

## Assessment of Papers of English of Sukkur BISE Sindh, Pakistan: An Exploration of the Reflection of Bloom's Taxonomy

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### Abstract

*This study aims to assess tenth-grade examination papers of English from the boards of intermediate and secondary education (BISEs) in Sindh through the lens of cognitive domain of Bloom's Taxonomy and to identify examination papers for the reflection of higher-order thinking skills (HOTS) or lower-order thinking skills (LOTS). In quest for answers, the positivist's philosophical stance is adopted, and the research approach is quantitative. The examination papers from 2015 to 2019 of tenth-grade English were analyzed. The five years papers were collected from Sukkur BISE. Based on the six levels of the Cognitive Domain, a checklist was developed to examine each item in the question paper. The findings reported that questions in English exam papers represented remember-level as the most dominant in the cognitive domain, while other level representation is negligible. Similarly, another finding informed more LOSTS than HOTS in all the examination papers. The suggestions advocate revamping examination paper setting to align the achievement of specific student learning outcomes for meeting competencies of the national curriculum. Future researchers may consider affective domain to elicit the societal impact of exam papers of other subjects and at various levels of education.*

**Keywords:** Cognitive Domain, Paper of English, Tenth-Grade, HOTS, LOTS

## **Introduction**

The knowledge and skills of assessment allude to teaching and learning processes because these processes follow assessment practice. If the assessment process is based on quality, the teaching and learning will ultimately ensure quality outcomes (Rind & Malik, 2019). The annual exams are consequential for checking students' readiness and equipping them for further education (Borghouts et al., 2017). Conducting annual exams has often become the reason for promoting exam-oriented teaching and learning approaches which students and teachers mainly consider rather than focusing on learning processes (Rind & Mari, 2019).

The research is replete with a focus on annual examinations where researchers analyzed the annual exam papers in various contexts. For example, Chandio et al. (2021) analyzed exam papers of the Karachi, Sukkur, Hyderabad, and Mirpurkhas boards. They selected twelfth-grade papers of English from 2014 to 2018. Their results contended that 74 per cent of questions referred to lower-order learning, and only 26 per cent measured students' higher-order learning. Similarly, Mahroof (2021) analyzed the English subject exam papers of grades nine and ten of the Lahore board for 2014 and 2015 using the cognitive domain of Bloom's Taxonomy as the framework. The results reported that the papers reflected lower-order learning questions. Moreover, the research of Rind and Malik (2019) examined the annual exam papers of grades ten and twelve of one private board and five government boards in Sindh for the subjects of English, mathematics, physics, biology, and chemistry from 2005 to 2016. They informed that most questions in the board exam papers assessed students' memorization and comprehension level of learning. Hence, local literature indicated representation of lower order thinking skills in different exam papers of different boards.

The researchers have frequently utilized Bloom's Taxonomy (BT) of educational objectives (1994) as a framework in studies. The BT framework was first introduced by Benjamin Bloom and his colleagues in 1956 (Armstrong, 2016). At first it consisted of six categories of learning objectives: knowledge, comprehension, application, analysis, synthesis, and evaluation (Krathwohl, 2002). However, to adapt to the twenty-first century, Anderson and Krathwohl (2001), a student of Benjamin Bloom, revised and made specific changes in the BT. Three

changes were made in the revised version: the terminologies of the original taxonomy were changed, the lowest category was changed from knowledge to remember, comprehension to understand, application to apply, analysis to analyze, synthesis to create, and the highest category evaluation was changed to evaluate; two categories were changed from the first version of the taxonomy, i.e., evaluation placed second-last, and synthesis moved to the top in the cognitive domain; as the fundamental category is about knowledge; the authors further divided cognitive domain based on types of knowledge, i.e., factual knowledge, conceptual knowledge, procedural knowledge, metacognitive knowledge (Seel, 2011). BT is currently used for developing curricula, textbooks, and question papers (Mahroof, 2021). It is widely accepted as a framework for designing quality questions for exam papers (Omar et al., 2012).

