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Identifying the Cognitive Complexity of Teacher-Made Examination Questions through the Lens of Bloom's Taxonomy

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Abstract

Bloom's Taxonomy is widely acclaimed as a framework for ordering learning objectives and promoting the students' higher-order thinking skills. The current study aims to investigate the categories of the examination questioning patterns formulated by teachers of Master in Foreign Language Didactics at the Department of English at Constantine 1, Mentouri Brothers University. Notably, the study seeks to find out the extent to which the teachers prioritize lower-order thinking levels versus higher-order thinking levels in their assessments. Based on general perspectives and observations, it was hypothesized that the teachers predominantly design examination questions that fall within the lower-order thinking levels of Bloom's Taxonomy, emphasizing rote memorization over critical thinking. To test this research hypothesis, a document analysis was conducted on ten selected examination papers. The study findings revealed a significant inclination towards lower-order thinking levels and a lack of emphasis on higher-order thinking skills, particularly in the level of creating questions. Accordingly, integrating higher-order thinking skills and aligning assessments with learning objectives are essentially required to foster critical thinking and ensure a more profound understanding among students.

Keywords: Assessment and cognition, Blooms' taxonomy, document analysis, higher order thinking levels, lower order thinking levels, teachers' examination questions

ملخص

يُشاد على نطاق واسع بتصنيف بلوم باعتباره إطارًا لترتيب أهداف التعلم وتعزيز مهارات التفكير العليا لدى الطلاب. تهدف الدراسة الحالية إلى التحقيق في فئات أنماط أسئلة الامتحان التي يصوغها اساتذة الماسترتخصص تعليمية اللغات الأجنبية في قسم اللغة الإنجليزية في جامعة قسنطينة 1، الاخوة منتوري. وعلى وجه الخصوص، تسعى الدراسة إلى معرفة مدى تركيزالاساتذة على مستويات التفكير الدنيا مقارنة بمستويات التفكير العليا في تقييماتهم. بناءً على وجهات النظر والملاحظات العامة، يُفترض أن الاساتذة يصممون بشكل أساسي أسئلة الامتحان التي تندرج ضمن مستويات التفكير الدنيا في تصنيف بلوم، مع إعطاء الأولوية للحفظ عن ظهر قلب بدلا على التفكير النقدي. للتحقق من هذه الفرضية البحثية، تم استخدام التحليل الوثائقي لعشر أوراق اسئلة الامتحانات و قد كشفت نتائج الدراسة عن ميل كبيرللاساتذة نحو طرح اسئلة تخص مستويات التفكير الدنيا في حين هناك نقص في التركيز على مستويات التفكير العليا، وخاصة في جانب الإنشاء. وعليه يطلب من الاساتذة الحاجة الى المزيد من التكامل بين مهارات التفكير العليا ومواءمة التقييمات مع أهداف التعلم لتنمية التفكير النقدي والفهم العميق بين الطلاب.

الكلمات المفتاحية: التقييم والإدراك، تصنيف بلوم، تحليل الوثائق، مستويات التفكير العليا، مستويات التفكير الدنيا، أسئلة امتحانات الاساتذة

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Introduction

The significance of assessment in higher education has received much scholarly attention, highlighting its crucial role in teaching, learning and research. Growing demands are being made on teachers regarding the maintenance of a desired level of quality in education. A practical assessment allows teachers to measure the efficacy and progress of various approaches, methods and strategies of teaching and learning. It helps determine whether efforts are targeted and whether the teachers, students and the overall instructional process are on the right track. Constructing a particular taxonomy can be a practical approach to developing an all-inclusive list of high-quality objectives. For example, the application of Bloom's Taxonomy in education, particularly in the processes of teaching, learning, and assessment, is highly significant. Bloom's taxonomy provides a valuable standard for sorting educational objectives and learning outcomes based on cognitive complexity. By incorporating Bloom's taxonomy into instructional and assessment practices, teachers can improve the students' higher-order thinking skills, critical analysis, and problem-solving abilities. In addition, this taxonomy helps in designing appropriate assessment methods and techniques that align with the anticipated learning, ensuring an all-encompassing evaluation of the student's knowledge and skills.

