

**TEACHER QUESTIONING BEHAVIOR AND STUDENT
CRITICAL THINKING IN THE COLLEGE EFL
READING CLASSROOM: A CASE STUDY**



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**A Thesis Submitted in Partial Fulfillment of the Requirements for
the Degree of Master of Arts in English Language Studies**

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พฤติกรรมคำถามคำถามของอาจารย์ และการอ่านเชิงวิจารณ์ของนักศึกษา
ในชั้นเรียนการอ่านภาษาอังกฤษเป็นภาษาต่างประเทศ
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Suranaree University of Technology has approved this thesis submitted in partial fulfillment of the requirements for a Master's Degree.

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เฉิน ผิง : พฤติกรรมการถามคำถามของอาจารย์ และการอ่านเชิงวิจารณ์ของนักศึกษาใน
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กรณีศึกษานี้มุ่งเน้นเพื่อตรวจสอบอย่างลึกซึ้งซึ่งเกี่ยวกับพฤติกรรมการถามคำถามของครู และ
การคิดเชิงวิพากษ์ของนักเรียน ในห้องเรียนการอ่านภาษาอังกฤษเป็นภาษาต่างประเทศในบริบท
ของประเทศจีนเป็นหลัก วัตถุประสงค์แรก คือ เพื่อสำรวจลักษณะสำคัญทั่วไป รวมทั้ง ความถี่ของ
การถามคำถามของครู และ วัตถุประสงค์ที่สองคือเพื่อตรวจสอบให้แน่ใจว่า การถามคำถามของครู
สามารถส่งเสริมให้เกิดการคิดเชิงวิพากษ์ของผู้เรียนได้หรือไม่

ปรัชญาพิสัยของการจัดจำพวกแบบบลูมได้ถูกนำมาปรับใช้เป็นการรอบความคิดเชิงทฤษฎี
สำหรับการศึกษาวิจัยฉบับนี้ ข้อมูลการวิจัย รวบรวมโดยการใช้การสังเกตการสอน การย้อนพินิจ
ของครู และ การสอบถามแบบกึ่งโครงสร้าง การสังเกตการสอนใช้เวลาทั้งหมด 20 ชั่วโมง
พฤติกรรมการถามคำถามของครูจำนวนหนึ่งท่านถูกสังเกต และ นักศึกษาจำนวน 17 คนถูก
สัมภาษณ์

ผลการศึกษาเกี่ยวกับลักษณะสำคัญทั่วไปของการถามคำถามของครูแสดงให้เห็นว่า
1) จากจำนวนคำถาม 288 คำถามที่เกี่ยวกับเนื้อหาที่อ่านนั้น ครูตั้งคำถามที่ใช้การคิดระดับต่ำ และ
คำถามที่ใช้การคิดระดับสูง 2) ในเชิงปริมาณ ครูถามคำถามที่ใช้การคิดระดับต่ำ (79.2%) มากกว่า
คำถามที่ใช้การคิดระดับสูง (20.8%) นอกจากนี้ ผลการศึกษาที่เกี่ยวกับการถามคำถามของครู และ
การคิดเชิงวิพากษ์ของนักเรียน แสดงให้เห็นว่า 1) การใช้คำถามที่ใช้การคิดระดับสูงจำนวนน้อยนั้น
สามารถจำกัดขอบเขตของการพัฒนาการคิดเชิงวิพากษ์ของนักเรียน 2) การถามคำถามของครูไม่
สามารถส่งเสริมการคิดเชิงวิพากษ์ของนักเรียนในการศึกษาวิจัยนี้ได้ นอกจากนี้ยังได้ระบุคำถามที่
ใช้การคิดระดับสูงอย่างไม่ถูกต้องของครูไว้อีกด้วย อันได้แก่ การขาดการโยงการคิดอย่างมีเหตุผล
และ การถามคำถามที่ไม่ชัดเจน ผลการศึกษานี้มีประโยชน์โดยตรงต่อการศึกษาวิจัยอื่นๆที่มุ่งเน้น
การพัฒนา การคิดเชิงวิพากษ์ของนักเรียน โดยผ่านการถามคำถามของครู

สาขาวิชาภาษาอังกฤษ
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ลายมือชื่ออาจารย์ที่ปรึกษา _____