The studies suggest that higher-order thinking—analyzing, evaluating, and creating is not as effectively measured as lower-order thinking—remembering, understanding, and applying according to the BT of educational objectives (Chandio et al., 2021). The annual examination affects the process of teaching and learning throughout the year. The teachers must follow and complete grade-specific syllabi per the school administration's directions. The subject contents re-appear in question forms in the annual exams. Similarly, students pay unusual attention to topics already appearing in previous board exam papers. This approach also influences exam-oriented teaching that focuses merely on success in final exams. Teachers keep in mind that they must prepare students for the final examination, and students learn keeping the final exams in view (Chandio et al., 2016). Above all, English is compulsory from kindergarten to higher education levels (Khan et al., 2022). Therefore, a close review of papers administered in annual exams necessitated a research inquiry into this matter to seek useful information. So, the purpose of this study was to assess the alignment of exam questions papers from 2015 to 2019 of Sukkur BISE in Sindh to inquire about the cognitive levels of Bloom's Taxonomy in the papers; to examine whether questions asked in annual exam question papers were reflected the higher order thinking skills (HOTS) or, the lower order thinking skills (LOTS). The reasons to examine the English subject were: its significance at the international level, its wider audience to communicate with global citizens, and its requirement for better career prospects in Pakistan. This study shares information regarding the real academic status of board exam papers. Moreover, teachers, paper setters and curriculum evaluators can take useful lessons to rethink the

development of board exam papers in the light of BT and competencies cited in the national curriculum.

### **Research questions**

1. What cognitive levels are embedded in the items of tenth-grade papers of English from 2015 to 2019 of Sukkur board of intermediate and secondary education according to Bloom's Taxonomy?
2. What higher-order thinking skills of the Bloom's Taxonomy of cognitive domain are reflected in the tenth-grade papers of English from 2015 to 2019 of Sukkur Board of Intermediate and Secondary Education?
3. What lower-order thinking skills of the Bloom's Taxonomy of cognitive domain are reflected in the tenth-grade papers of English from 2015 to 2019 of Sukkur Board of Intermediate and Secondary Education?

### **Literature Review**

Examinations are conducted to assess students' knowledge and learned skills (Al Amin & Greenwood, 2018). Examinations are a type of assessment practice (Elwood et al., 2017). Assessment is a process used to check students' prior knowledge and whether the students have learned the required knowledge or skills (Baird et al., 2017). According to Boud and Falchikov (2006), assessment has two purposes: to give certification to students for upgrading and provide feedback on/for learning to students. Examinations are a traditional assessment method for teachers to evaluate how well their students know a particular topic. Examination results assess how well students possess the cognitive skills necessary for the lesson (Köksal & Ulum, 2018).

According to Rind and Malik (2019), different external examination boards in Pakistan, known as Boards of Intermediate and Secondary Education (BISEs), conduct the final exams for grades nine through twelve. The BISE is an administrative body led by the government. Eight boards are functioning in Sindh: five divisional, two private, and one federal. The administration of many divisional boards, including Larkana, Sukkur, Mirpurkhas, Karachi, and Hyderabad, are under the control of the Sindh government. The divisional BISEs are limited to those schools and

colleges located under the region of the specific division. The private boards include Cambridge Examination System, and Agha Khan University-Examination Board. The federal government runs federal board that provides affiliation to secondary school and higher secondary school certificates to affiliated schools and colleges across the country.

In the literature, many studies mainly focus on examinations, specifically exam question papers. One of the studies by Alzu'bi (2014) analyzed questions from an English written test for the secondary certificate examination from 2010 to 2013 in Jordan based on the cognitive domain of BT. The findings from that study showed that most of the items of English asked in the secondary certificate examination were of the lower level, and the items of higher level were found, 69.6% of the items were based on lower levels, and 30.4% of the items were based on higher levels. The research recommended that the paper setters include more higher-level questions and decrease the use of lower-level questions in exams. Moreover, Cullinane and Liston (2016) analyzed examination papers of the Biology syllabus for the leaving certificate in Ireland. The study aimed to identify the learning levels of questions according to the cognitive domain of BT. The study demonstrated that most questions promoted lower-order learning among students.

Assaly and Smadi's (2015) research aimed to analyze the levels of the cognitive domain of BT in questions of the textbook of the master class in Israel. The checklist was built based on all six levels of BT to record the levels of each question that appeared in the textbook. The analysis of all 137 questions revealed that 60% of the items were based on the lower order, and 40% were on the higher order. The research recommended that textbook makers be aware of the cognitive levels and design books accordingly. According to the study of Köks al and Ulum (2018), questions asked in the exam papers of various English language courses at different universities in Turkey measured students' lower-order learning skills rather than higher-order as it was revealed in the result that in every course exam, the questions asked were based on action verbs like remember and understand according to the cognitive domain of BT. The rest of the levels were ignored. They analyzed the questions of the various English language course tests, including the writing, reading, grammar, vocabulary, speaking, and listening exams.


Muhayimana et al. (2022) researched to analyze the items asked in the primary English six, leaving examinations in all educational institutes of Rwanda administered from 2013 to 2019. The objective of the analysis was to check the levels of those exam questions according to the BT. The results revealed that 98.79% of the total questions were lower-order in all exam papers, and only 1.21% were higher-order. Similarly, Swart (2009) conducted a case study to analyze the questions asked in the examination papers of Electrical Engineering, to evaluate whether those were lower-order or higher-order questions. The findings indicated that most of the items asked in the final exams were lower-order questions. Research suggests that exam papers should strike a balance between the lower and higher-order questions.

