomy to obtain the indicators of operational verbs used in the preparation process. Meanwhile, data on students were collected incorporating their scores after participating in lecture activities with the involved lecturers, and they were calculated using the *SPSS 25*.

4. Results

The findings of this present study showed that the subjects involved were 96 respondents, 33 lecturers and 63 students. For more details, see the demographics of lecturers in Table 1 and students in Table 2.

Table 1. Distribution of Lecturers as Study Subjects

Variable	Information	Percentage
Gender	Male	39.4%
	Female	60.6%
Age	21-30 years	30.3%
	31-40 years	42.4%
	41-50 years	21.2%
	51-60 years	6.1%
Education	Master Degree	84.8%
	Doctoral Degree	15.2%
Length of Employment	Below 5 years	60.6%
	6-10 years	27.3%
	11-15 years	9.1%
	16-20 years	3.0%

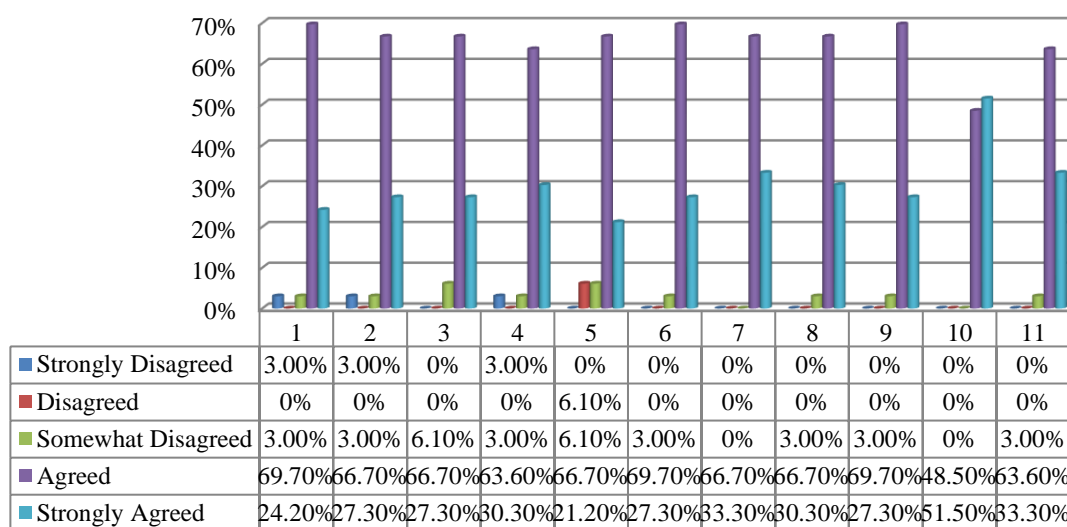
Based on Table 1, the distribution of the subjects could be described as follows and there were 39.4% male and 60.6% female lecturers. According to their age, 30.3%, 42.4%, 21.2%, and 6.1% of lecturers were between 21-30, 31-40, 41-50, and 51-60, respectively. For education level, 84.8% of lecturers were graduates of master's degrees, and 15.2% were doctoral. The percentage of lecturers who worked below 5 years, 6-10 years, 11-15 years, and 16-20 years was 60.6%, 27.3%, 9.1%, and 3.0%, respectively. In addition, the number of students whose learning outcomes were observed was 63 people who attended courses in the Islamic Religious Education study program.

Table 2. Distribution of Students as Study Subjects

Variable	Information	Percentage
Gender	Male	7,93%
	Female	92,07%
Age	20-21 years	84,13%
	22-23 years	15,87%
Study program	Islamic education	100%

