INVESTIGATING HSSC ENGLISH TEXTBOOKS OF THE PUNJAB CURRICULUM AND TEXTBOOK BOARD (PCTB): A GAP ANALYSIS

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Original Article

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Abstract

Higher-Order Thinking Abilities (HOTS) are essential academic skills, specifically in English language instruction. This study evaluates the exercises of the English textbook–Book-I prepared under the patronage of the Punjab Curriculum and Textbook Board (PCTB) and taught at Pakistan's Higher Secondary School (HSSC) to determine the gap in the application of HOTs; COGNITIVE and KNOWLEDGE DOMAIN. The research will have implications for the syllabus designers and teachers to be aware of the gap in using HOTs in the designed tasks of the English textbook-Book-I. Through this gap analysis, they will learn about the current structure of textbooks and the intended state of textbooks to improve students' HOTs. The research is descriptive, and a qualitative approach is employed. The textbook is considered as the sample of the study. Bloom's Revised Taxonomy of Learning Outcomes (2001) is used as a theoretical framework (Anderson & Krathwohl, 2001). The researchers have devised an evaluation criterion by themselves. They have created a coded checklist to determine the amount of "KNOWLEDGE AND COGNITIVE DIMENSIONS". The findings show a substantial gap in the use of HOTs in the English Textbook activities prepared by PCTB at the HSSC level in the COGNITIVE DOMAIN and the KNOWLEDGE DOMAIN. The results indicate that very few questions, tasks, and activities are used to test students' HOTs (14 questions with 7.5% at Level-4, 10 with 5.4% at Level-5, and 1 with 0% at Level-6. It is recommended that such activities be included in English textbooks, enabling learners to improve their HOTs because the curriculum paves the way for learners to improve globally and technologically

Keywords: English Language; Higher-Order Thinking Skills; Gap Analysis; Textbook Evaluation

1. Introduction

Assaly & Smadi, (2015) stated that the purpose of education does not only mean to get knowledge about things and the world. Only having knowledge and understanding is now regarded as inadequate for learners."Critical thinking and problem solving, teamwork and leadership, excellent orally and writing communication skills, acquiring and evaluating information, creativity, inquiry, and invention" are the seven qualities students must acquire (Wagner, 2008. p.21, cited in Assaly & Smadi, 2015). The need to enhance students' critical thinking skills is considered necessary worldwide with knowledge because learners with critical thinking abilities can gain a deeper comprehension of what they are learning and become more analytical and creative in their thinking (Zohar, 2007; Yamin, 2013; Gallaghera, Rosemary, & Zohar, 2012; Lin, 2005).

Higher Order Thinking Skills (HOTs) are going to be considered the most valuable skills in education as well as in English language teaching particularly. It has become one of the most critical

areas in education and the teaching profession worldwide (Sanavi & Tarighat, 2014; Conolly, 2000).In light of the growing demand for critical thinking abilities, also known as Higher Order Thinking Skills in Bloom's Educational Taxonomy (1956) and Revised Bloom's Taxonomy (2001), curriculum developers should focus on the infusion of HOTs in the Textbooks. There cannot be any teaching without curriculum, syllabus, and teaching materials. Educational development is based on curriculum development. The curriculum objectives and content eventually lead to changes in the individual's learning abilities based on the students' cognitive learning skills (Farooq, 1994).

According to Brown (2001) and Hamza (2004), Textbooks are an essential part of the teaching and learning process and the curriculum because they keep learners engaged in learning cognitive skills. Iqbal (2013) asserts that textbooks enable learners to achieve the designed learning outcomes. The activities and exercises in the textbooks facilitate the learners to enhance their thinking and cognitive abilities.

English is considered an international and global language and is taught as a compulsory subject from grades 1-12 in Pakistan. So, this research is conducted to analyze the gap in the use of higher-order thinking skills (HOTs) through evaluation of the exercises of English textbooks produced under the supervision of the Punjab Curriculum and Textbook Board (PCTB) taught at Higher Secondary School (HSSC) in Pakistan.

Evaluation of the exercises of the textbooks needs a criterion, framework, or checklist. So, the researchers took the Higher Order Thinking Skills from Bloom's Revised Taxonomy of Educational Objectives COGNITIVE DOMAIN and identified a gap in using HOTs in the textbooks. According to Rainsberger (2016), the COGNITIVE DOMAIN is categorized into six levels of learning; Remember, Understand, Apply, Analyze, Evaluate, and Create. The Lower Level of Thinking Skills (LOTs) are addressed in the first three levels (Remember, Understand, and Apply), while the Higher Order Thinking Skills (Analyze, Evaluate, and Create) are addressed in the following three levels (Analyzing, Evaluating, and Creating) (HOTs).