At the Department of English at the University of Constantine 1/ Mentouri Brothers, an imbalance has been observed in the teachers' approaches to questioning and question design. Specifically, there is a discernible imbalance between lower-level and higher-level questions, as defined by Bloom's Taxonomy. The teachers may have good reasons for this assessment practice; however, if categorically there is an imbalance, this may contribute to hindering the students' cognitive development and limit their ability to engage in critical thinking and deep learning in the future. On account of this, this study was conducted to investigate the cognitive level of the teachers' examination questions as a pivotal factor in designing appropriate assessment methods. Notably, this research seeks to discern the extent to which teachers of Master of Foreign Language Didactics at the Department of English at Constantine 1/ Mentouri Brothers University incorporate Bloom's taxonomy into their examination design process, mainly in terms of giving attention to Lower Order Thinking Levels (LOTs) versus Higher Order Thinking Levels (HOTs). This investigation contributes to providing a deeper understanding of the cognitive emphasis placed by teachers of English in the assessment process, seeking to identify the potential areas for improvement in the future, including the assessment practices, the teaching and learning processes, and the quality of foreign language education. Based on this, the following hypothesis is put forward: Master teachers of Foreign Language Didactics at the Department of English at Constantine 1/ Mentouri Brothers University emphasize lower-order thinking levels over higher-order thinking levels when designing their examination questions. To support the hypothesis and clear up the area of investigation, the following research questions were generated:

1. To what extent are the examination questions formulated by Master teachers of Foreign Language Didactics at Constantine1/ Mentouri Brothers University distributed across Bloom's Taxonomy levels?
2. Is there a significant difference in the emphasis on developing critical thinking, problem-solving, and creativity versus focusing on recall and basic comprehension?

Literature Review

Assessment in the Process of Teaching and Learning

The definition of assessment put forward by educators is very diverse as it has been widely used in various fields of language education. As a general term, Furlong et al. (2023) defined assessment as the procedure of identifying, selecting, designing, collecting, analyzing, interpreting, and using evidence to understand and improve services. According to Ventouris et al.(2022), it is also the measurement of the individual's ability, the training course's worth or realization, or the compliance of an individual's achievement with specific criteria._Related to education specifically, Hodge and Carbonara (2015) defined assessment as the deliberate process of gathering data about how the students are progressing toward the learning target using different methods to evaluate the learning process and to make instruction-related decisions. While teachers obtain feedback on the teaching and learning process, a practical assessment strategy could enable them to recognize and gain insights into their students' level of understanding. Teachers, therefore, are required to constantly use a variety of assessing methods and procedures to improve the teaching experience, as well as to increase the student's performance during each part of the teaching process.

Classroom assessment is a complex task with different meanings for different audiences and contexts. Cooper (2011) stated that "assessment requires that teachers understand how to offer students different ways to demonstrate learning while maintaining the integrity of the learning targets to be assessed" (p. 5). Classroom assessment is then considered to be authentic if it is based on realistic and real-life contexts, inspires the students, and makes them analytically reflect on their learning. Teachers need to understand the basic concept of assessment fully and that particular objectives for assessment complement one another, while others oppose each other. Having in-depth knowledge and understanding of the assessment system, teachers, as Wilson (1996) supported, are expected to adopt a variety of assessment duties. However, it might be challenging to continue them all straight. He referred to different roles and goals of assessment that the teacher can take, including mentor, guide, accountant, reporter, and program director.

Assessment, as a crucial component of learning and teaching, aims to shape the students' understanding of the curriculum and track the quality of their learning advancement. In this regard, numerous terms are used to describe different types and approaches to educational assessment, precisely formative and summative assessment. According to Gierl et al. (2016), formative assessment refers to a range of evaluative procedures that provide constant and targeted feedback, thereby developing the instructional methods and promoting the students' learning. This type of assessment entails on-demand testing, the delivery of immediate feedback to students, and the flexibility to design assessments in different settings and at varied times.

Formative assessment is one of the most essential steps in the teaching and learning process because it determines what the students have learned and what they still need to learn. It enables the teachers to choose the best teaching strategies to cope with the student's needs. Ainsworth (2006) summarized the purpose of formative assessment in the following themes:

- To encourage learners to stay connected and engaged in the learning process.
- To help the students develop a good outlook and a productive way of thinking.
- To aid in assessing how valuable and efficient learning tactics are.
- To offer students feedback on their skills and learning.

- To give details on what particular knowledge or concept the student has acquired following the standards.

Summative assessment, or assessment of learning, is another type of assessment designed after a defined period of instruction. Herrera et al. (2015) referred to it as a kind of assessment that reports the students' learning advancement or failure on a numerical scale. It serves as a numerical representation of what they have learned after an instructional period. According to Fernandes et al. (2021), summative assessment is critical in any educational system because it describes the students' overall achievement against predetermined criteria which are based on specific learning standards, thereby allowing the measurement of curriculum outcomes to be used in future decision-making, such as assigning grades or certifying proficiency. Summative assessment is a product-oriented practice compared to formative assessment which is a process-oriented practice, helping to guide progress toward the accomplishment of that product.

