Do Post-Reading-Questions in EFL / ESL Reading Textbooks Improve Cognitive Skills?

Chiharu NAKANISHI [1,*], Kaori ANDO [2], Hodaka NAKANISHI [3], and Rie SUZUKI [4]

[1] Kunitachi College of Music
Tokyo, Japan

[2] Chuo University
Tokyo, Japan

[3] Teikyo University
Tokyo, Japan

[4] Tokyo University of Information Sciences
Chiba, Japan

[*] Corresponding author's email: nakanishi.chiharu [AT] kunitachi.ac.jp

---

ABSTRACT— *In the present study we investigate the characteristics of post-reading questions in EFL / ESL reading textbooks for lower English proficiency students. Two types of textbooks were compared using Bloom's Revised taxonomy. One type aims at improving not only learners' English skills but also enhancing their critical thinking skills whereas the other type intend to improve learners' reading skills as well as their English skills. The focus of this investigation is on whether there are any differences in the cognitive skills that learners are expected to employ while using these textbooks and if so how they differ. The results illustrate that the two types of textbooks actually show different patterns of usage in the cognitive process. While the cognitive skills enhancing textbooks use a variety of cognitive processes (12 of 19 subcategories), the reading skills textbooks use only 7 of them. As reading skills textbooks are widely used at university in Japan, teachers who would like to develop a wider variety of cognitive skills have to prepare additional / other questions when the questions in textbooks seem insufficient for the purpose. One of the teaching implications from this study is the use of the first language and short answer questions.*

Keywords—cognitive processes, Bloom's revised taxonomy, lower- / higher-order thinking skills, post-reading questions

---

1. INTRODUCTION

Teachers of any subject should try to develop students' not only lower-order but also higher-order thinking skills which are a part of the 21st century skills and competencies (OECD, 2009) [1]. It is the same in EFL / ESL class where students are required to use their foreign or second language. In order to promote wider range of students' cognitive skills and to increase willingness to answer questions, it is important to ask students a right question at appropriate times. Our present research focuses on the post-reading questions of EFL / ESL textbooks for students of lower English proficiency as most EFL / ESL teachers use textbooks and post-reading questions provided in textbooks. Analyzing cognitive processes of questions in textbooks provides a useful information source to teachers, material writers and teacher trainers who would like to build students' cognitive skills. When the questions in textbooks are not adequate, teachers should prepare additional or other questions by themselves. To promote student cognitive skills, it is also necessary to build teacher's competence of making appropriate cognitive questions.

Some Japanese researchers have studied about the reading questions of textbooks. Tanaka found that the questions in textbooks are largely divided into two categories, which are fact-finding and inferential questions (2010) [2]. Tanaka & Tanaka insisted that teachers should use more inferential questions, as they let students think deeply and actively (2015) [3]. Fukazawa reviewed post-reading comprehension questions in senior high school English textbooks in Japan (2008) [4]. He found that most questions require students only to copy out the words directly from the passage. He further mentioned that the answers can be easily found or clearly written in the texts in most cases.

Hirai et al. (2014) [5] conducted a research on the questions and tasks of EFL junior and senior high school textbooks with the Bloom's Revised Taxonomy (Anderson et al. 2001) [6]. Their findings indicate that approximately 40 to 80 percent of questions and instructions in the textbooks were categorized as a lower-level cognitive skills such as Level 1: Remember and Level 2: Understand.

2. THE PRESENT STUDY

2-1. The purpose of the study

The purpose of the present study is to investigate what kind of cognitive skills can be developed by post-reading questions in EFL / ESL reading textbooks for students of lower English proficiency. We compared two types of textbooks. One is textbooks which aim to enhance not only learners' English skills but also learners' critical thinking skills but also their language skills (CTT: Critical Thinking Textbook) and the other type is textbooks which target at improving learners' English skills as well as their reading skills (RST: Reading Skill Textbook). In order to understand their characteristics, the following four points were analyzed.

1) What is the average length of one unit and their readability for native English speakers?

2) What are the themes and text styles of all units?

3) What are the formats and languages of the post-reading questions?

4) What cognitive processes are imposed on the post-reading questions by the framework of Bloom's Revised taxonomy?

2-2. Method

Five textbooks were analyzed in this study. Two of them are CTT textbooks and the other three books are RST textbooks. The CTT textbooks are 'World English I' (Text A), and '21st Century Reading 1'(Text B). They are published by Cengage Learning Inc., in America and used as EFL / ESL course books. Their aim is to enhance students' communication skills and promote critical thinking (http://cengage.jp/).

The three RST textbooks are 'Reading Tasks for College Students' (Text C), 'Sports Paradise' (Text D) and 'It's time to read' (Text E). They are published by Nan'un-do Co. Ltd. in Japan and used as EFL reading textbooks. Unlike the CTTs, they do not aim at promoting students' cognitive skills. Their primary aim is to improve students' basic reading skills in English (http://www.nanun-do.co.jp/).