The researchers' focus is also to identify the gap in using the Cognitive Domain, particularly HOTs by Revised Bloom's Taxonomy in exercises of the English textbooks of HSSC. Bonnici (2017, p.1) describes that Gap Analysis is a technique for determining the gap between present knowledge, abilities, and/or practices and the intended recommended practice (or the Desired State). The researchers have used Bloom's revised educational Taxonomy of Cognitive Domain as a theoretical framework to investigate the level of HOTs in the exercises of the textbooks at the HSSC level. The four steps of Gap Analysis are integrated with Cognitive Domain as:

- **i.** Current State of the Cognitive Domain (LOTs and HOTs);
- **ii.** Desired State of Cognitive Domain (HOTs);
- **iii.** The gap in Cognitive Domain (using OTs and LOTs); and,
- **iv.** Remedies to enhance Cognitive Domain (HOTs) in the exercises of the textbooks of HSSC in Pakistan.

1.2 Significance of the Research

The research will have implications for the syllabus designers and teachers to be aware of the gap in using HOTs in the designed activities of the English textbook Book-1 taught at the HSSC level. The gap analysis will make them awareof the current state and what should be the desired state of textbooks to enhance the students' HOTs to enable them to be successful in a social, economic, and technological society. Focusing on the English language and English textbooks at the HSSC level,

the tasks designed in Book-1will give the curriculum developers to what extent they have designed questions analyzing the students' HOTs.

1.3 Research Objectives

The objectives of the research are:

- To identify the gap using HIGHER-ORDER THINKING SKILLSin the exercises of Book-I (PCTB) taught at the HSSC Level.
- To recognize the gap using LOWER-ORDER THINKING SKILLSin the exercises of Book-I (PCTB) taught at the HSSC Level

1.4 Research Questions

- What is the gap in using HIGHER-ORDER THINKING SKILLS in the exercises of Book-I (PCTB) taught at the HSSC level?
- What is the gap in using LOWER-ORDER THINKING SKILLS in the exercises of Book-I (PCTB) taught at the HSSC level?

1.5 Statement of the Problem

According to researchers such as Yamin, 2013; Assaly & Smadi, 2015; Zohar, 2007; Gallaghera, Rosemary, & Zohar, 2012; Sanavi & Tarighat, 2014; Lin, 2005; Conolly, 2000, Higher Order Thinking Skills are going to be considered vital skills to teach students and enhance their level of learning through the curriculum. Bloom's Revised Taxonomy of Educational Objectives (2001) divides educational objectives into cognitive, affective, and psychomotor categories. Lower Order Thinking Skills (LOTs) and Higher Order Thinking Skills (HOTS) are divided into six levels in the Cognitive Domain (HOTs). The researchers in this study investigate the GAP keeping in view the concept of GAP ANALYSIS in using the HOTs in THE COGNITIVE DOMAIN and THE KNOWLEDGE DOMAIN at the HSSC level in the exercises of the English textbook Book-1. The point of departure of this research is identifying the gap analysis; to identify the Current State of HOTs in the exercises of Book-I, the Desired State of HOTs in the assigned tasks, the Gap in using HOTs in the questions asked in the English textbook Book-1; fall under which category of the Cognitive domain and then suggesting remedies to improve the learners critical thinking skills.

1.6. Delimitation of the Study

Higher Secondary School is based on TWO years of Study and Intermediate (11^{th} grade and 12^{th} Grade). There are 4 textbooks of English (PCTB); Book-I and Book-III arein 11^{th} grade, and Book-II and Novel arein 12^{th} grade. Considering the time constraints and the article's length, the researchers have delimited the analysis on the 11^{th}-grade book, Book-I. The analysis is also delimited to the evaluation of exercises given at the end of the units of the book because the questions and problems give the appropriate way to analyze the learning levels of students.

2. Literature Review

Nentl & Zietlow (2008) stated that Benjamin Bloom's Taxonomy of Educational Objectives, sometimes known as Bloom's Taxonomy, was established at the University of Chicago by a group of cognitive psychologists led by educational psychologist Benjamin Bloom. According to (Krathwohl, 2002), Bloom's initial intention in assembling the group of measuring experts from throughout the country was to decrease the time and effort involved in preparing yearly higher chances, as well as to come up with some centralization of instructional goals in academics. The team's mission of identifying and centralizing the instructional goals or student accomplishment resulted in creating test banks that all evaluated the same instructional goal. Benjamin Bloom's Taxonomy gained popularity in the 1960s

due to the rising focus on training and education during Lyndon Baines Johnson's Great Society, and several instructors are familiar with the paradigm today. However, Bloom's systematical approach to educational taxonomy discusses three stages of learning (cognitive, psychomotor, and affective).