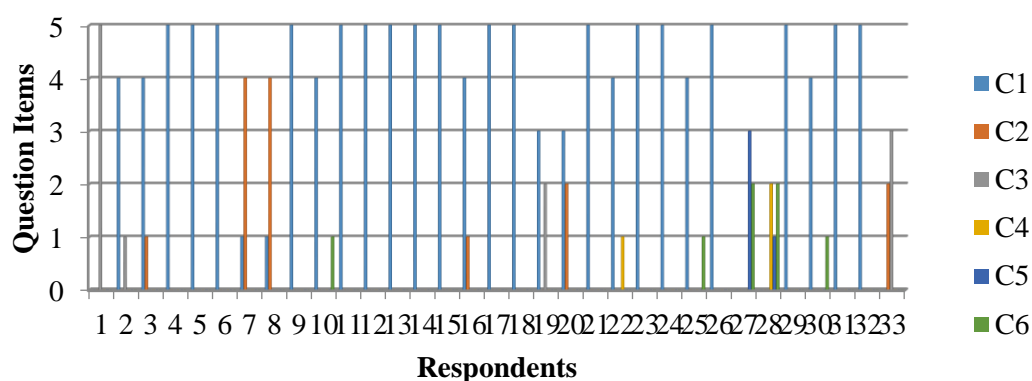
Based on Table 2, the distribution of the subjects could be described as follows and there were 7.93% male and 92.07% female students. According to their age, 84.13%, and 15.87% of students were between 20-21 and 22-23. All students come from the Islamic religious education study program.

4.1. Lecturers' Perception of Higher Order Thinking Skills (HOTS)



Graph 1. Lecturers' Perception of Higher Order Thinking Skills (HOTS)

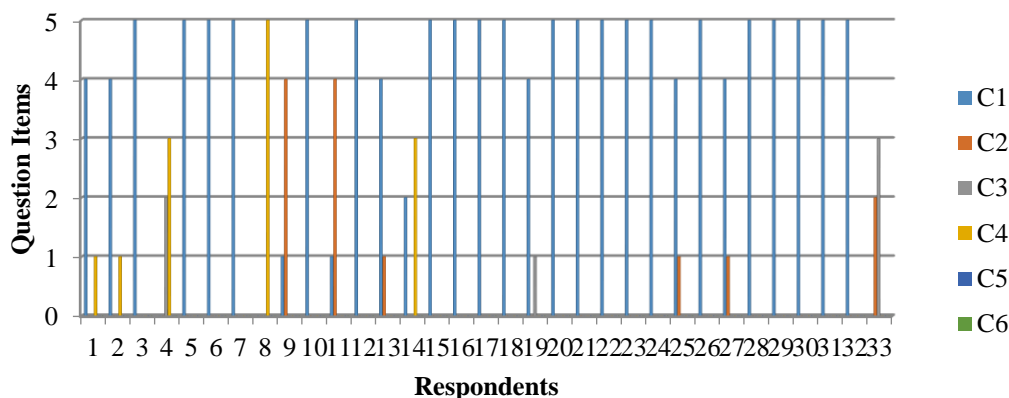
Graph 1 on lecturers' perceptions of HOTS illustrated a quite high percentage. Of the eleven existing instrument items, the following results were obtained: 65.3% of respondents agreed, 30.3% strongly agreed, 3.02% somewhat disagreed, 0.55% disagreed, and 1.09% strongly disagreed. Furthermore, the documentation results to determine the cognitive level of the mid-term exam question items prepared by the lecturers on the learning process were described in Graph 2.



Graph 2. Cognitive Level of Mid-term Exam Question Items

The percentage of cognitive level of mid-term exam question items, from highest to lowest, was C1 (remembering), C2 (understanding), C3 (applying), C4 (analyzing), C5 (evaluating), and C6 (creating). The average items were categorized as LOTS, precisely at levels C1 to C3, up to 31 subjects. Meanwhile, those included in the HOTS category, at levels C4, C5, and C6, were only 2 subjects. The cognitive level of question items only focused on the bottom three aspects of Bloom's Taxonomy, namely C1 (remembering), C2 (understanding), and C3 (applying). Therefore, it was concluded that the cognitive level of critical

thinking skills was still in the LOTS category. The findings on the cognitive level category of final-term exam question items on the learning process can be seen in Graph 3.