The research was conducted in the following four steps, readability for native English speakers, themes and text styles, post-reading question formats, cognitive processes of post-reading questions. This study focuses on the reading section of the textbooks and only those sections were analyzed.

2-2-1. Readability

The five textbooks' readabilities for native English speakers were scaled. From each textbook, two chapters (total 400-600 words) were extracted and placed into Text Readability Consensus Calculator (Retrieved from http://www.readabilityformulas.com/the-LIX-readability-formula.php; Viewed on 17th of June, 2017). Text Readability Consensus Calculator uses 7 readability formulas to calculate the average grade level and text difficulty for native English speakers.

2-2-2. Themes and text styles

The reading passages were categorized and tallied according to their themes and text styles. The themes were classified into General works, Philosophy, History, Social Sciences, Natural Sciences, Technology, Industry, the Arts, Languages, and Literature. The text styles were classified into Expository, Narrative, Conversation, and Letter.

2-2-3. Formats of post-reading questions

The formats used in post-reading questions were categorized into five types, True / False, multiple choice, cloze question, short answer, and others. Languages used in questions, whether the English language or the Japanese language, were also examined.

2-2-4. Cognitive processes of post-reading questions

Bloom's Revised Taxonomy of Educational Objectives (Anderson et al. ibid.) [6] was employed in order to analyze cognitive processes of the post-reading questions. Hereafter the framework is abbreviated as Revised Taxonomy. In Revised Taxonomy, the cognitive processes are defined as six categories. They are Level 1: Remember, Level 2:

Understand, Level 3: Apply, Level 4: Analyze, Level 5: Evaluate, and Level 6: Create. Within these six categories, Anderson et al. (ibid.) [6] further provide 19 subcategories. Table 1 shows the cognitive processes and the subcategories.

In most of the former researches, only the 6 cognitive processes in the original Bloom's taxonomy (1956) [7] or Revised Taxonomy were used in studying teaching and learning questions and activities. The present research used 19 subcategories as they can provide more precise and useful information of the cognitive processes.

Table1: The Cognitive Process Dimension
(Adapted from Anderson et al., 2001, pp.67-68 [6])

Categories & Cognitive processes	Alternative Names	Definition and Examples
1. Remember	Retrieve relevant knowledge from long-term memory	
1.1 Recognizing	Identifying	Locating knowledge in long-term memory that is consistent with presented material
1.2 Recalling	Retrieving	Retrieving relevant knowledge from long-term memory
2. Understand	Construct meaning from instructional messages, including oral, written, and graphic communication	
2.1 Interpreting	Clarifying, paraphrasing, representing, translating	Changing from one form of representation to another
2.2 Exemplifying	Illustrating, instantiating	Finding a specific example or illustration of a concept or principle
2.3 Classifying	Categorizing, subsuming	Determining that something belongs to a category
2.4 Summarizing	Abstracting, generalizing	Abstracting a general theme or major point(s)
2.5 Inferring	Concluding, extrapolating, interpolating, predicting	Drawing a logical conclusion from presented information
2.6 Comparing	Contrasting, mapping, matching	Detecting correspondences between two ideas, objects, and the like
2.7 Explaining	Constructing models	Constructing a cause-effects model of a system
3. Apply	Carry out or use a procedure in a given situation	
3.1 Executing	Carrying out	Applying a procedure to a familiar task
3.2 Implementing	Using	Applying a procedure to an unfamiliar task
4. Analyze	Break material into its constituent parts and determine parts and determine how the parts relate to one another and to an overall structure or purpose	
4.1 Differentiating	Discriminating, distinguishing, focusing, selecting	Distinguishing relevant from irrelevant parts or important from unimportant parts of presented material
4.2 Organizing	Finding coherence, integrating, outlining, parsing, structuring	Determining how elements fit or function within a structure
4.3 Attributing	Deconstructing	Determine a point of view, bias, values, or intent underlying presented material
5. Evaluate	Make judgements based on criteria and standards	
5.1 Checking	Coordinating, detecting, monitoring, testing	Detecting inconsistencies or fallacies within a process or product; determining whether a process or product has internal consistency; detecting the effectiveness of a procedure as it is being implemented
5.2 Critiquing	Judging	Detecting inconsistencies between a product and external criteria, determining whether a product has external consistency; detecting the appropriateness of a procedure for a given problem
6. Create	Put elements together to form a coherent or functional whole; reorganize elements into a new pattern or structure	
6.1 Generating	Hypothesizing	Coming up with alternative hypotheses based on criteria
6.2 Planning	Designing	Devising a procedure for accompanying some task
6.3 Producing	Constructing	Inventing a product

Examples of categorizing post-reading questions into the subcategories are shown below.