According to Anderson & Krathwohl (2001), the taxonomy was monitored and revised to reflect applicability to twenty-first-century works for learners and instructors. Anderson and Krathwohl changed Bloom's stages from nouns to verbs, altering the actual terms in the original taxonomy. They revised the knowledge, comprehension, and synthesizing stages to remember, understand, and create. Theyalso rearranged the synthesis order, tapping it at the highest level of the hierarchy under the category/stage Create. Consequently, "REMEMBER, UNDERSTAND, APPLY, ANALYZE, EVALUATE, AND CREATE" became the updated Bloom's educational taxonomy of Anderson & Krathwohlentitled "REVISED BLOOM'S TAXONOMY" (2001).

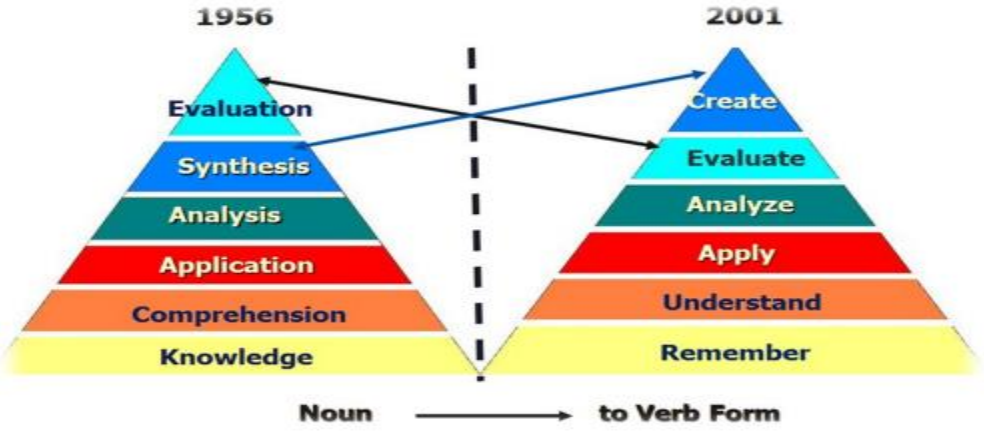

Figure 1. The Revised Bloom's Taxonomy by Anderson and Krathwohl (2001).

The actual Bloom's classification system in taxonomy was likewise restructured by Anderson and Krathwohl (2001). The updated taxonomy classification system incorporated two domains rather than one. The Two aspects of the taxonomy are

i. The Knowledge domain/dimension; or the type of knowledge acquired); and,
ii. The Cognition domain/dimension, or the perceptive procedures used to acquire knowledge (Anderson & Krathwohl (2001).

As seen in the Figure below, the convergence of both the knowledge and cognitive domains yields twenty-four different cells. As per Anderson, the Knowledge Aspect/domain on the left flank comprises four types of information: FACTUAL, CONCEPTUAL, PROCEDURAL, AND META-COGNITIVE KNOWLEDGE. The six layers of the Cognitive Process Domain/aspect at the top of the matrix are: REMEMBER, UNDERSTAND, APPLY, ANALYZE, EVALUATE, AND CREATE (Anderson & Krathwohl, 2001).

	The Cognitive Process Dimension					
	Remember	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Create**
Factual Knowledge	List	Summarize	Classify	Order	Rank	Compile
Conceptual Knowledge	Describe	Interpret	Experiment	Explain	Assess	Plan
Procedural Knowledge	Tabulate	Predict	Calculate	Differentiate	Conclude	Compose
Meta-Cognitive Knowledge	Appropriate use	Execute	Construct	Achieve	Action	Actualize

Figure 2. Knowledge and Cognitive Dimensions of Bloom's Taxonomy as revised by Anderson.

Gordanire searched, in 2010 at Shiraz University, Iran, examined the coursebooks using the traditional Bloom's educational Taxonomy (1956). The researchers discovered that the first three levels in the cognitive domain, as these are lower ranked in cognitive level, dominate all 351 tasks and activities in the textbooks. The researcher also found a substantial variation in a realistic picture of all aspects of the learning domain (Gordani, 2010).

Kazempourfard (2010, p.87) examined the curricula to see how Revised Bloom's Taxonomy's educational outcomes were represented. The findings were consistent with those of previous similar research. The first three layers of the cognitive dimension, lower-order thinking skills, are likewise preferred.

Many researchers, such as Abdelrahman, 2014; Assaly & Igbaria, 2014, Freahat & Smadi, 2014, conducted studies to evaluate the textbooks using Bloom's Original Taxonomy 1956 at grade 10in different countries. They found that lower-level inquiries or tasks are predominated in the book. The studies also discovered that advanced-level cognition is not represented in textbook-recommended readings, whereas higher-order cognitive skills are increasingly emphasized nowadays.

One of the studies was conducted by Ulum in 2016 to evaluate Reading Comprehension Questions to determine the degree of Bloom's Taxonomy levels. The researcher examined a total of 179 questions. Only the first two levels of knowledge (92.51 percent) and understanding were shown to have a majority (87. 49 percent).