According to the BT, the literature findings suggested that most items analyzed were based on lower-order thinking. Moreover, the literature also indicates a gap that necessitates conducting a study to examine the level of English papers from 2015 to 2019, as no exams were administered in 2020 and 2021 because of the COVID-19 pandemic. So, the study aimed to analyze the items of the question papers designed by different BISEs in Sindh. The analysis aimed to check whether the questions were based on lower- or higher-order learning.

### **Bloom's Taxonomy of Educational Objectives**

Benjamin Bloom (1956) conceptualized and proposed a taxonomy. This taxonomy served as a classification tool to understand educational goals and objectives (Orey, 2012). There are two dimensions of BT: the old comprising nouns—knowledge, comprehension, application, analysis, synthesis, and evaluation (Bloom, 1956); and the latest comprising verbs—remember, understand, apply, analyze, evaluate, and create (Krathwohl, 2002). The exam paper assessment application was drawn from the revised dimension of BT (Figure 1). The components of LOTS consist of remember, understand, and apply, whereas analyze, evaluate, and create levels come under HOTS of the cognitive domain in BT (Sivaraman & Krishna, 2015).

Table 1  
 Higher Order Thinking Skills and Lower Order Thinking Skills in Bloom’s Taxonomy

	Lower order thinking skills 			higher order thinking skills	
Remember recognizing (identifying)	Understand interpreting (clarifying, paraphrasing, representing, translating)	Apply executing (carrying out)	Analyze differentiating (discriminating, distinguishing, focusing, selecting)	Evaluate checking (coordinating, detecting, monitoring, testing)	Create generating (hypothesizing)
recalling (retrieving)	exemplifying (illustrating, instantiating)	implementing (using)	organizing (finding coherence, integrating, outlining, parsing, structuring)	critiquing (judging)	planning (designing)
	classifying (categorizing, subsuming)		attributing (deconstructing)		producing (construct)
	summarizing (abstracting, generalizing)				
	inferring (concluding, extrapolating, interpolating, predicting)				
	explaining (constructing models)				

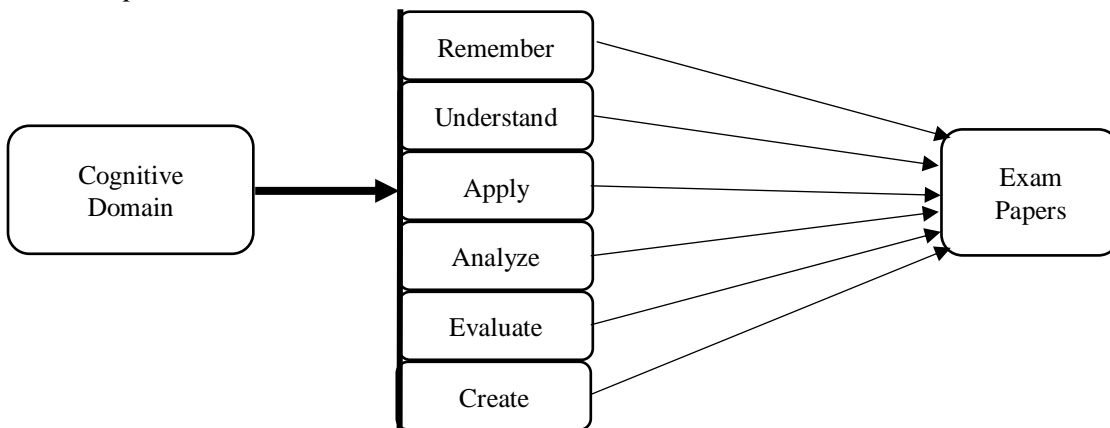
**Note.** Adopted from Sivaraman and Krishna (2015)

A multi-level classification of BT ranges from the factual level of remembering to the complex level of creating (Orey, 2012). These levels indicate cognitive achievement of students' thought processes, and application determines the practical assessment of student achievement. Giesen (2014) proposed BT application in the following areas: identifying simple to most challenging skills, writing and revising learning objectives, aligning goals to assessment, techniques, and standards, planning curriculum, facilitating questioning, and incorporating knowledge to be learned. According to Seel (2011), in the cognitive domain, the levels; of remember and understand reflect lower cognition, while apply, analyze, evaluate, and create levels indicate higher cognition, and critical thinking begins at analyze level (p. 470). Teachers mostly cover the formative assessment during teaching and learning processes; however, the observations over summative assessments still need an inquiry.