Example 1: "What does Peter do?" (Level 1: Remember 1.1 *Recognizing*) Students are expected to recognize the passage to answer the question. It is a fact-finding about the passage.

Example 2: "What are three things the buildings in the reading passages have in common?" (Level 2: Understand 2.6 *Comparing*, Level 4: Analyze 4.1 *Differentiating*) Sudetes are asked to compare the characteristics of buildings in the passage and distinguish the information. Two subcategories are used in one question.

Example 3: "How do you think people will get energy in the future? Solar, wind, fossil fuels, or another way? Discuss with a partner." First, students are expected to infer a way to get energy in the future (Level 2: Understand 2.5 *Inferring*), then, they are expected to attribute the background (Level 4: Analyze 4.3 *Attributing*), and finally they are expected to compare their opinion with other students (Level 2: Understand 2.7 *Explaining*, 2.6 *Comparing*).

Each author of this paper categorized all the questions individually and then compared their results. Most of the results were identical. When they were different, final agreement was made through discussion.

3. RESULTS

3-1. Readability

10 units, two units from each textbook, were extracted in total and examined. Table 2 shows their number of words and readability (grade level and reading level) for native English speakers. The lengths of the text vary and they are between190 and 300 words (Figure 1). Readability of the two CTTs (Text A and B) range between 6 and 8 and the average grade level for them are 7 or 6 respectively, while grade levels of the three RSTs vary greatly. The Text C units have Grade 3 and Grade 7 level readability. The Text D units require readers Grade 8 and Grade 11 level reading ability, whereas readability of the Text E units are 4 and 8.

Table 2: Text Readability

	Unit	Number of Words	Grade Level	Reading Level
Text A	2	193	6	fairly easy to read
	7	200	8	standard / average
Text B	1	284	6	fairly easy to read
	9	307	7	fairly easy to read
Text C	1	229	3	very easy to read
	21	247	7	fairly easy to read
Text D	1	266	11	difficult to read
	12	274	8	standard / average
Text E	1	217	4	very easy to read
	20	240	8	standard / average

Figure 1: Number of Words
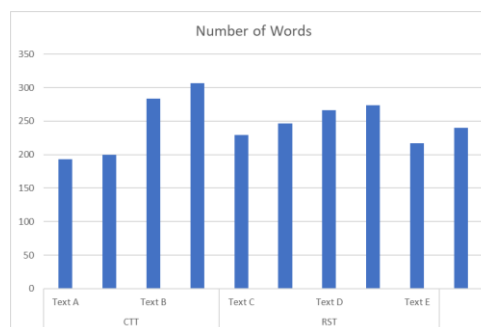
3-2. Themes and text styles

3-2-1. Themes

All the seventy-four units of the five textbooks were analyzed in order to study whether the textbooks cover only limited types of themes or a wide range of areas. The Nippon Decimal Classification (NDC), the most widely used library classification system in Japan, was used to categorize the topics. Although the classification also provides subcategories, only the ten major classifications were used in this study in order to minimize confusion. The classifications are; General works, Philosophy, History, Social Sciences, Natural Sciences, Technology, Industry, the Arts, Languages, and Literature. Table 3 shows the results.

Table 3: Topic Classification

n(%)

	0	1	2	3	4	5	6	7	8	9	
	General works	Philosophy	History	Social Sciences	Natural Sciences	Technology	Industry	The Arts	Languages	Literature	Total
Text A	0(0.0%)	1(8.3%)	4(33.3%)	2(16.7%)	2(16.7%)	2(16.7%)	0(0.0%)	0(0.0%)	0(0.0%)	1(8.3%)	12(100%)
Text B	0(0.0%)	0(0.0%)	1(10.0%)	4(40.0%)	1(10.0%)	3(30.0%)	0(0.0%)	0(0.0%)	0(0.0%)	1(10.0%)	10(100%)
Text C	0(0.0%)	1(4.5%)	2(9.1%)	6(27.3%)	1(4.5%)	1(4.5%)	1(4.5%)	1(4.5%)	2(9.1%)	7(31.8%)	22(100%)
Text D	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	12(100%)	0(0.0%)	0(0.0%)	12(100%)
Text E	0(0.0%)	1(5.0%)	1(5.0%)	4(20.0%)	1(5.0%)	4(20.0%)	0(0.0%)	2(10.0%)	0(0.0%)	7(35.0%)	20(100%)

It can be seen that all textbooks, apart from Text D, which is a sports-featured ESP textbook, deal with a variety of topics with each of them covering more than five the ten classifications. Two RSTs, Text C and Text E, in particular, includes many topics. Text C includes nine classifications and Text E covers seven categories out of 10 categories. Another thing to note is that the two RSTs and the CTTs (Text A and B) favor different classifications. Two RSTs deal with Literature topics most frequently (Text C: 31.8%, Text E: 35.0%), whereas the CTTs dedicate only one chapter each to the topic of Literature.