3. Research Methodology:

3.1 Research Design:

The study is descriptive.A qualitative approach is used. Data are collected considering the exercise of English Textbook Book-I (PCTB) of 11th grade. So, the textbook is considered as the sample of the study. The book's title is English Book-Ifor Intermediate Students (Short Stories). The book is comprised of Two Sections; Lessons and Exercises. There are fifteen (15) lessons, and eight (08) exercises against each lesson. The exercises are based on (Mcqs) multiple-choice questions, (T/F) true/false, short answer, long answer, and grammar questions. 2 questions are about MCQs and T/F, 2 questions are about the short answer and long answer questions, and 4 questions are about grammar.

Table 1: Description of the Textbook Book-1:

Lessons	Exercises		
15	08		
	Mcqs& T/F	Short answer questions and Long answer questions	Grammar
	02	02	04

3.2 Theoretical Framework

As a theoretical framework, Bloom's Revised Taxonomy of Educational Objectives by Anderson & Krathwohl (2001) is employedto analyze the Gap in using HOTs in the exercises of the English textbook Book -I of 11th grade. Ulum (2016) states that the first three low levels of cognition are remembering, comprehending, and applying, whereas the three higher levels are analyzing, evaluating, and creating.

3.2.1 Rationale to use Bloom's Revised Taxonomy of Educational Objectives

Anderson and Krathwhol revised Bloom's original taxonomy (1956) in 2001. The taxonomy is divided into three categories; one of them is the cognitive domain, comprised of six stages. The fundamental variations are not even in naming or rewording nouns to verbs or replacing the last two stages. The most significant modifications are considered more helpful and show complete improvements to how the taxonomy incorporates and functions on multiple **types and levels of knowledge**—FACTUAL, CONCEPTUAL, PROCEDURAL, AND METACOGNITIVE. This intersection is done with the COGNITIVE DOMAIN that will help the teachers/curriculum developers to know how one is instructing at both the knowledge and cognitive process levels.

The rationale for choosing Bloom's Revised Taxonomy of Educational Objectives for the current is to examine textbooks' COGNITIVE and KNOWLEDGE DIMENSIONS. The researchers favour the updated version of the Taxonomy as it intersectsthe Knowledge dimension with the Cognitive Dimension. Therefore, this updated version is used as a theoretical framework in this research. The researchers have developed a checklist/evaluation criterion by adapting the Revised Bloom's Taxonomy by Anderson & Krathwohl (2001). They have coded a checklist to determine the level of "Knowledge and Cognitive Dimensions" of HOTs in the textbook. Coding is done to determine the Level, i.e., at which level the questions fall in the checklist.Following is the Checklist/Evaluation Criterion:

Table 2: Checklist/Evaluation Criterion:

The Knowledge Dimension	The Cognitive Process Dimension					
	Remember Level-1	**Understand Level-2**	**Apply Level-3**	**Analyze Level-4**	**Evaluate Level-5**	**Create Level-6**
Level-1Factual Knowledge	Listing, Name, Recall,	Summarizing	Apply, Classifying,	Ordering, Categorize	Ranking	Compiling, Combine
Level-2 Conceptual Knowledge	Find, State	Describing, Interpreting, Illustrate,	Experimenting, developing,	Explaining, Discover, Inspect	Assessing, Evaluate, Estimate	Plan, Build, Create, Design
Level-3 Procedural Knowledge	Tabulate	Demonstrate	Calculate, Organize	Differentiate, Compare, Contrast	Conclude	Compose
Level-4 Meta-Cognitive Knowledge	Appropriate use	Execute	Construct, Examine	Achieve	Action, Agree, Disagree, Criticize, Decide, Giving Opinion, Justify	Actualize, Predict, elaborate, Imagine, Problem Solving

The action verbs in this checklist helped the researchers categorize the questions into different categories. Anderson and Krathwhol have categorized these action verbs in their revision.This checklist makes questions like calculation and tabulation more relevant to science. The researchers foresee that it is inappropriate or will not be found in English Textbook. So, the researcher will not consider these two action verbs in gap analysis if not found.

Firstly, the researchers analyze the exercises of Book-I. To evaluate the textbook;

Secondly, while analyzing the exercises in the textbook, the gap analysis is doneby focusing on the four steps:

- **i.** Current State of the Cognitive Domain and Knowledge Domain (LOTs and HOTs);
- **ii.** Desired State of Cognitive and Knowledge Domain (LOTs and HOTs);
- **iii.** The gap in Cognitive Domain and Knowledge Domain(using LOTs and LOTs); and,
- **iv.** Remedies to enhance Cognitive Domain and Knowledge Domain (LOTs and HOTs) in the exercises of the textbook of HSSC in Pakistan.