## The Conceptual framework

Many authors use Bloom's Taxonomy as a framework in various studies. In all these studies referenced above, the examination papers were analyzed. Different subjects, grade levels, and question papers of various years were selected. Still, in all these studies, the common framework used to analyze the items was the cognitive domain of BT. For the current study, the taxonomy was an appropriate option for analyzing the items of question papers. Therefore, this study used BT as a conceptual framework to assess English question papers.

Figure 1  
*The Conceptual Framework*



## Methodology

The methodology was based on desk research of the descriptive nature. The philosophical stance was epistemologically positivist, which deals with statistical analysis (Antwi & Hamza, 2015). The research approach was deductive, the method was quantitative. The data collection tool was designed from the cognitive domain framework of BT.

A sample of tenth-grade English exam papers was selected from Sukkur BISE, Sindh, Pakistan. A set of five annual exam papers were selected from each BISE, making a total of twenty-five question papers. Each question paper was divided into two sections: subjective and objective; the objective section was comprised of MCQs, and the subjective section was divided into two sections: the first section of the subjective part consisted of short answer questions, fill-in-the-blank questions, sentence translation, word meaning, and their use in sentences, word antonyms, and sentence correction; while the second section of subjective part comprised of extended response questions like essay writing, and application writing or composing a letter.



For data analysis, a checklist was designed according to six levels of the cognitive domain of BT. Separate checklists were used to verify the items in the question papers of the past five-year i.e. from 2015 to 2019 examination papers of English of Sukkur BISE. Each item entry was the same in the checklist as was in the question paper. Next, items were marked as checked according to the levels of cognitive domain based on the BT. The process was reiterated until all five-year papers of English were examined against cognitive domain of BT.

### **Results**

The purpose of the study was achieved through the exam paper analysis. The data analysis was run grounded in descriptive statistics. The items in the papers of English for each BISE were examined for their alignment with cognitive domain of BT, and results were compiled after scrutinization of each item appeared in the annual exams from 2015 to 2019. A joint tabular representation of the consolidated results from five BISEs was presented to holistically highlight the comparison of cognitive domain levels.

### **Sukkur Board of Intermediate and Secondary Education**

The Sukkur BISE paper for the year 2015 English comprised three parts, A, B, and C total of 75 marks with a three-hour time duration: A) objective questions, which included multiple choice questions (MCQs) with two versions, A and B to reduce chances of cheating from other students around during exams; the marks allocated for MCQs were 15, and the time allowed for this part was 15 minutes; B) constructed response questions (CRQs) comprised 09 short answer questions with 22 sub-items to answer from 29 sub-items; the marks allocated for CRQs were 36, and the time allowed for part B and C was 2 hours and 45 minutes; C) extended response questions (ERQs) contained 03 long answer questions with 03 sub-items to answer from 08 sub-items; the marks allocated for ERQs were 24 (Table 2).

Table 2  
*Sukkur Board Exam Paper of English 2015*

Part	Item No.	Type of Item	Item	Marks	Level	Marks %
A	1	MCQs	15	15	R	20
B	1	Short answer questions	5/7	05	R	6.67
	2	Do as directed	5/6	05	A	6.67
	3	Write the synonyms of the following	3/5	03	R	4
	4	Give the antonyms of the following	3/5	03	R	4
	5	Give the nouns of the following	3/5	03	R	4
	6	Translate into English	5/6	05	U	6.67
	7	Use the idioms in sentences with meaning	3/4	06	A	8

	8	Give a general word or phrase for the following	3/4	03	U	4
	9	Explain the stanza to the context	1/2	03	U	4
C	10	Write a paragraph	1/3	10	C	13.33
	11	Writing a letter <b>or</b> application	1/2	07	C	9.33
	12	Write a summary	1/3	07	U	9.33

*Note.* R=Remember, U=Understand, A=Apply, C=Create.

Part A of the question paper began with the objective questions, where 15 items (15 marks of 20%) were based on remember-level. Part B of the question paper had subjective questions, question one comprised 07 short answer questions (5 marks of 6.67%), where the items reflected remember-level. The students had choice to select any five out of seven to answer this question; question two was on Do as Directed (5 marks of 6.67%), which reflected apply-level; in question three students had to write three synonyms out of five (3 marks of 4%), which reflected remember-level; in question four students had to write three antonyms out of five (3 marks of 4%), which reflected remember-level; question five asked students to give nouns to three given verbs out of five (3 marks of 4%), which indicated remember-level; question six comprised of six sentences in Sindhi/Urdu out of which students had to translate any five into English (5 marks of 6.67%), which reflected understand-level; question seven contained four idioms out of which students had to use any three in their own sentences (6 marks of 8%), which reflected apply-level; in question eight students had to give general words or phrases to the category of things (3 marks of 4%), which reflected understand-level; question nine offered a choice (one out of two) to students to explain a couplet with reference to the context (3 marks of 4%), which reflected understand-level. Part C of the question paper contained extended response questions; question ten was on writing a paragraph out of three choices (10 marks 13.33%), which was positioned at the create-level; and question eleven comprised of choice between writing a letter or an application (7 marks of 9.33%), which earned create-level; question twelve was on writing a summary on one out of three topics (7 marks of 9.33%), which was placed at understand-level in the cognitive domain of BT.