3-2-2. Text styles

Text styles were classified into four categories, which are Expository, Narrative, Conversation, and Letter. Expository style is to present the author's affirmation showing the examples of a certain theme. Narrative style is to chronologically describe incidents which happen on characters in the story and describe their behaviors and feelings. Conversation style is written in a format of dialogue, often involves more than two people, and generally uses colloquial expressions (Tanaka et al., 2015) [8].

Table 4 and Figure 2 show the results that the text style of Expository is most frequently used in five textbooks except in Text E (RST). Expository which is to define and explain an idea is the main style in all textbooks. Especially in Text B (CTT) and D (RST), Expository style is used throughout the whole textbooks. Two text styles are used in Text C, and 64% are written in Expository style and the remaining 36% are written in narrative style. Expository and Narrative style are equally used in Text E (45% each) and Conversation and Letter style is used in the remaining 5% of the textbook.

Table 4: Text styles

n(%)

	Total #	Expository	Narrative	Conversation	Letter
Text A	12	10(83.3)	2(16.7)	0(0)	0(0)
Text B	10	10(100)	0(0)	0(0)	0(0)
Text C	22	14(63.6)	8(36.4)	0(0)	0(0)
Text D	12	12(100)	0(0)	0(0)	0(0)
Text E	20	9(45.0)	9(45.0)	1(5.0)	1(5.0)

Figure 2: Text styles
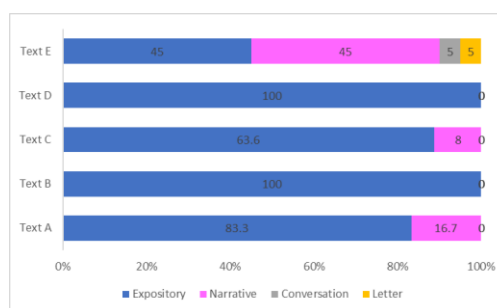
## 3-3. Formats of post-reading questions
3-3-1. Formats of post-reading questions

Post-reading questions in the five textbooks were analyzed and question formats used in the textbooks were examined. A total of 528 questions were categorized into five different question types. The question types are True / False, multiple Choice, closed question, short Answer, and others. Table 5 shows the results.

Table 5: Format of post-reading questions

n(%)

	T/F	Multiple Choice	Cloze	Short Answer	Others	Total
Text A	46(31.9)	6(4.2)	34(23.6)	48(33.3)	10(6.9)	144(100)
Text B	10(6.4)	38(24.4)	28(17.9)	35(22.4)	45(28.8)	156(100)
Text C	3(5.6)	15(27.8)	5(9.3)	26(48.1)	5(9.3)	54(100)
Text D	48(50.0)	0(0)	48(50.0)	0(0)	0(0)	96(100)
Text E	46(59.0)	26(33.3)	0(0.0)	0(0)	6(7.7)	78(100)

Figure 3: Format of post-reading questions
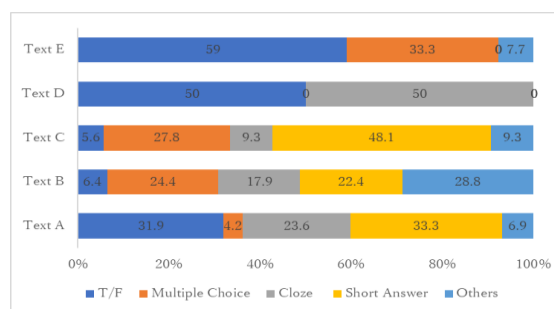
It seems that each textbook favors different questions format. Text A, B and C employ all the five formats, whereas Text D and E use only two or three types respectively. However, one thing which seems worth mentioning here is that True / False questions were found in all the textbooks. True / False was indeed the most frequently observed question format in this study, with 153 questions out of 528 (29.0%) being True / False questions. The second most commonly observed question format is closed question (22.1%), followed by short answer format (20.6%). It is also interesting to see that two RSTs, Text D and E, have no short answer format questions, whereas both CTTs (Text A and B) more or less use the format. 33.3 % of Text A questions and 22.4% of Text B questions ask students to answer in a short answer format.