In this research, the researchers refer to summative assessment because it takes stock of the students' learning and gives information about their academic advancement. In classrooms, summative assessment often takes place at the end of the educational program, taking the form of examinations that cover questions given from the subject matter covered during the instructional period. The outcomes from this kind of assessment are formally conveyed as marks.

Cognition and Education

Cognition and education are two rich fields of research that provide individuals with valuable insights through their theories. Cognition helped them to gain a deep understanding of human processes and abilities, while education promoted new and effective teaching methods and academic programs. According to the SCP Panel of Experts (2020), in any classroom setting, we notice a diverse group of students. Each student has unique characteristics, which are revealed in their individual learning levels. Teachers should be aware of individual cognitive differences in the classroom to help their students attain their learning goals. Understanding the students' cognitive differences also helps the teachers plan their educational objectives, strategies, and content in a manner that attracts the students' interest.

Bloom's Taxonomy Cognitive Levels in Education

One of the indispensable objectives of education is to promote the students' critical or higher-order thinking skills. Therefore, one of the significant charges inherent to the role of a teacher is to devise methods for developing, instructing, and evaluating the cognitive capabilities of their students. Bloom's Taxonomy of Educational Objectives (Bloom et al., 1956) is one of the practical tools to serve this purpose. It was developed in his book *The Taxonomy of Educational Objectives: The Classification of Educational Goals* (1956). It has a significant impact on how academic curricula are currently made. According to Bloom et al. (1956), their educational model was meant to produce a taxonomy of instructional objectives. Its purpose is to classify these objectives so that they assist teachers, administrators, professional specialists, and researchers who deal with curricular and evaluation issues.

This model was also said to be helpful to teachers in making lesson plans and achieving the objectives of teaching. It was also designed to attain possible educational objectives and outcomes such as evaluating textbooks, constructing oral and written questions, and analyzing classroom questions (Bloom et al., 1956, p. 2). The original model that was elaborated by Bloom and his collaborators consisted of six major categories, whereby learning at higher

levels is contingent upon mastering the requisite knowledge and abilities at lower levels. They are classified as follows:

• Lower-Order Thinking Skills (LOTS): Knowledge, Comprehension and Application.

• Higher-Order Thinking Skills (HOTS): Analysis, Synthesis and Evaluation. (Bloom et al., 1956).

During the 1990s, a group created by Lorin Anderson and David Krathwohl (one of Bloom's original collaborators) revised Bloom's taxonomy, and they published the revised edition with a few minor reconsiderations in 2001. As Krathwohl (2002) reported, this new revised version changed the terminology of the cognitive levels from nouns to verbs (Remember, Understand, Apply, Analyze, Evaluate, Create). "Synthesis" was omitted, and "create" was added to the domain's highest level.

In education, the objectives related to these levels encompass a spectrum that ranges from the primary retention of formerly learned information to highly innovative and creative techniques of integrating and synthesizing new concepts and materials. Written examinations are a prevalent technique to measure the student's performance within a specific field of study. The questions asked by the teachers in the written examination should accurately reflect the learners' knowledge and abilities. In other words, good examination questions should encompass a range of difficulty levels to test the students' different cognitive abilities.

Bloom's levels of cognition were classified into two categories: High-Order Thinking levels (HOTs) and Low-Order Thinking levels (LOTs). LOTs refer to collecting information, and HOTs refer to processing it. Khan and Inamullah (2011) explained that lower-order questions are likely to be closed (a known answer is required); higher-order questions are likely to be open-ended (the answer is known but the exact answer is unknown; students answer without restrictions). Lower-order questions tend to elicit less complex forms of thinking from students, whereas higher-order questions entail the students' higher thinking abilities.

The selection of different question types may lead to the student's active engagement. Additionally, designing effective questions, according to Chin (2007), is one of the critical mechanisms that foster the students' creativity, self-confidence and critical thinking. Specifically, higher-order questions should be given priority in assessment because they elicit deeper and more critical thinking. Sullivan and Lilburn (2004) on their parts delineated three essential characteristics for designing practical questions and, therefore, enhancing higher-order thinking skills:

1. Questions that prompt students to search for more information rather than simply remembering and replicating them.
2. Questions that promote the students' learning engagement through answering and expressing ideas, concurrently allowing the teachers to get insight from the students' feedback.
3. Questions with more than two possible answers.