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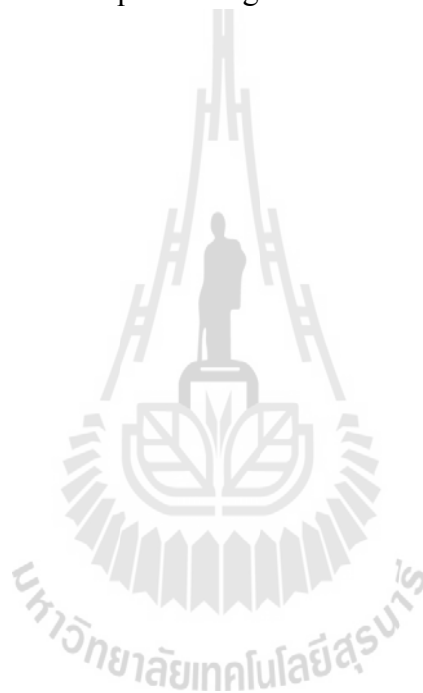
TEACHER'S QUESTIONING/CRITICAL THINKING/ COGNITIVE DOMAIN/
LOWER-COGNITIVE QUESTION/HIGHER-COGNITIVE QUESTION

The current case study was mainly to investigate in depth the teacher's questioning behavior and students' CT in the college EFL reading classroom in the Chinese context. The first purpose was to explore the common features including frequencies of teacher's questions and the second one was to ascertain whether the teacher's questions could facilitate learners' CT.

The cognitive domain of Bloom's taxonomy was adapted as the theoretical framework for the present study. The data were collected by using classroom observation, teacher's retrospection, and semi-structured interview. The observation lasted totally 20 hours. A teacher's questioning behavior was observed and 17 students were interviewed.

The results regarding common features of teacher's questions showed 1) among 288 content-related questions, both lower-cognitive questions (LCQ) and higher-cognitive questions (HCQ) were raised by the teacher; 2) quantitatively, the teacher proposed much more LCQ (79.2%) than HCQ (20.8%). Additionally, the

results regarding teacher's questions and students' CT revealed that 1) the limited use of HCQ could limit the extent to develop students' CT; 2) teacher's questions could not facilitate students' CT under investigation. Furthermore, the misuses of HCQ were also identified: lacking of a chain of reasoning and unclear questioning instructions. The findings were directly beneficial to other research studies aiming at developing students' CT through teachers' questioning.



School of English

Student's Signature _____

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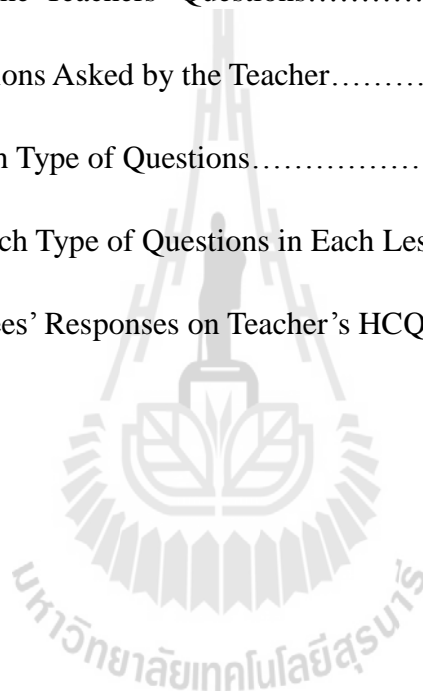
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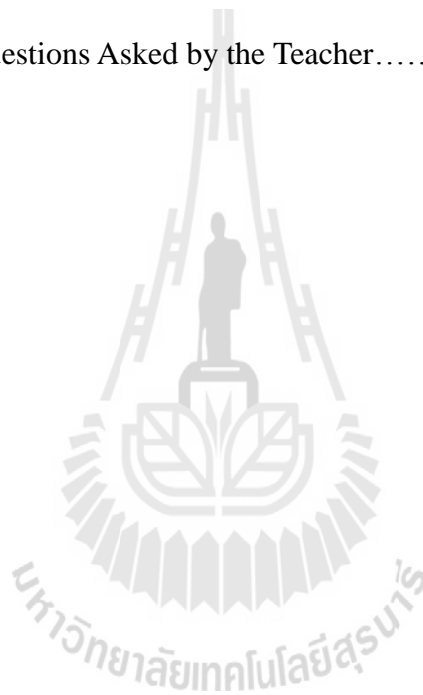
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LIST OF ABBREVIATIONS