3-3-2. Language of post-reading questions and answers

Language, whether the first language Japanese (J) or the target language English (E), used in post-reading questions were studied.
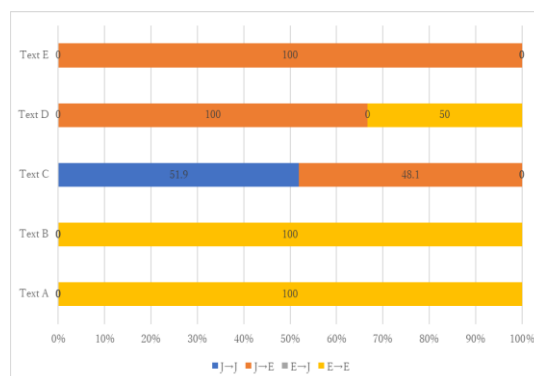
Table 6: Post-reading questions

n(%)

Question → Answer Languages				
	J → J	J → E	E → J	E → E
Text A	0(0)	0(0)	0(0)	144(100)
Text B	0(0)	0(0)	0(0)	156(100)
Text C	28(51.9)	26(48.1)	0(0)	0(0)
Text D	0(0)	96(100)	0(0)	*48(50.0)
Text E	0(0)	78(100)	0(0)	0(0)

J: Japanese   E: English

∗ As for Text D, half of the questions are stated in both languages

Figure 4: Post-reading questions

A total of 528 questions were analyzed and sorted into four types, J→J, J→E, E→J or E→E. J→J type question asks students to read and answer a question in Japanese. J→E means that students read a question in Japanese but are asked to answer the question in English. E→J indicates that students read a question in English and are required to answer in Japanese. E→E means students both read and answer a question in English. The results are shown in Table 6 and Figure 4.

The results show that the Japanese language is used in all the questions provided in the three RSTs. It is interesting to see that Text D writes questions in simple English but also provides their Japanese translation. Many of the questions in the RSTs ask students to answer in English.

3-4. Cognitive processes of Post-reading questions

The post-reading questions in the five textbooks were classified into 6 cognitive process categories and 19 subcategories by the Revised taxonomy (Table 7, Figure 5). Among 528 questions, 72 questions were sorted into more than two subcategories. As a result, a total of 600 questions were analyzed.

Level 1: Remember 1.1 *Recognizing* questions are used in Text A (54.6%) and B (40.7 %) in CTTs, while Text C (43.8%), D (100%), and E (95.1%) in RSTs. 1.2 *Recalling* is found in Text B (13.8%), but it is not found in RSTs.

Level 2: Understand accounts for about one fourth of the questions in CTTs. Text A has 2.5 Inferring questions (12.6%) and 2.7 *Explaining* questions (5.5%). Text B has 2. 5 *Inferring* questions (7.8%) and 2.7 *Explaining* questions (6.6%). Whereas in RSTs, only Text C has 2.1 *Interpreting* questions (45.3%). All questions in *Interpreting* are translating from English to Japanese. Text D and E have 0 % from Level 2.

Level 3: Apply is less than 1 % in all five textbooks.

Level 4: Analyze is found Text A (13.7%), B (12.0%), C (10.9%), D (0%) and E (4.9%). 4.3 *Attributing* questions are used in Text A (11.5%) and B (8.4%). 4.1 Differentiating questions are secondly most used.

Level 5: Evaluate is less than 6 % in all five textbooks. Text B has *Checking* questions (1.8%) and *Critiquing* question (3.6%), whereas Text A has 1.6% *Critiquing* questions. No RST has Level 5 questions.

There are no Level 6: There is no Create in all 5 textbooks.

Table 7: Post-reading questions in the levels of Revised Taxonomy

n(%)

Cognitive Processes		Remember		Understand							Apply		Analyze			Evaluate		Create		
Subcategories		1.1	1.2	2.1	2.2	2.3	2.4	2.5	2.6	2.7	3.1	3.2	4.1	4.2	4.3	5.1	5.2	6.1	6.2	6.3
	total #	Recognizing	Recalling	Interpreting	Exemplifying	Classifying	Summarizin	Inferring	Comparing	Explaining	Executing	Implementing	Differentiating	Organizing	Attributing	Checking	Critiquing	Generating	Planning	Producing
Text A	183	100(54.6)	7(3.8)	0(0)	3(1.6)	0(0)	0(0)	23(12.6)	11(6.0)	10(5.5)	0(0)	1(0.5)	4(2.2)	0(0)	21(11.5)	0(0)	3(1.6)	0(0)	0(0)	0(0)
Text B	176	68(40.7)	23(13.8)	0(0)	4(2.4)	0(0)	9(5.4)	13(7.8)	18(10.8)	11(6.6)	1(0.6)	0(0)	5(3.0)	1(0.6)	14(8.4)	3(1.8)	6(3.6)	0(0)	0(0)	0(0)
Text C	64	28(43.8)	0(0)	26(40.6)	1(1.6)	0(0)	1(1.6)	0(0)	0(0)	1(1.6)	0(0)	0(0)	6(9.4)	1(0.6)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)
Text D	96	96(100)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)
Test E	81	77(95.1)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	19(4.9)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)