Overview of the Previous Studies on Bloom's Taxonomy in Assessment

The literature on Bloom's taxonomy underscores its critical role in shaping educational assessment practices, mainly through fostering higher-order thinking skills (HOTS). Bloom's taxonomy, initially proposed by Benjamin Bloom and later revised by Anderson and Krathwohl, categorizes cognitive skills into a hierarchical structure. This framework, widely used in education, helps teachers design assessments that go beyond factual recall, as well as encourage students to engage in analysis, synthesis, and evaluation. By utilizing this taxonomy, educators can develop assessments that promote critical thinking and problem-solving abilities,

which are increasingly important in today's dynamic workforce (Lawely, 2020; Fife, 2022).

Several studies have investigated the application of Bloom's revised taxonomy in assessment design, mainly in enhancing the quality of evaluation methods that promote deeper cognitive engagement. For instance, Fife (2022) explored the utility of Bloom's revised taxonomy as a framework for constructing assessment tests. By validating the taxonomy's effectiveness through evaluations by external judges, teachers, and students, Fife demonstrated that Bloom's revised taxonomy is a highly effective tool in assessment design. The study employed Aiken's V, a statistical measure of content validity, which indicated strong agreement among participants regarding the taxonomy's effectiveness in fostering critical thinking. The findings suggest that incorporating Bloom's taxonomy into assessment development can enhance learning outcomes by encouraging students to engage with content at higher cognitive levels.

Similarly, Hilmi et al. (2022) emphasized that HOTS-based questions are instrumental in promoting students' cognitive engagement. Their research highlighted that assessments designed with higher-order questions enable students to go beyond rote memorization, pushing them to demonstrate a deeper understanding and mastery of the subject. This shift aligns with broader educational goals that aim to cultivate critical thinking and problem-solving skills, which are crucial in today's complex, evolving work environments. Accordingly, assessments that incorporate higher-order thinking questions not only evaluate the student's knowledge but also prepare them for real-world challenges by developing competencies essential for professional success. In this line of thought, research by Pugh and Gates in 2021 emphasized the importance of aligning examination content with higher-order cognitive skills. According to these researchers, employers increasingly value critical thinking, creativity, and the ability to apply knowledge in practical contexts. However, traditional assessments often focus on lower-level cognitive tasks, such as recall and rote memorization, which leads to a gap between the skills students acquire in academic settings and those required in professional environments. This misalignment calls for reevaluating assessment strategies to incorporate more HOTS-based questions that rely on Bloom's taxonomy (Sabir et al., 2024).

Research by Tuela et al. (2022) further demonstrated the role of Bloom's Taxonomy in promoting HOTS through educational assessments. This study specifically investigated how the taxonomy could be applied to categorize examination questions by cognitive level, using Anderson and Krathwohl's revised framework. Through a descriptive qualitative approach and Miles and Huberman's interactive analysis model, Tuela and colleagues highlighted the taxonomy's utility in achieving a balanced approach to cognitive demands in assessments. This balance is achieved by designing exams that not only test students' knowledge retention, but also encourage critical thinking, analysis, and evaluation- skills that are vital for students' cognitive growth.

Another significant contribution to the literature comes from Oktaviana et al. (2020), who focused on developing test instruments based on the Revised Bloom's Taxonomy to measure students' higher-order thinking skills. Using the Tessmer model, which involves stages like expert validation and field testing, the study demonstrated the effectiveness of these instruments in fostering HOTS. By categorizing cognitive skills into levels such as analyzing, evaluating, and creating, the researchers showed how Bloom's Taxonomy can guide the construction of assessments, prioritizing critical thinking and problem-solving over simple recall. The study's findings highlight the taxonomy's versatility and effectiveness in enhancing

assessment design.

The previous studies investigated Bloom's taxonomy in assessment from different approaches and perspectives, mainly focusing on the employment of qualitative and subjective measures to evaluate the effectiveness and the application of this taxonomy, as well as the significance of higher-order thinking levels. The current research, being purely quantitative, seeks to systematically analyze the teachers' examination questions in different educational subjects based on numerical facts, as opposed to much previous qualitative research. This specific area remained hugely underexplored in existing research. Further, this study addresses how specific teachers employ Bloom's taxonomy when formulating their examination questions rather than emphasizing particular theoretical frameworks or curriculum designs as used in other existing studies. This study is more realistic, focusing on teacher-specific practices in authentic educational settings.