4. Data Analysis

At first, the researchers looked at the activities' levels using a checklist called "The COGNITIVE DOMAIN AND THE KNOWLEDGE DOMAIN,"which they created based on the Revised Bloom's Taxonomy (2001) as a theoretical model.While examining the stages against cognitive and knowledge dimensions, they have identified the “CURRENT STATE” in the “GAP ANALYSIS” in Lower-Order Thinking Skills (LOTs) and Higher-Order Thinking Skills (HOTs).Following is the description of the Answer questions in the Book-1:

Table 3: Description of the Exercises in BOOK-I:

Lessons	Questions		Total Questions
15	Short	Long (50-100 words)	
	123	62	185

Table 04: LOTs and HOTs Distribution in using COGNITIVE DOMAIN in Book-I

Level No	Levels	No. of Questions	Percentage %
1	*Remember*	*125*	*125/185*100 = 67.5*
2	*Understand*	*35*	*35/185*100 = 18.9*
3	*Apply*	*0*	*0/185*100=0*
4	*Analyze*	*14*	*14/185*100 = 7.5*
5	*Evaluate*	*10*	*10/185*100 = 5.4*
6	*Create*	*0*	*0/185*100 = 0*

Table 04shows the percentage of the questions used in Book-I. This table is giving the statistics of LOTs and HOTs; 125 questions with 67.5% at Level-1, 35 questions with 18.9% at Level-2, 0 questions at Level-3, 14 questions with 7.5% at Level-4, and 10 questions with 5.4% at Level-5, 0 question with 0 at Level-6.

Table 05: HOTs Distribution in using COGNITIVE DOMAIN in Book-I

Level No	Levels	No. of Questions	Percentage %
4	*Analyze*	*14*	*14/185*100 = 7.5*
5	*Evaluate*	*10*	*10/185*100 = 5.4*
6	*Create*	*0*	*0/185*100 = 0*
	Total	*24*	*24/185*100= 12.9*

Table 05 shows the percentage of the questions used in Book-I. A total of 25 questions are designed in the book at the HSSC level with 13%. This percentage shows the distribution of HOTs in using COGNITIVE DOMAIN in Book-I at the HSSC level.

4.1 GAP ANALYSIS

In this section, the researchers have presented the data related to GAP ANALYSIS, which is done while analyzing the COGNITIVE DOMAIN and the KNOWLEDGE DOMAIN in the exercises of the Book-I at HSSC Level. The following table shows the Gap Analysis of LOTsand HOTs in COGNITIVE and KNOWLEDGE DOMAIN:

Table 06: Gap Analysis using LOTs in COGNITIVE DOMAIN:

LOTs	Current State	Desired State	Gap	Remedies
Remember-Level-1	125 tasks are designed about (Recalling, stating, finding, listing, and naming)	Questions should be asked about the appropriate use of vocab, coherence, and cohesion	Missing questions about (appropriate use of grammar, vocab	By asking them questions on adequate sharing information, language, coherence, and cohesiveness, LOTs may be enhanced
Understand-Level-2	35 tasks are designed for (summarizing, illustrating, and describing)	More questions should be asked about demonstrating and implementing the ideas	Missing questions about demonstrating and implementing the ideas	This level can be accomplished by designing activities such as demonstrations and implementing concepts
Apply-Level-3	0 tasks are designed	This level is fundamental. Practical questions should be asked like applying, classifying, organizing, and constructing the ideas	Missing tasks about Application, Classification, Experimenting, developing, Organizing Constructing, Examining	This stage may be achieved by designing activities like classifying the things, experimenting with similar or different things that they have read in stories, learning to organize information constructing their ideas based on real experiences, and examining the positive and negative aspects of the things/ideas

Table 06 shows the four steps of Gap analysis: current state, desired state, gap, and remedies using LOTs in COGNITIVE DOMAIN in Book-I.

Table 07: Gap Analysis Using HOTs in the Cognitive Domain:

HOTs	Current State	Desired State	Gap	Remedies
Analyze-Level-4	14 tasks are designed about (explaining, differentiating, comparing and contrasting, finding the moral lessons)	More tasks should be designed about differentiating, comparing, and contrasting things as only 3-4 questions are	Missing questions about ordering, categorizing things, and writing about achievements	This level can be improved by designing more activities about finding differences and similarities and how to write about the achievements.