Figure 5: Post-reading questions in the levels of Revised Taxonomy
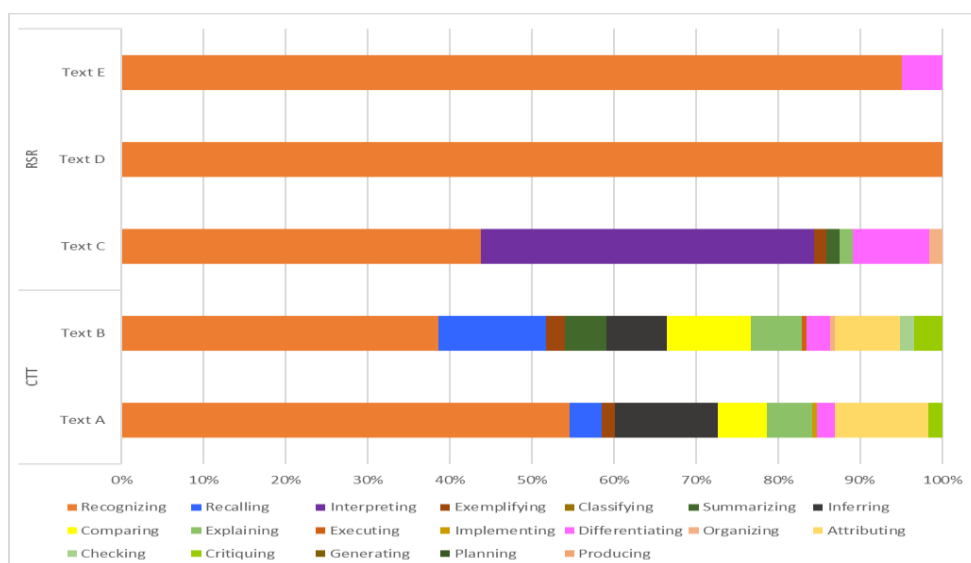
4. CONCLUSION

The two CTTs (Text A and B) and the three RSTs (Text C, D, and E) show both similarities and differences. Four similarities were observed between the two text types. The first similarity was found in their text theme. Teachers are often required to carefully choose which topics to teach as contents and topics used in lessons have a huge impact on the development of students' understanding of the world (Katayama et al., 1994) [9]. All the textbooks, apart from Text D which is an ESP textbook, cover various kinds of topics rather than focusing on limited themes. Even students with the same major often show interests towards different things, therefore, including various themes would be beneficial in order to meet their diverse interests. As for Text D, it is a ESP book as mentioned above. Thus, it of course has theme-specific contents. Hutchinson and Waters (1987; 19) [10] state ESP is "an approach to language teaching in which all decision as to content and method are based on the learner's reason for learning." Through reading topics which students have strong interests, it is hoped that students can enhance not only their reading skills but also their motivation towards learning English.

Secondly, concerning the style of text, expository is most frequently adopted in all the five textbooks. As Smith (Ed. 2003) [11] mentions, the primary function of the style is to convey information. Thus, it could be considered that this style is appropriate when one of the main purposes of English class is to build up students' knowledge. Gillam et al. (1999) [12] mention it relates to the students' zone of proximal development and effective learning strategies. The authors state that the Expository types are quite effective and related to achieve students' cognitive processes. Also Expository text structure awareness is one reading comprehension strategy that should be explicitly and systematically taught (Sweet & Snow, 2003) [13].

Thirdly, all the textbooks in this study employ True or False question format. True-False question format asks students to choose whether a statement is correct or incorrect. One of the main advantages of this format is easy to score. In other words, teachers and students can easily find if students have reached to the correct answer. However, when this format is used in reading question, it often requires students only to look for information in the text, which does not involve higher-level cognitions. IT Training Services of Penn State University (2017) [14] mentions that True-False format "measures only low level of learning - remembering and understanding." They further point out that "Students have a 50 percent chance of being correct, just by chance" and it "[m]ay be perceived as an unfair judgment of learning." Thus, having too many or only True-False questions can result in insufficient use of higher-cognitive skills.

Fourthly, among 19 subcategories of cognitive processes, Level 1 Remember (1.1 *Recognizing*) is most frequently used in terms of finding fact from a text. Many questions rely on recognizing literal information from a text and answer in a form of True / False or Cloze. It cannot be cognitively challenging, but it can be used to check comprehension of reading. Fact-finding or *Recognizing* questions are necessary for learners as first stage of comprehending a text. To answer *Recognizing* questions promptly is a prerequisite to proceed to second and third stage of reading (Takahashi and Takahashi, 1987) [15]. Generally, *Recognizing* questions appear to be easier to answer than other questions such as inferential questions (Fukazawa, ibid.) [4], and students of low English proficiency are more likely to answer correctly. These questions might play a role to improve their self-efficacy and motivation to learn English in university.