Methodology

In this research, a quantitative research design was employed to meet the research objective of analyzing and categorizing systematically the teachers' examination questions based on the cognitive levels delineated in Bloom's Taxonomy. This research is inherently quantitative because it includes the assignment of numerical data to the different cognitive levels, which range from lower-order thinking levels to higher-order thinking levels. Adopting a numerical system, the researchers can demonstrably and objectively measure the mental demands of each question, displaying an evident framework for analysis. A further objective of this research is to determine which of the mental levels the teachers adhere to, and this entails the calculation of the question types' frequencies and using statistical analysis to draw valid conclusions. Most importantly, opting for a quantitative approach aligns with the recent educational tendencies toward data-driven decision-making. Finally, measuring the cognitive levels of examination questions provides realistic proof and unequivocal results that support teachers reflect on and adjusting their assessment practices in the future.

Participants

The sampling technique used in this research is purposive sampling, also known as judgmental sampling, where the researchers used their judgment to select the participants who meet the research objectives best. Notably, the participants are the teachers whose examination questions are analyzed. The sample consisted solely of teachers of Master of Foreign Language Didactics at the Department of English at the University of Mentouri Brothers/ Constantine 1, during the academic year 2022/2023. This study was purposefully addressed to these participants, who share the same field of study as the researchers, allowing the researchers to analyze the questions at a more informed level. Specifically, the selection of these participants was based on the researchers' context familiarity and knowledge of the courses' content, which streamlined the process of analyzing these participants' examination questions and provided the researchers with groundwork to interpret the results accurately. This sample consisted of ten teachers, each with varying levels of experience in teaching English at university, ranging from five to twenty years.

Research Method

To gather data for this research topic, document analysis was employed as the primary research tool to examine the cognitive level guidelines of the examination questions designed by the research participants. It was selected due to its practicality, efficiency, and applicability to quantitative research. Through the analysis of these documents, the aim was to gain insights

into how teachers design examination questions in terms of their cognitive complexity. This analysis helped the researchers to understand the existing emphasis on cognitive levels in assessment practices. As a research instrument within document analysis, the researchers created a coding framework based on the six levels of Bloom's Taxonomy, and it was created using three sources (Cullinane, 2009; Allen, 2013; Quinnipiac University, 2014). This adopted framework is considered valid because many previous studies have already been conducted using Bloom's Taxonomy levels. Educators and researchers divided these levels into two main categories:

Lower Order Thinking Level (LOTS): Remembering, Understanding, Applying

Higher Order Thinking Level (HOTS): Analyzing, Evaluating, Creating

To that end, each level in the coding framework was defined with clear criteria to facilitate the process of classification, and each examination question was classified to its relevant levels, allowing the researchers to identify whether a question relates to LOTS or HOTS.

Data Collection and Analysis

Document analysis is a valuable tool of research to investigate the teachers' kinds of questions asked in the examinations regarding their cognitive level. It involves a systematic examination and interpretation of written exam subjects that pertain to the topic of interest. Document analysis is efficient and effective for this research, as it contains data that cannot be observed regularly in concrete situations; it provided the researchers with the specific research context they sought to investigate. In the context of this research, the process of document analysis typically involves the following data collection and analysis procedure.

Initially, the researchers collected the examination documents of ten different courses, during the academic year 2022- 2023. It is worth mentioning that a few teachers did not provide their documents, and their decision was utterly respected following the ethical regulations. The collection of documents adhered to the ethical research practices, ensuring that all the participants were informed about the aim of this research, and felt comfortable making their own choice regarding their participation. Most importantly, the researchers ensured confidentiality so that no identifying information would be disclosed.

Once the documents were gathered, the researchers started reviewing and analyzing them systematically. They carefully read through the subjects and highlighted relevant information. They used the coding framework they created, which is based on the six levels of Bloom's Taxonomy. To ensure consistency and reliability, the first researcher used content analysis as a coding method. The second researcher went through the same procedure. Once the coding process was complete, the researchers conducted an inter-rater reliability asking two other teachers to analyze and categorize the questions. This process helped identify common perspectives, criteria, or variations in the participants' assessment practices related to Bloom's six levels of critical thinking. Furthermore, the data from different subjects were compared and contrasted to identify similarities and differences in the participants' designs. This comparative analysis could reveal common trends or variations based on factors such as the student's cognitive level.

Finally, the conclusions about the teachers' cognitive level of examination questions were drawn based on a quantitative analysis. For statistical calculation, each cognitive level in the examination questions was assigned a score of 5 points. This means the total score for both LOTS and HOTS is 30 points. Descriptive statistics were initially used, including the mean, mode, and range of scores (lower and higher) to display the data's central tendency and

variability. This foundational analysis offered a general idea about the distribution of the obtained data before moving on to the inferential statistical procedure, which provides more accurate findings and deeper insights. In other words, on a quantitative basis, the researchers were able to identify prevailing preferences among teachers and highlight the specific cognitive levels of the examination questions. The obtained analysis informed the researchers to draw a general idea about how teachers of Foreign Language Didactics at the Department of English design their examination questions.