The Sukkur BISE paper for the year 2016 English comprised three parts, A, B, and C total of 75 marks with a three-hour time duration: A) objective questions, which included multiple choice questions (MCQs) with two versions, A and B to reduce chances of cheating from other students around during exams; the marks allocated for MCQs were 15, and the time allowed for this part was 15 minutes; B) constructed response questions (CRQs) comprised 09 short answer questions with 19 sub-items to answer from 29 sub-items; the marks allocated for CRQs were 36, and the time allowed for part B and C was 2 hours and 45 minutes; C) extended response questions (ERQs)

contained 03 long answer questions with 03 sub-items to answer from 08 sub-items; the marks allocated for ERQs were 24 (Table 3).

Table 3  
*Sukkur Board Exam Paper of English 2016*

Part	Item No.	Type of Item	Item	Marks	Level	Marks %
A	1	MCQs	15	15	R	20
B	1	Short answer questions	5/7	05	R	6.67
	2	Do as directed	5/6	05	A	6.67
	3	Write the synonyms of the following	3/5	03	R	4
	4	Give the antonyms of the following	3/5	03	R	4
	5	Give the nouns of the following	3/5	03	R	4
	6	Give comparative and superlative degrees of the following	3/5	03	R	4
	7	Translate into English	5/6	05	U	6.67
C	8	Use the idioms in sentences with meaning	3/5	06	A	8
	9	Explain the stanza to the context	1/2	03	U	4
	10	Write a paragraph	1/3	10	C	13.33
	11	Writing a letter <b>or</b> application	1/2	07	C	9.33
	12	Write a summary	1/3	07	U	9.33

*Note.* R=Remember, U=Understand, A=Apply, C=Create.

Part A of the question paper began with the objective questions, where 15 items (15 marks of 20%) were based on remember-level. While part B of the question paper had subjective questions, question one comprised seven short answer questions (5 marks of 6.67%), where the items reflected remember-level. The students had choice to select any five out of seven to answer this question; question two was on 'do as directed' (5 marks of 6.67%), which reflected apply-level; in question three students had to write three synonyms out of five (3 marks of 4%), which reflected remember-level; in question four students had to write three antonyms out of five (3 marks of 4%), which reflected remember-level; question five asked students to give nouns to three given verbs out of five (3 marks of 4%), which indicated remember-level; in question six students had to give comparative and superlative degrees (3 marks of 4%), which reflected remember-level; question seven comprised of six sentences in Sindhi/Urdu out of which students had to translate any five into English (5 marks of 6.67%), which reflected understand-level; question eight contained five idioms out of which students had to use any three in their own sentences (6 marks of 8%), which reflected apply-level; question nine offered a choice (one out of two) to explain a couplet with reference to the context (3 marks of 4%), which reflected understand-level. Part C of the question paper contained extended response questions; question ten was on writing a paragraph out of three choices (10 marks, 13.33%), which was positioned at the create-level; and question eleven comprised of choice between writing a letter or an

application (7 marks of 9.33%), which earned create-level on; question twelve was on writing a summary on one topic out of three (7 marks of 9.33%), which was placed at understand-level in the cognitive domain.

The Sukkur BISE paper for the year 2017 English comprised three parts, A, B, and C total of 75 marks with a three-hour time duration: A) objective questions, which included multiple choice questions (MCQs) with two versions, A and B to reduce chances of cheating from other students around during exams; the marks allocated for MCQs were 15, and the time allowed for this part was 15 minutes; B) constructed response questions (CRQs) comprised 09 short answer questions with 19 sub-items to answer from 27 sub-items; the marks allocated for CRQs were 36, and the time allowed for part B and C was 2 hours and 45 minutes; C) extended response questions (ERQs) contained 03 long answer questions with 03 sub-items to answer from 08 sub-items; the marks allocated for ERQs were 24 (Table 3).