In contrast, the CTTs and the RSTs are different in several aspects. Firstly, the CTTs are generally easier than the RSTs in terms of their readability. The CTTs also employ fewer kinds of text style. One might think textbooks must be difficult and use many kinds of text styles in order to be cognitively challenging. However, results of the present study suggest that this might be a wrong assumption. With reading texts for Grade 6 to Grade 8 of native English speaker, CTTs present both lower-order and higher-order cognitive questions. It shows it is possible to make cognitively challenging questions with easy texts.

The languages used in the textbooks are different as they are ESL textbooks published by an American publisher (CTTs) and EFL textbooks written to be used at university in Japan (RSTs). The three RSTs use the Japanese language in all of their questions. This might be explained by the fact that the textbooks are for students with lower English ability. Students who are assigned to a beginner level class at university often have experienced difficulties in learning English at some point of their learning and they tend to show lack of motivation or uneasiness towards learning English. This might lead writers to think that it would help students to read questions in their native language to ease their anxiety and to enhance students' motivation towards English learning.

The analysis of cognitive processes of learning questions showed different patterns in the CTTs and the RSTs. The CTTs use a variety of cognitive processes such as *Recognizing, Recalling, Exemplifying, Summarizing, Inferring, Comparing, Explaining, Implementing, Differentiating, Attributing, and Critiquing*. 12 of 19 subcategories are used. However, these subcategories mainly belong to lower-order thinking which are Level 1: Remember and Level 2: Understand. The subcategories of Level 2: Understand are mostly used (*Exemplifying, Summarizing, Inferring, Comparing, and Explaining*). Although the CTTs note to promote critical thinking, the percentage of using higher-order thinking skills which are *Attributing* (Level 4), *Checking* (Level 5), and *Critiquing* (Level 5), is very low. The RSTs emphasize on *Recognizing* questions. The total number of subcategories which are used in the three textbooks is 7, which is half of the CTTs. The two CTTs use *Recognizing* questions as a first step in checking comprehension of reading, before developing into a further stage, whereas the RSTs over emphasize the stage of *Recognizing*.

Another thing to be noted is that although all the texts from the CTTs and the RSTs are between 200 and 300 words, the numbers of their questions differ greatly. The CTTs have much more post-reading questions. The numbers of questions of CTTs, are as many as 144 and 156 respectively, but those of the RSTs are about 1/3 to 2/3 (Table 5). Also, the large number of post-reading questions in the CTTs are provided in order of cognitive levels.

Figure 6: Steps of Questions from CTTs
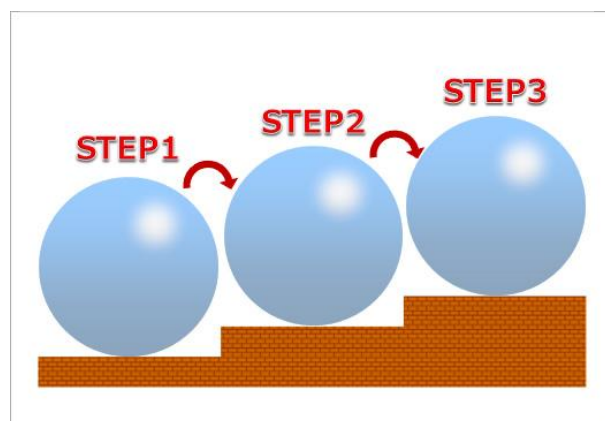
[Example questions from CTTs]

Step 1: [Level 1: Remember (*Recognizing* question)]

Step 2: [Level 2: Understand (*Inferring, Summarizing, and Explaining* question)]

Step 3: [Level 3: Analyze (*Attributing* question) + Level 4: Evaluate (*Checking and Critiquing* question)]

On the other hand, RSTs which have fewer number of questions, do not develop their cognitive questions, but stay almost at *Recognizing* question.

The textbooks which have many questions are prone to being avoided by English lower proficiency students, but it seems that step by step questions as the above, are necessary to build higher-level of cognitive skills.

5. TEACHING IMPLICATIONS

RST is a type of textbook which is widely used at university in Japan, however as shown in the present research, the post-reading questions in the RSTs seem not to be adequate when teachers and students aim at developing a wider variety of cognitive skills. Therefore, it is important for teachers to be able to prepare additional/other questions when they find questions in textbooks insufficient for the purpose. Followings are some examples when teachers use a RST.

One implication is the use of their first language. RSTs analyzed in this study use Japanese in all of their questions. However, not many of them ask students to answer in Japanese. This might explain the limited usage of the cognitive processes in the questions of the RSTs. One of the advantages of EFL, which is a main English teaching situation at

Japanese universities, is that teachers and students often share the same native language. When students with lower English proficiency are asked to answer in English, they sometimes find it hard to express what they really would like to answer in English. As a result, they tend to settle with shorter and simpler answers, which enables teachers to observe students' cognitive enhancement adequately and teachers may conclude the students do not or cannot use enough cognitive skills. Teachers must remember that students with insufficient English ability do not mean they also have insufficient cognitive ability. Through allowing students to think and answer in their native language, higher –cognitive activities might be possible even for lower English level students.