Results

C*omparison of the Two Cognitive Levels' Overall Result*

Table 1. *The Comparison between LOTS and HOTS*

Participants	Lower Order Thinking Levels (15)			Higher Order Thinking Levels (15)		
	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
Teacher 1	05	05	05	00	00	00
Teacher 2	00	00	00	05	00	00
Teacher 3	05	05	05	00	00	00
Teacher 4	05	05	00	05	00	00
Teacher 5	05	05	00	05	00	00
Teacher 6	00	00	05	00	00	00
Teacher 7	05	05	05	05	05	00
Teacher 8	00	05	05	00	00	00
Teacher 9	00	05	00	00	05	00
Teacher 10	05	05	00	05	00	00
Total	30 (23.07%)	40 (30.76%)	25(19.23%)	25(19.23%)	10(7.69%)	00 (00%)
N = 10		$åx_1$= 95 (63.33%)			$åx_2$= 35 (36.66%)	
Mean		$\bar{X}_1$ = 9.5			$\bar{X}_2$ = 3.5	
Mode		10			05	
Low Score		00			00	
High Score		15			10	

Based on the data presented in the previous table, it is evident that the average score for Lower Order Thinking Levels (LOTL) is 9.5, while the average score for Higher Order Thinking Levels (HOTL) is 3.5. This result indicates that the participants achieved a higher mean score when including LOTL questions in their examination than HOTL questions. When examining the mode, the most frequently occurring score for LOTL is 10, which is significantly higher than the mode for HOTL, which is 05. The dispersion aspects reveal that the lowest score among participants in LOTL is 00, as reported by one teacher who did not include any LOTL questions in her assessment. Similarly, the lowest score for participants in HOTL is also 00, attributed to four teachers who did not incorporate any HOTL in their exams. As for the highest grade, four participants in LOTL obtained 15, while in the HOTL group, one subject managed to achieve 10 out of 30. So far, the comparisons of means, central tendency, and dispersion suggested a tendency among the participants to design lower-order questions rather than higher-order questions. This observation aligns with the stated hypothesis; however, it is only through the use of a statistical test this apparent difference can be justified.

Considering the data that clearly showed the results of the participants at the lower-order levels and higher-order levels, the version of the t-test for dependent samples compared the results of both levels (LOTs Vs. HOTs). The computed results are displayed in the table below:

Table 2. *T-test for Lower-Order Thinking Levels and Higher-Order Thinking Levels*

	Mean	SEdiff	df	T	P-value
Lower Order Thinking Levels	9.5				
Higher Order Thinking Levels	3.5	1.9437	9	3.0870	0.0065

The t-test is a standard method used to compare the mean of one sample with the mean of another sample. This procedure calculates the difference between the observed means in two dependent samples. Every t-value has a p-value to go with it. A p-value, or significance level, is the probability that the results from the sample data occurred by chance. P-values are from 0% to 100%; however, the significance level most commonly used in educational research is 0.05. Most researchers refer to statistically significant as $P < 0.05$ and statistically highly significant as $P < 0.001$ (less than one in a thousand chance of being wrong). Following this research findings, there was a statistically significant difference between the means, Lower Order oriented teachers and Higher Order oriented teachers, because the computed t of 3.0870 was higher than the p-value 0.0065; $t= 3.0870$ and $P < .0065$. Therefore, the null hypothesis, which stated that the teachers of Master of Foreign Language Didactics at the Department of English at Mentouri Brothers- Constantine 1 University emphasize higher-order thinking levels rather than lower-order thinking levels when designing their examination questions, was rejected.

Discussion

This study aimed to investigate the categories of the examination questioning patterns formulated by teachers of Master in Foreign Language Didactics at the Department of English at Constantine 1, Mentouri Brothers University. The hypothesis was that Master teachers of Foreign Language Didactics at the Department of English at Constantine 1/ Mentouri Brothers University emphasize lower-order thinking levels over higher-order thinking levels when designing their examination questions. The results support to a high extent this hypothesis, revealing that the teacher participants rely heavily on lower-order thinking levels, which make up more than half of the examination questions.