Part A of the question paper began with the objective questions, where 15 items (15 marks of 20%) were based on remember-level. While part B of the question paper had subjective questions, question one comprised 07 short answer questions (5 marks, 6.67%), where the items reflected remember-level. The students had choice to select any five out of seven to answer this question; question two was on 'do as directed' (5 marks of 6.67%), wherein item reflected apply-level; in question three students had to write three synonyms out of five (3 marks of 4%), which reflected remember-level; in question four students had to write three antonyms out of five (3 marks of 4%), which reflected remember-level; question five asked students to give nouns to three given verbs out of five (3 marks of 4%), which indicated remember-level; in question six students had to compress the phrases into one word (3 marks of 4%), which reflected understand-level; question seven comprised of six sentences in Sindhi/Urdu out of which students had to translate any five into English (5 marks of 6.67%), which reflected understand-level; question eight contained five idioms out of which students had to use any three in their own sentences (6 marks 8%), which reflected apply-level;; question nine offered a choice (one out of two) to students to explain a couplet with reference to the context (3 marks of 4%), which reflected understand-level.

Table 4  
Sukkur Board Exam Paper of English 2017

Part	Item No.	Type of Item	Item	Marks	Level	Marks %
A	1	MCQs	15	15	R	20
B	1	Short answer questions	5/7	05	R	6.67
	2	Do as directed	5/6	05	A	6.67
	3	Write the synonyms of the following	3/5	03	R	4
	4	Give the antonyms of the following	3/5	03	R	4
	5	Give the nouns of the following	3/5	03	R	4
	6	Compress the following phrases into one word	3/4	03	U	4
	7	Translate into English	5/6	05	U	6.67
	8	Use the idioms in sentences with meaning	3/5	06	A	8
	9	Explain the stanza to the context	1/2	03	U	4
C	10	Write a paragraph	1/3	10	C	13.33
	11	Writing a letter <b>or</b> application	1/2	07	C	9.33
	12	Write a summary	1/3	07	U	9.33

*Note.* R=Remember, U=Understand, A=Apply, C=Create.

Part C of the question paper contained extended response questions; question ten was on writing a paragraph out of three choices (10 marks, 13.33%), which was positioned at the create-level; and question eleven comprised of choice between writing a letter or an application (7 marks of 9.33%), which earned create-level on; question twelve was on writing a summary on one topic out of three (7 marks of 9.33%), which was placed at understand-level in the cognitive domain of BT.

The Sukkur BISE paper for the year 2018 English comprised three parts, A, B, and C, of a total of 75 marks with a three-hour time duration: A) objective questions, which included multiple choice questions (MCQs) with two versions, A and B to reduce chances of cheating from other students around during exams; the marks allocated for MCQs were 15, and the time allowed for this part was 15 minutes; B) constructed response questions (CRQs) comprised 09 short answer questions with 19 sub-items to answer from 26 sub-items; the marks allocated for CRQs were 36, and the time allowed for part B and C was 2 hours and 45 minutes; C) extended response questions (ERQs) contained 03 long answer questions with 03 sub-items to answer from 08 sub-items; the marks allocated for ERQs were 24 (Table 5).

Table 5  
Sukkur Board Exam Paper of English 2018

Part	Item No.	Type of Item	Item	Marks	Level	Marks %
A	1	MCQs	15	15	R	20
B	1	Short answer questions	5/7	05	R	6.67
	2	Do as directed	5/6	05	A	6.67
	3	Write the synonyms of the following	3/5	03	R	4
	4	Give the antonyms of the following	3/5	03	R	4
	5	Give the nouns of the following	3/5	03	R	4
	6	Give past and past participles of the verbs	3/5	03	U	4
	7	Translate into English	5/6	05	U	6.67
	8	Use the idioms in sentences with meaning	3/5	06	A	8
	9	Explain the stanza to the context	1/2	03	U	4
C	10	Write a paragraph	1/3	10	C	13.33
	11	Writing a letter or application	1/2	07	C	9.33
	12	Write a summary	1/3	07	U	9.33

Note. R=Remember, U=Understand, A=Apply, C=Create.

Part A of the question paper began with the objective questions, where 15 items (15 marks of 20%) were based on remember-level. While part B of the question paper had subjective questions, question one comprised seven short answer questions (5 marks of 6.67%), where the items reflected remember-level. The students had choice to select any five out of seven to answer this question; question two was on Do as Directed (5 marks of 6.67%), wherein item reflected apply-level; in question three students had to write three synonyms out of five (3 marks of 4%), which reflected remember-level; in question four students had to write three antonyms out of five (3 marks of 4%), which reflected remember-level; question five asked students to give nouns to three given verbs out of five (3 marks of 4%), which indicated remember-level; in question six students had to give past and past participles of the verbs (3 marks of 4%), which reflected understand-level; question seven comprised of six sentences in Sindhi/Urdu out of which students had to translate any five into English (5 marks of 6.67%), which reflected understand-level; question eight contained five idioms out of which students had to use any three in their own sentences (6 marks of 8%), which reflected apply-level;; question nine offered a choice (one out of two) to students to explain a couplet with reference to the context (3 marks of 4%), which reflected understand-level. Part C of the question paper contained extended response questions;

question ten was on writing a paragraph out of three choices (10 marks, 13.33%), which was positioned at the create-level; and question eleven comprised of choice between writing a letter or an application (7 marks of 9.33%), which earned create-level on; question twelve was on writing a summary on one topic out of three (7 marks of 9.33%), which was placed at understand-level in the cognitive domain of BT.