Another implication is to add one more task to True or False questions, which is most frequently used question format in this study. Teachers can ask students not only to choose whether the statement is correct or incorrect, but also correct the statement when they think the statement is wrong. Through this activity, the task will not be a 50%-50% guessing task anymore, teachers can check students' understanding more precisely.

The last implication is the use of short-answer format. It challenges both teachers and students in terms of easiness of scoring. However, this format also allows teachers to see whether students really understand the text, not just a lucky hunch, like True-False or multiple-choice questions. Also, this format can lead to activities with higher-cognitive activities.

6. LIMIT

This is the first step to see whether post-reading questions found in EFL / ESL textbooks for university students with lower English proficiency can help leaners to develop various cognitive skills. It must be noted that only five textbooks were analyzed in this research and further research must be done in order to generalize the results. Additional research also needs to be done on how L1 and L2 used in not only questions but also answers can cognitively influence students.

7. ACKNOWLEDGEMENT

8. REFERENCES

[1] OECD. "21st Century Skills and Competences for New Millennium Learners in OECD Countries, EDU Working paper" no. 41. 2009. Retrieved fromhttp://www.oecd.org/officialdocu ments/publicdisplaydocumentpdf/?cote=EDU/W - KP(2009)20-&doclanguage=en,

[2] Takeo Tanaka. "Yoi hatsumon, warui hatsumon: jyugyo wo kaeru hatsumonn towa" [Good questions and bad questions: what are the questions to change classrooms]. Eigo Kyoiku, 59 (1), 10-13. 2010.

[3] Takeo Tanaka & Chisato Tanaka, "Eigo Kyoshi no tameno Hatsumon Technique" [Designing of English classrooms: Reading Comprehenshion, Focusiong on the quesiotns] Tokyo: Taishukan shoten. 2009.

[4] Seiji Fukazawa, "Dokkai wo sokushin-suru hatsumon zukuri no jyuyosei – Koto gakko eigo reading kyokashochu no setsumon-bunseki wo toshite" [Significance of Designing Questions to Enhance Reading Comprehension: Through the analysis of post-reading questions in senior high school English textbooks in Japan]. Bulletin of the Graduate School of Education, Hiroshima University. Part. II. 57, 169-176. 2008.

[5] Seiko Hirai (Ed.), "A Study of language education based on the theories of bilingualism: the effectiveness of CALP-oriented teaching methodologies" Report on study 23520699 Grants-in Aid for Scientific Research C. Japan Society for the Promotion of Science(JSPS), 2014.

[6] Lorin W. Anderson and David R. Krathwohl (Eds.), "A taxonomy for learning, teaching and assessing: A revision of Bloom's Taxonomy of educational objectives, abridged edition" New York: Longman. 2001.

[7] Benjamin S. Bloom, Max D. Engelhart, Edward J. Furst, Walker H. Hill, & David R. Krathwohl "Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain" New York: David McKay Company. 1956.

[8] Takeo Tanaka, Katsumasa Shimada & Hiroyuki Kondo, "Suiron hatsumon wo tori ireta eigo reading shido"[English Reading Guidance for Incorporating Inferential Questions] Sanseido Co Ltd., 74-87, 2015

[9] Yoshio Katayama, Eiichi Endo, Akira Sasaki & Mikio Matsumura, "Shin eigo ka kyouiku no kenkyu" [New Study on English Education]. Taishukan Publishing Co., Ltd, 1994.

[10] Tom Hutchinson, Alan Waters, English for Specific Purposes, Cambridge University Press, 1987

[11] Carl B, Smith, Dorra M. Ellis and Eugene Read, "The Importance of Expository Text: Reading and Writing". Retrieved form https://files.eFric.ed.gov/fulltext/ED480886.pdf (Viewed on 17th of February, 2018)

[12] Ronald B. Gillam, Elizabeth D. Pena & Lynda Miler, "Dynamic Assessment of Narrative and Expository Discourse", Bulletin of the Topics in Language Discourse; Research Library 33-47, Nov.,1999.

[13] Anne P. Sweet and Catherine E. Snow (Eds.), Rethinking reading comprehension. New York: Guilford. 2003

[14] IT Training Services, Penn State University 2017, Writing Effective Quiz Questions. Retrieved from http://personal.psu.edu/bxb11/QuizQuestions/QuizQuestions_print.html (Viewed on 17th of February, 2018)

[15] Tsuneo Takahashi & Masao Takahashi, "Eigo reading shido no kiso" [Basics of Teaching English Reading]. Tokyo: Kenkyusha. 1987