This first category encompassed the first three levels of Bloom's taxonomy: remembering, understanding, and applying. “Remembering” and “Understanding” questions were the most commonly used, indicating that the teachers focus on helping the students recall previously taught information to reinforce foundational knowledge. These types of questions also assess the student's comprehension and interpretation skills to promote understanding and application of concepts. The findings of this study are consistent with Pugh and Gates's study in 2021 (cited in Sabir et al., 2024), which has indicated that traditional assessments often focus on lower-level cognitive tasks, such as recall and rote memorization, which leads to a gap between the skills students acquire in academic settings and those required in professional environments. Unfortunately, an overreliance on these types of questions can encourage the students to study for good marks rather than develop a deep understanding of the course. “Applying” questions made up a small portion of the points of that level; this type of question needs to be taken more into account in the future because it encourages the students to utilize their knowledge in practical, real-world scenarios, going beyond mere memorization. Based on the findings, the teachers tend to prioritize the two first lower-order thinking questions over application-based questions. This may be because application-based questions are time-consuming to answer and to score. Pugh and Gates supported that this misalignment calls for reevaluating assessment strategies to incorporate more HOTS-based questions that rely on Bloom's taxonomy.

Higher-order thinking questions made up a small percentage of the total assessment, addressing analyzing, evaluating, and creating levels of Bloom's Taxonomy. Displaying the levels separately, "analyzing" questions were the prevalent types, and it aimed to develop the student's critical thinking skills by breaking down information and identifying patterns. "Evaluating" questions constituted the smallest percentage in higher-order thinking levels, challenging the students to assess the quality and significance of concepts. Unfortunately, "creating" questions were not included in the examination sheets, as they involved generating new ideas or solutions, representing the highest level of cognitive complexity. This omission may be due to time constraints and the need for the students' higher cognitive abilities to tackle such questions. These findings do not match Tuela et al. (2022) and Oktaviana et al. (2020) research findings, which demonstrated the role of Bloom's Taxonomy in promoting HOTS through educational assessments. Tuela and his colleagues highlighted the taxonomy's utility in achieving a balanced approach to cognitive demands in assessments. This balance can only be achieved by designing examinations that not only test the student's knowledge retention, but also encourage critical thinking, analysis, and evaluation skills which are vital for the student's cognitive growth.

The results reaffirmed the significance of incorporating Bloom's Taxonomy as a valuable guide for teachers when planning assessments. Teachers must be aware of their assessment practices by adhering to specific guidelines that could help them stay focused on attaining the significant learning target of developing the student's critical thinking. The findings underlined the need for a well-adjusted and balanced approach encompassing both lower-order and higher-order thinking levels at the Department of English at Constantine 1, Mentouri Brothers' University. Integrating higher-order thinking questions and skills, emphasizing creating questions, should be the primary concern for fostering creativity and advancing the students' cognitive abilities. Besides, this research stresses the significance of aligning assessments with the learning objectives by considering several factors in the assessment design process. Finally, incorporating Bloom's taxonomy should be encouraged as it contributes to enhancing assessment practices in higher education.

Conclusion

The current research investigated the extent to which teachers incorporate Bloom's taxonomy into their examination design process, focusing on lower-order thinking levels versus higher-order thinking levels. The findings revealed that the teachers primarily relied on lower-order thinking levels, placing a significant emphasis on remembering and understanding questions that focus on reinforcing foundational knowledge, comprehension skills, and practical applications of concepts. However, higher-order thinking questions were used to a significantly lesser extent, with "creating" questions being completely excluded from the assessment. This less emphasis on higher-order thinking levels was primarily on analyzing and evaluating questions to promote critical thinking. Still, the teachers missed the opportunity to foster creativity and generate new ideas. To this end, the teachers in today's rapidly developing educational landscape are required to promote higher-order thinking skills in the department of English at Constantine 1- Mentouri Brothers University to increase the students' dynamic involvement with content, understand the significance of the educational programs, and most importantly prepare them for active participation in society.

Assessment is crucial for determining the extent to which an education system is achieving the desired outcomes for students, the curriculum, and the educational system

overall. Bloom's taxonomy of educational objectives is a well-recognized model for classifying cognition domains and has therefore been proven to aid significant assessment. This taxonomy identifies the levels of proficiency necessary to reflect the set instructional objectives; when employing this method of classifying these measurable outcomes, teachers specifically will be able to select appropriate classroom assessment procedures for their course.

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Declaration of AI Refined

This research paper has undergone language correction using AI-powered tools (Grammarly) to address grammatical, spelling, and language errors. It is acknowledged that the use of such tools may introduce standardized patterns typical of AI-generated content. Consequently, a certain percentage of content may reflect AI-generated language structures. Yet, the intellectual content and the analysis remain entirely the author's work.

Statement of Absence of Conflict of Interest

The author(s) mentioned above hereby solemnly declare that they are not and shall not be in any situation that could give rise to a conflict of interest in what concerns the findings and recommendations contained in this academic article.