The Sukkur BISE paper for the year 2019 English comprised three parts, A, B, and C, of a total of 75 marks with a three-hour time duration: A) objective questions, which included multiple choice questions (MCQs) with two versions, A and B to reduce chances of cheating from other students around during exams; the marks allocated for MCQs were 15, and the time allowed for this part was 15 minutes; B) constructed response questions (CRQs) comprised 09 short answer questions with 19 sub-items to answer from 27 sub-items; the marks allocated for CRQs were 36, and the time allowed for part B and C was 2 hours and 45 minutes; C) extended response questions (ERQs) contained 03 long answer questions with 03 sub-items to answer from 08 sub-items; the marks allocated for ERQs were 24 (Table 6).

Table 6  
*Sukkur BISE Exam Paper of English 2019*

Part	Item No.	Type of Item	Item	Marks	Level	Marks %
A	1	MCQs	15	15	R	20
B	1	Short answer questions	5/7	05	R	6.67
	2	Do as directed	5/7	05	A	6.67
	3	Write the synonyms of the following	3/5	03	R	4
	4	Give the antonyms of the following	3/5	03	R	4
	5	Give the nouns of the following	3/5	03	R	4
	6	Give past and past participles of the verbs	3/5	03	U	4
	7	Translate into English	5/7	05	U	6.67
	8	Use the idioms in sentences with meaning	3/4	06	A	8
	9	Explain the stanza to the context	1/2	03	U	4
C	10	Write a paragraph	1/3	10	C	13.33
	11	Writing a letter or application	1/2	07	C	9.33
	12	Write a summary	1/3	07	U	9.33

*Note.* R=Remember, U=Understand, A=Apply, C=Create.

Part A of the question paper began with the objective questions, where 15 items (15 marks of 20%) were based on remember-level. While part B of the question paper had subjective questions, question one comprised 07 short answer questions (5 marks, 6.67%), where the items reflected remember-level. The students had choice to select any five out of seven to answer this question; question two was on ‘do as directed’ (5 marks of 6.67%), wherein item reflected apply-level; in question three students had to write three synonyms out of five (3 marks of of 4%),

which reflected remember-level; in question four students had to write three antonyms out of five (3 marks of 4%), which reflected remember-level; question five asked students to give nouns to three given verbs out of five (3 marks of 4%), which indicated remember-level; in question six students had to give past and past participles of the verbs (3 marks of 4%), which reflected understand-level; question seven comprised of seven sentences in Sindhi/Urdu out of which students had to translate any five into English (5 marks of 6.67%), which reflected understand-level; question eight contained four idioms out of which students had to use any three in their own sentences (6 marks of 8%), which reflected apply-level; question nine offered a choice (one out of two) to students to explain a couplet with reference to the context (3 marks of 4%), which reflected understand-level. Part C of the question paper contained extended response questions; question ten was on writing a paragraph out of three choices (10 marks, 13.33%), which was positioned at the create-level; and question eleven comprised of choice between writing a letter or an application (7 marks of 9.33%), which earned create-level on; question twelve was on writing a summary on one topic out of three (7 marks of 9.33%), which was placed at understand-level in the cognitive domain of BT.

The computations for the English paper of the Sukkur board exam from 2015 to 2019 report the per cent distribution for each cognitive domain level (Table 6). The level-wise per cent spreads across all levels from remember to create. However, the results present cognitive domain application in the development of exam questions which ranged between the highest per cent for remember 39.47, and the lowest per cent for apply 6.26.

Table 7

*The Cognitive Domain Reflection in the Sukkur Board Exam Papers of English*

Level	2015 %	2016 %	2017 %	2018 %	2019 %	Total %
Remember	38.67	42.67	38.67	38.67	38.67	39.47
Understand	24	20	24	24	24	23.2
Apply	14.67	14.67	14.67	14.67	14.67	14.67
Analyze	--	--	--	--	--	--
Evaluate	--	--	--	--	--	--
Create	22.66	22.66	22.66	22.66	22.66	22.66

The per cent is calculated on marks per cent assigned to each question according to cognitive levels. Moreover, the table indicates that the most dominant level has been remember, which suggests the rationalization in paper development process for incorporating a balanced ratio of



residual cognitive levels. The absence of analyze and evaluate levels in the paper items leaves a chasm to address by the paper setters.