HOTs	Current State	Desired State	Gap	Remedies
		found. The questions should also be asked about ordering, categorizing the things		
Evaluate - Level-5	10 tasks are designed about (agreeing and disagreeing, giving suggestions, and evaluating)	More questions should be designed about how to write agreement or disagreement, as only 2 questions are found regarding this. The activities like how to write criticize, decisions, justifications, and conclusions should also be designed	Missing questions about Ranking Concluding, Criticize, Decide, Giving Opinion, justifying the arguments	While constructing more activities about agreeing, disagreeing, and suggesting things, this level may be improved. Also, there is a need to design the missing question discussed in the gap column
Create- Level-6	0 tasks are designed	This is the highest level in HOTS. Activities should be designed to include various situations so that the learners can gather information, compile it, may build a model, may plan something, predict things, imagines things, be able to solve issues, and may come up with similar or alternative situation or story	Compiling, Combine Plan, Build, Create, Design Compose Actualize, Predict, elaborate, Imagine, Problem Solving	Such activities should enable learners to create situations/events/stories by themselves.

Table 07 shows the four steps of Gap analysis: current state, desired state, gap, and remedies using HOTs in COGNITIVE DOMAIN in Book-I.

The following table shows the Gap Analysis of LOTS and HOTS in KNOWLEDGE DOMAIN:

Table 08: Gap Analysis Using LOTS and HOTS in Knowledge Domain:

The Knowledge Domain	Current State	Desired State	Gap	Remedies
Factual Knowledge-Level-1	106 tasks are designed about (Recalling, stating, finding, listing, naming, and summarizing)	Questions should be asked about the appropriate use of vocab, coherence, and cohesion, Applying, Classifying, Ordering, Categorizing, Ranking, Compiling, and Combining	Missing questions about (appropriate use of grammar, vocab, Application, Classification, Ordering, Categorizing, Ranking, Compiling, Combining	Questions on proper vocabulary usage, coherence, and cohesiveness should be designed. Applying, classifying, ordering, categorizing, ranking, compiling, and combining facts can help kids learn more at this level.
Conceptual Knowledge-Level-2	72 tasks are designed to (illustrate, describe, discover, discuss, evaluate)	Questions should be asked about Experimenting, developing, Planning, Building, Creating, and Designing the ideas	Missing questions about Experimenting, developing, planning, Building, Creating, Design	Activities like Experimenting, developing, planning, building, creating, and designing the concepts should be developed to improve students' conceptual understanding.
Procedural Knowledge–Level-3	3 tasks are designed about (differentiating, comparing, and contrasting)	Questions should be asked Demonstration, Organizations, Concluding remarks	Missing tasks about demonstrating, Organize, Conclude, Compose	It is necessary to ask such questions as demonstrations, organisations, and concluding remarks to improve Students' procedural understanding
Meta-cognitive Knowledge – Level-4	4 tasks are designed about (agreeing and disagreeing)	More tasks should be designed about constructing the ideas, writing Criticism, making Decisions, Giving Opinions, Justifications, Predicting, elaborating, Imagine, Problem Solving	Missing questions about Criticize, Decide, Giving Opinion, Justify, Predict, elaborating, Imagining, Problem Solving	To develop meta-cognitive knowledge, more activities should be built; creating ideas, writing Criticism, making Decisions, Giving Opinions, Justifications, Predicting, elaborating, Imagining, and Problem Solving

Table 08 shows the four steps of Gap analysis: current state, desired state, gap, and remedies using LOTs and HOTs in the KNOWLEDGE DOMAIN in Book-I.

Table 09: The knowledge level distribution in Using KNOWLEDGE DOMAIN in Book-I

Level No	Levels	No. of Questions	Percentage %
1	*Factual Knowledge*	*106*	*106/185*100 = 57.2*
2	*Conceptual Knowledge*	*72*	*72/185*100 = 38.9*
3	*Procedural Knowledge*	*3*	*3/185*100=1.6*
4	*Meta-Cognitive Knowledge*	*4*	*4/185*100 = 2.1*

Table 09 shows the percentage of the questions used in Book-I. This table gives the statistics of questions about the knowledge domain: 106 questions, with 57.2%, throw light on Level-1, 72, with 38.9% at Level-2, 3 with 1.6%, at Level-3, 4 questions, with 2.1% at Level-4.

5. Results and Discussion:

5.1 Gap Analysis Using LOTs in COGNITIVE DOMAIN:

5.1.1 LEVEL-1-REMEMBER

To convergeon the concept of the Current State in GAP ANALYSIS, the analysis shows that the questions from Unit 1-15 fall under the category of LEVEL-1-REMEMBER in COGNITIVE DIMENSION and is also under level 1 and 2 in the DIMENSION of KNOWLEDGE, i.e., Factual and Conceptual knowledge. It is found that most of the questions at "Level-1-Remember" in COGNITIVE DOMAIN are related to 'recalling the events in the story, listing the names of the characters, finding and stating the information by recalling the stories'. These tasks are based on levels 1 and 2; describing the facts and concepts in KNOWLEDGE DOMAIN. The Level-1-Remember is highly embedded in this Book-1 at the HSSC level, asking the varied WH-questions (what, why, how, when, and where). However, this reflects the LOTs in the Revised Bloom's Taxonomy.