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Appendices

Appendix A

The Analysis Framework (Adapted from Allen, 2013; Cullinane, 2009; Quinnipiac University, 2014)

- **Remembering: (The recall of information)**

Cue questions to assess at *Remembering* level

• What is …?
• How is …?
• Where is …?
• When did _____ happen?
• How did _____ happen?
• How would you explain …?
• How would you describe …?
• What do you recall …?
• How would you show …?
• Who (what) were the main …?
• What are three …?
• What is the definition of...?

Rationale:

• Multiple choice test.
• Short answer test.
• Fill in the blank test.
• Matching test.
• Labeling.
• Presentation.
• Illustrations.
• Visualizations.
• Lectures.
• Analogies.
• Examples.

Sample Question:

- Who is the author of 'The Alchemist' (play)?

- **Understanding: (The Comprehension; Explaining the meaning of information)**

Cue questions to assess at the *Understanding* level.

• How would you classify the type of …?
• How would you compare …? contrast …?
• How would you rephrase the meaning …?
• What facts or ideas show …?
• What is the main idea of …?
• Which statements support …?
• How can you explain what is meant …?
• What can you say about …?
• Which is the best answer …?
• How would you summarize …?

Rationale:

• Story.
• Written report.
• Outline.
• Matching test.
• Multiple choice test.
• Summary.
• Short answer test.
• Comparison.
• Oral report.
• Presentation.

Sample Question:

- How can you explain what is meant by an Absolute Monarchy?

- **Applying: (Using learned knowledge in new situations or to solve a real-life problem)**

Cue questions to assess at the *Applying* level.

• How would you use …?
• What examples can you find to …?
• How would you solve _____ using what you have learned …?
• How would you organize _____ to show …?
• How would you show your understanding of …?
• What approach would you use to …?
• How would you apply what you learned to develop …?
• What other way would you plan to …?
• What would result if …?
• How can you make use of the facts to …?
• What elements would you choose to change …?

Rationale:

• Diagram.
• Building.
• Creation.
• Illustration.
• Role-play.
• Project.
• Simulation.
• Q&A.
• Prototype.
• List.
• Demonstration.
• Poetry.

Sample Question:

- What approach would you use to motivate your students and why?

- **Analyzing: (Breaking down knowledge into parts and showing relationships among the parts).**

Cue questions to assess at the *Analyzing* level.

• What are the parts or features of …?
• How is _____ related to …?
• Why do you think …?
• What is the theme …?
• What motive is there …?
• What conclusions can you draw …?
• How would you classify …?
• How can you identify the different parts …?
• What evidence can you find …?
• What is the relationship between …?
• How can you make a distinction between …?
• What is the function of …?
• What ideas justify …?

Rationale:

• Survey.
• Problem exercises.
• Case studies.
• Discussion.
• Questionnaire.
• Argument.
• Critical incidents.
• Propaganda.

Sample Question:

- Why did the United States go to war with England? Identify and provide real-life events from what you have dealt with in previous lectures.

- **Evaluating: (Making value judgments about ideas, objects, or phenomena based on criteria).**

Cue questions to assess at the *Evaluating* level.

• Why do you agree with the actions? The outcomes?
• What is your opinion of …? (Must explain why)
• How would you prove …? disprove …?
• How can you assess the value or importance of …?
• What would you recommend …?
• How would you rate or evaluate the …?
• What choice would you have made …?
• How would you prioritize …?
• What details would you use to support the view …?
• Why was it better than …?

Rationale:

• Appraisals.
• Case studies.
• Critiques.
• Self-Evaluations.
• Simulations.
• Surveys.
• Compare/Establish standards.
• Writing conclusions.
• Valuing.
• Surveys.

Sample Question:

- Why do you think Benjamin Franklin is so famous?

▪ **Creating: (Putting ideas together to form a new and different whole)**

Cue questions to assess at the *Creating* level.

• What changes would you make to solve …?
• How would you improve …?
• What would happen if …?
• How can you elaborate on the reason …?
• What alternative can you propose …?
• How can you invent …?
• How would you adapt _____ to create a different …?
• How could you change (modify) the plot (plan) …?
• What could be done to minimize (maximize) …?
• What way would you design …?
• What could be combined to improve (change) …?
• How would you test or formulate a theory for …?
• What would you predict as the outcome of ...?

Rationale:

• Articles.
• Action plans.
• Creative exercises.
• Code programs.
• Construct simulations.
• Develop plans.
• Experiment.
• Games.
• Invention.
• Machines.
• Projects.

Sample Question:

- Put these ideas together to form a complete article.

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