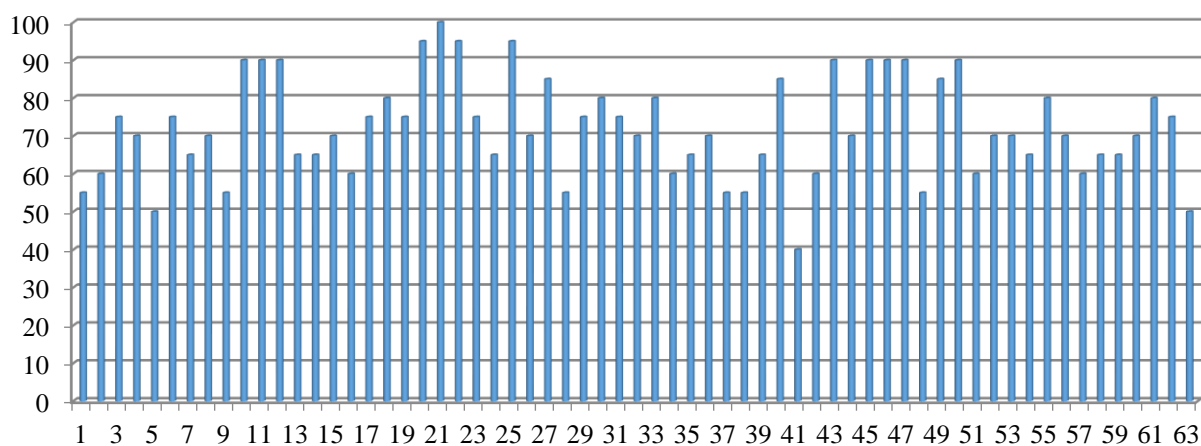


Graph 3. Cognitive Level of Final-term Exam Question Items

Based on Graph 3, the average final-term exam question items were categorized as LOTS, precisely at the levels of C1 (remembering), C2 (understanding), and C3 (applying), with a total of 32 subjects. Meanwhile, those classified into HOTS, at the level of C4 (analyzing), were only 1 subject. It indicated that the lecturers' critical thinking skills were classified into LOTS.

4.2. Relevance of Lecturers' Perception of HOTS on Students' Academic Performance

According to Widoyoko (2014), the criteria for the average score of learning outcomes are 80-100 (excellent), 75-79 (good), 70-74 (fair), 65-69 (poor), and 0-64 (very poor).



Graph 4. Students' Learning Outcomes

Based on Graph 4 on academic performance, 20, 8, 11, 9, and 15 students were found to have "excellent", "good", "fair", "poor", and "very poor" HOTS abilities, respectively. Students in the high and low category were 44.44% and 55.56%, respectively. Therefore, more students were considered to have LOTS abilities.

5. Discussion

The results of lecturer perceptions in learning were found to have implemented HOTS as much as 65.3% with indicators C4 and C5. As Hwang et al. (2018) identified three HOTS abilities, namely problem solving, critical thinking, and creativity. However, the findings on the mid-term and final-term exam question items' documentation showed different and contradictory reports. Students' academic performance also indicated that their learning outcomes were classified as LOTS.

The demands of the 21st century require lecturers to have various skills. According to Ariyana et al. (2018), lecturers should have 4C skills, namely critical thinking, communication, collaboration, and creativity, to improve their HOTS abilities. The higher education level requires solving more complex problems, requiring the application of learning to engage HOTS. Therefore, lecturers are vital in making various forms of HOTS-based evaluation. They should be able to carry out their obligations and responsibilities and master all the materials provided to students (Winarno et al., 2017). In addition, they should have particular skills related to the assessments based on HOTS.

Lecturers had low abilities to prepare question items because they were not creative in developing their skills and were not very independent in exploring knowledge. The other factors were low motivation in reading and a lack of understanding of the HOTS concept. To increase the knowledge categorized as LOTS, they should be accustomed to compiling HOTS-based exercises and assignments. The management of HOTS should be trained and improved to organize learning materials and conduct the process optimally and consistently (Ramdiah et al., 2019).