The **Desired State** of this level is that students' LOTs may be improved by asking them the questions like the appropriate use of information, vocabulary, coherence, and cohesion, which reflects the Third (3^{rd}) and Fourth (4^{th}) level in the KNOWLEDGE DIMENSION. This is the Identified Gap in using LOTs in the exercises of the English Book-I.

5.1.2 LEVEL-2-UNDERSTAND

Concentratingon the **Current State** model, it is analyzed that in "Level-2-UNDERSTAND", most of the questions are related to the description of characters, and only four (04) questions describe the situations and events. This level also throws light on the LOTs in Revised Bloom's Taxonomy.

The **Desired State**at this level is that the students not only learn about describing the physical appearance of the characters but also reflect Levels 1 and 2 in KNOWLEDGE DIMENSION, which is asked in Book-I but also the purpose of this level is to develop the LOTs at Level 3 and 4 in KNOWLEDGE DIMENSION; Procedural Knowledge and Meta-Cognitive Knowledge. These levels can be achieved while asking the questions like activities on making inferences, rephrasing the sentences/paragraphs/events, summarizing the stories/events/incidents, relating one idea to another idea, finding the relationship between entities, etc. This is the **Identified Gap** in the KNOWLEDGE DIMENSION: Levels 3 and 4.

5.1.3 LEVEL-3-APPLY

Stating the **Current State**, the tasks related to "LEVEL-3-APPLY" in the COGNITIVE DOMAIN and KNOWLEDGE DOMAIN are missing in the BOOK-I exercises. This shows the **MAJOR GAP**in the tasks of Book-I in the concept of GAP ANALYSIS. Missing this level, the tasks jump to "LEVEL-4-ANALYZE".

The **Desired State** of this level throws light that the students should be able to develop their skill of application-level in LOTs which is the highest level of LOTs, while answering the questions like applying the things in different situations, asking them the question, writing about the similar situations and apply the results, classifying the things, experimenting the similar or different things which they have read in the stories, learning to organize the information (coherence and cohesion), constructing their ideas based on the actual experiences and examining the positive and negative aspects of the things/ideas, etc.

5.2 Gap Analysis Using HOTs in Cognitive Domain

5.2.1 LEVEL-4-ANALYZE

It is analyzed that "Level-4-ANALYZE" in COGNITIVE DOMAIN, Six (06) questions are asked about discovering the themes of the story in seven (07) separate units except fifteen (15) and in total ONE HUNDRED AND EIGHTY-FIVE (185) questions in the Book-I. Three (03) questions are asked about comparing and contrasting entities. These tasks highlight Levels 2 and 3 in the KNOWLEDGE DOMAIN; Procedural Knowledge and Conceptual Knowledge. LEVEL-4-ANALYZE is considered as the HOTs in Revised Bloom's Taxonomy. Questions about writing comparisons and contrasts enable students to develop their procedural knowledge and know the difference between words comparison and contrast. This is the reflection of the **Current State**.

The **Desired State** of this level points out that the students' HOTs are developed in this level while asking the questions, i.e., application, discovering the things, examining and identifying the things, comparing and contrasting items, distinguishing between the entities, writing the difference, classifying the things, etc. But the analysis suggests that only TWO (02) questions are repeatedly asked in the textbook exercises related to "moral lesson and compare and contrast". This shows the **MAJOR GAP** in the exercises. Asking only the questions about comparing and contrasting does not enhance the students' HOTs.

5.2.2 LEVEL-5-EVALUATE

LEVEL-5-EVALUATE is regarded as the HOTs in Revised Bloom's Taxonomy. Concentrating the concept of **Current State**, it is analyzed that in the "LEVEL-5-EVALUATE" domain, TWO (02) questions are asked about agreeing and disagreeing in the situation, TWO (02) questions are asked about giving recommendations, and FIVE (05) questions are asked to evaluate the stories or incidents in the stories in ONE HUNDRED AND EIGHTY-FIVE (185) question of the complete textbook. Total NINE (09) questions are asked to measure the students' LEVEL-5 in COGNITIVE DOMAIN and THE KNOWLEDGE DOMAIN in BOOK-I. This is the **MAJOR GAP** while developing the students' HOTS.

The **Desired State** of this level is that the students' HOTs are developed while giving them more tasks like ranking things as good or bad, giving opinions about why things are good or bad, giving critical comments on the situations, asking the students about their opinion about different things which they read in the stories, justifying the arguments/moral lessons of the stories, giving critiques on the morals of the stories, giving concluding remarks on the theme of the stories, writing the importance of entities, finding the influences of the incidents; positive or negative, etc. This is

Identified Gap in LEVEL-5-EVALUATE in COGNITIVE DOMAIN and KNOWLEDGE DIMENSION in the given activities of the BOOK-1.