### **Discussion**

The current study examined the examination papers of tenth-grade English from 2015 to 2019 that were developed and administered under the supervision of Sukkur board of intermediate and secondary education. The results portray presence of remember, understand, create, and apply levels, but also show an absence of analyze and evaluate levels of cognitive domain. Moreover, the corresponding numeral values for the levels also reflect linearity and repetition, that signifies the traditional approach being adopted in the existing process of exam paper development. In the exam papers, one-third items were based on the remember level, around one-fourth items touched understand and create levels, while few reached apply level, but no items of analyze and evaluate were included in all the exam papers. Alzu'bi (2014) also confirmed that the examination papers are replete with items based on LOT. These results confirm the use of knowledge (33.05%) and comprehension (40.90%) is widespread while analysis (17.37%), synthesis (1.96%), and evaluation (1.96%) are sparsely used in the preparation of papers (Anees, 2017). Moreover, after analyzing the textbooks content components: questions, exercises, and activities; in order for students to reach higher level of thinking, students should be asked questions beyond factual knowledge (Al-hasanat, 2016). The results suggest that fostering HOT depends on developing questions that are cognitive level-appropriate (Anderson & Krathwohl, 2001).

The results for the HOTS show a marginal representation which indicate negligible coverage given in almost all the examination papers (Barak et al., 2011). Mahroof's (2021) study also supported that most of the analyzed questions were based on the lowest levels of BT, and a small number of items were based on the highest levels of BT. The appearance of items based on lower-order thinking in the examination papers promotes surface-level learning among students (Rind & Malik, 2019). A reason of inclusion of LOT in exam papers is that the question paper setters lack knowledge and training to develop effective assessment questions (Narayanan & Adithan, 2015). The exam scenario suggests that choosing the right questions helps students develop HOTS (Anderson & Krathwohl, 2001). In line with previous results, Abdelrahman's

(2014) study corroborated that most of the items in the examination papers reflect the lowest levels of BT, which shows a lack of professional knowledge among the paper setters. Surprisingly, the answer to the third research question was the most rampant, as in all papers exhibited LOTS. From the data analysis, it came out that exam papers promote lower-order learning among students at matriculation, as mostly lower-order questions are asked. The literature confirmed that lower-order thinking have received priority in Sukkur BISE examinations, which primarily evaluate students' memory and comprehension abilities (Rind & Mari, 2019). Despite the fact that exam question papers need an equal proportion of cognitive levels for enhancing the quality education, not much attention is paid on materialization of this thought.

### **Implications**

As most of the items in the exam papers of English were based on the lower order thinking levels, which indicates that the paper setters are playing significant roles as stakeholders at the department of examination of Sukkur BISE who possess less knowledge, and skills of cognitive domain of Bloom's Taxonomy for developing quality question papers. Therefore, this study implies that examination paper developers need item development training to construct items on behavioral terms as the competencies of curriculum reside in subject specific examinations, which in the absence of alternative modes of assessment is not possible due to limited human and economic resources. Moreover, there are implications for teachers who shoulder responsibility of conducting the previously taken examination papers and design formative assessment items around action verbs of BT to ensure outcome-based learning experiences. A final implication calls for academic audit of formative assessment carried out by the teachers, and summative assessment for ensuring exam paper quality and relevancy with the educational objective achievement as stipulated in the national curriculum.

### **Conclusion**

The examination is one of the key elements of the educational journey that positively or negatively affects students' academic goals. Literature suggests that in annual exams mostly, students' learning situates at the surface level. The examinations develop a mindset to encourage exam-oriented teaching and learning approaches, where the primary focus of teachers and students is on the exams rather than the actual learning process. The BISE examinations greatly impact students' academic learning throughout the educational journey. Therefore, this examined

the quality of questions asked from students in the BISE annual examinations to determine cognitive domain levels in the examination papers, and to ascertain if these papers promote the HOTS or LOTS. The results of this study indicated that the questions asked in the exam papers mostly touch students' LOTS according to BT of cognitive domain. Moreover, the Sukkur BISE examination papers need to design questions from all learning levels of the cognitive domain. In addition, future studies using other subjects at the same and different levels can yield useful insights about quality of examination papers, and improvement required to bridge the gap between curriculum and examination. Finally, creating high-quality items for all board examinations, examination paper developers need to receive proper item-development training to objectively assess student competencies through exam papers.

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