Documentation of lecturers' question items contradicted their perception as they were categorized as LOTS, including C1-C3. The difficulties encountered in preparing these questions were caused by an understanding of HOTS that had not been maximized, the absence of analysis results, the preparation of sentences in the question items that missed the analysis stage, and the scarcity of training in discussing various methods leading to the patterns of HOTS (Halim et al., 2021). Widyaningrum (2020) stated that the lecturers had low abilities on HOTS because they were not trained to prepare test questions requiring high analysis, evaluation, and creativity. They needed HOTS abilities to combine and convey information, explain, draw conclusions, and interpret ideas (Armiati, 2018).

Religious education requires several strategies to improve learning quality and develop HOTS abilities, such as analyzing, evaluating, and integrating the prepared question items (Prihantoro & Suyadi, 2021). Yoke et al. (2021) asserted that cultivating thinking skills demands the suitability of teaching materials and cultural changes oriented towards critical thinking. Mustapha et al. (2019) revealed that an online education environment employing an inquiry learning model had the potential to solve problems related to HOTS. Johansson (2020) studied the use of e-assessment tasks focused on HOTS. Meanwhile, Setyarini and Ling (2019) employed storytelling activities to promote HOTS to teenagers. Various related strategies were engaged, such as asking questions, mind

mapping, brainstorming, role-playing, discussing, and creating new ideas. Learning models were essential in improving students' HOTS (Manik, 2020).

Students' academic performance was classified into the low category, more than 50%, due to various factors. Lecturers should facilitate students to become better thinkers and problem solvers by providing particular circumstances or issues to apply HOTS (Wahid & Karimah, 2018). Haroun et al. (2016) discovered that a lecturer's beliefs and experiences affected learning design and implementation (Belo et al., 2014; Muhtarom et al., 2019). The level of students' thinking competence was reflected in their abilities to understand concepts, generate knowledge, and solve problems (Yoke et al., 2021). Furthermore, the different abilities in cognitive aspects were considered logical and reasonable due to the influence of reasoning, environment, teachers' learning media, learning models, and learning facilities (Arifullah et al., 2020).

The novelty in this study shows that student academic performance is influenced by lecturers' HOTS skills in the learning process. Implementing HOTS-based learning in Islamic religious education could improve learning quality to be more effective, efficient, fun, meaningful, and impact achievement (Ahmad et al., 2020). Besides that, to get maximum learning results, collaboration between lecturers and students is needed. Hamzah et al. (2018) emphasizes that collaboration between lecturers and students is important for developing students' thinking so they are able to think critically and creatively. In addition, lecturers must also be able to connect learning material with everyday life so that students are comfortable doing higher-order thinking activities.

Therefore, the learning implementation process should be directed at developing critical, creative, collaborative, and communicative thinking skills to improve students' HOTS abilities. Lecturers and universities are also expected to be committed to implementing a HOTS-based learning and assessment process. They should be trained to prepare HOTS question items, and the curriculum needs to be reviewed involving lecturers' learning outcomes. Halim et al. (2021) stated that every educational institution is expected to consider curriculum design, teaching strategies, and learning evaluations leading to authentic decision-making or problem-solving.

6. Conclusion and Limitation

This study concluded that lecturers already had a good perception of HOTS, indicated by their high scores on the perception instrument. However, it was contrary to most question items in the LOTS category. These findings were in line with students' academic performance, as depicted by their low abilities to answer questions.

The implications of this research can improve lecturers' abilities in making midterm exam questions, final semester exams, lecture assignments, HOTS-based learning media. This research also contributes to the development of the HOTS concept in online learning practices.

This present study confirmed that it was important for lecturers to improve HOTS abilities in online learning, including the presented materials, the implementation of learning, and the quality of exam questions. Meanwhile, good HOTS abilities could improve students' critical thinking skills in higher education. The limitation lies in the data collection, which only focused on two universities as study samples. The practical recommendation for future studies was to engage more subjects with a broader scope and involve learning strategies that might improve the output quality of religious education students. Estimation of the number of respondents is also a serious concern in the future so that it can make research results more representative.

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