5.2.3. LEVEL-6-CREATE

The **Current State** is found that no question out of ONE HUNDRED AND EIGHTY-FIVE (185) is asked to measure the students' LEVEL-6-CREATE in COGNITIVE DOMAIN in the exercises of the English BOOK-I. "Level-6-CREATE" is the highest level of HOTs in COGNITIVE DOMAIN. Nevertheless, no task is designed to measure this level. This shows that the tasks designed in the English Book-I are not focusing on developing the students' LEVEL-6-CREATE in HOTs. This is the **crucial and critical Identified GAP** in assessing the students' HOTs in the COGNITIVE DOMAIN and KNOWLEDGE DOMAIN.

The **Desired State** of this level is that the students' HOTs are developed while giving them more tasks, i.e., creating the stories, designing the models which they read in the stories, combining and compiling the information, giving the plans for different things/items, writing how to plan the things, building the arguments about the phenomenon, elaborating the issues faced by the people, imagining the similar or different ideas/plans which they read in their textbooks, finding the problems, and giving the possible solutions of that problem, etc.

5 Conclusion

Answering the research questions, it is concluded that a significant GAP is identified in using LOTs and HOTs in the exercises of the English Textbook developed by PCTB at the HSSC level. The Gap is investigated in the COGNITIVE DOMAIN and the KNOWLEDGE DOMAIN. Focusing on HOTs, the principal and crucial GAPS are identified in measuring the students' HOTs. The conclusions are drawn that questions, tasks, and activities are found in meager percentage **(14 questions with 7.5% at Level-4, 10 with 5.4% at Level-5, 0 with 0 %at Level-6)** to assess the students' HOTs at Intermediate level. The Revised Bloom's Taxonomy suggests that learning is simple tocomplex phenomenon. Therefore, this educational taxonomy starts from Level-1 to Level 6, comprising LOTs (Remember, Understand, Apply) and HOTs (Analyze, Evaluate and Create).

It is concluded that **Zero (0)** task is assigned to measure the students' LEVEL-3-APPLY, only **SIX (06) questions** are designed to check the students' LEVEL-4-ANALYZE, **FIVE (05) tasks** are assigned to evaluate the students' LEVEL-5-EVALUATE, and **Zero (0) question** is designed to assess the students' LEVEL-6-CREATE in COGNITIVE DIMENSION out of total ONE HUNDRED AND EIGHTY-FIVE (185) questions in the exercises of English textbook Book-I at HSSC level. It is also concluded that there is agap in KNOWLEDGE DIMENSION in the exercises of the Book-I; 106 questions with 57.2%, throw light on Level-1, 72 questions with 38.9% are at Level-2, 3 questions with 1.6% are at Level-3, 4 questions with 2.1% are at Level-4. This is the Major Gap in the KNOWLEDGE DIMENSION, particularly at Level-3-Procedural Knowledge and Level-4, Meta-Cognitive Knowledge.

6.1 Recommendations

The following are the recommendations focusing on the identified gaps in using HOTs:

- **i.** The students should be able to develop their skills of application (LEVEL-APPLY), while answering questions such as applying things to different circumstances, asking them questions to tell the truth, advice, writing about familiar circumstances and implementing the results, categorizing the things, conducting experiments similar or different things that they have read in stories, learning to organize information.
- **ii.** While asking questions, the students' HOTs should be strengthened at ANALYZE LEVEL, such as implementation, discovering items, investigating and distinguishing things, making

comparisons and contrasts between objects, differentiating between entities, expressing the difference, classifying the things, and so forth.The students' HOTs, at the intermediate level should be enhanced while covering the GAP in the COGNITIVE DOMAIN and KNOWLEDGE DOMAIN. Procedural Knowledge and Meta-Cognitive Knowledge are also needed to be embedded in LEVEL-4-ANALYZE.

iii. The students' HOTs should be constructed at EVALUATE LEVEL by providing them more tasks such as learning to order the things as positive or negative, providing feedback about why things are good or bad, giving critical comments on scenarios, asking the students about their opinions about new aspects they read in the stories, attempting to justify and trying to rationalize the arguments, claims, moral lessons of the stories, giving critiques on the moral beliefs of the stories, concluding remarks of the study on the theme of the stories, writing the meaning and significance of the stories, and the like.

iv. The students' HOTs should be strengthened at CREATE LEVEL by handing them as many tasks, such as creating stories, formulating new models based on what they read in the stories, incorporating the information, analyzing and mining the information, giving planning activities for various situations, writing how to plan the things, clarifying the issues that people face, visualizing similar or different ideas/plans that they read in their textbooks, locating problems, and supplying potential solutions.

v. Such task questions or activities should be designed in curricula of the English textbooks to enhance the students' HOTs in COGNITIVE and KNOWLEDGE DIMENSIONS.

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