CR	Coefficient of Reliability
CRCEM	Curriculum Requirements for College English Majors
CT	Critical Thinking
EFL	English as a Foreign Language
HCQ	Higher-Cognitive Questions
IOC	Item Objective Congruence Index
KU	Kaili University
LCQ	Lower-Cognitive Questions
MOE	Ministry of Education of PRC
RC	Reading Comprehension

CHAPTER 1

INTRODUCTION

This chapter gives a brief introduction to the present case study which aims at investigating a teacher's questioning behavior and students' critical thinking in the college EFL reading classroom. It consists of research background and statement of problems. The purposes of the study and research questions are also presented. Then, this chapter provides the significance of the study, limitations of the study, definitions of terms and the outline of the thesis. It ends with the summary of this chapter.

1.1 Background

China, as a non-English speaking country, has the largest number of learners to learn English (Xiao, 2009); however, like other non-English speaking countries, with respect to the social milieu, most of Chinese learners do not have adequate opportunities to use English outside the classroom. The classroom is deemed as the main place where students can get language input and produce language output (Shen, 2003); thus, this kind of English as a foreign language (EFL) classroom becomes one of the indispensable elements for Chinese language learners. Since the 1950s, classroom research has drawn researchers' attentions throughout the world rapidly, which focuses on everything that happens in the classroom (Allwright & Bailey, 1991).

With respect to the language input in classroom context, based on Krashen's input hypothesis, teacher talk¹ is considered as an essential source of comprehensible input (Cullen, 1998). In Sinclair and Coulthard's (1975) study, they found that teacher talk occupied almost two thirds of lesson in teacher directed lessons. Legarreta and Dorothy (1977, as cited in Chaudron, 1988) carried out an investigation and found that teachers accounted for 70% to 89% of the total talk in the classroom. However, during a 50-minute class, the higher frequency of teacher talk means the less frequency of student talk. To elicit more student talk, most of research studies focus on teacher talk. Some research studies suggested minimizing teacher talk time in order to allot more time for students (Zhao, 1998; Zhou & Zhou, 2002). The others suggested asking more effective questions to elicit more students talk (Shomoossi, 2004; David, 2007). Therefore, it is useful and important to study teacher talk in order to elicit more student talk and improve students' language learning. There are some features concerning teacher talk that have been more or less the center of attention. For example, the amount and types of teacher talk, speech modifications made by teachers, error correction and questioning, in which questioning is one of the most familiar forms of teacher talk in language classroom (Shomoossi, 2004).

There has been wide interest in doing research on features of teacher talk in English classrooms. In terms of questioning, a large number of research studies have already found that during lectures teachers were inclined to ask a lot of questions

¹ Teacher talk is the amount of speech provided by teachers not students (Cook, 1989). It can be also called teacher's language, teacher's speech, or teacher's utterances.

(Stevens, 1912; Leven & Long, 1981; Roth, 1996; Hu, 2004; Tan, 2007; Almeida, 2010). Richards, Plat and Plat (2004) claimed that “the question is used most frequently as a teaching technique to initiate the classroom talk and investigation on teacher questions and questioning behavior has been an important issue in the language classroom” (p.476). Long and Sato (1983) have found that teachers asked 938 questions in six elementary level ESL lessons. White and Lightbown’s study (1984) pointed out that teachers asked nearly 200 questions per class period. Therefore, obviously, during the process of teaching and learning, the teacher’s questioning plays an important role in the classroom. Different researchers mentioned above analyzed teachers’ questions based on different criteria among which the cognitive domain of Bloom’s taxonomy is regarded as the most influential one. The cognitive domain of Bloom’s taxonomy includes six levels based on the thinking level, which is also the theoretical framework of the present case study. More information on it will be presented in Chapter Two. In the classroom, question-and-answer activity is viewed as the most common form of communication between students and teachers. A question proposed by teachers can promote students’ learning, participation and thinking, especially critical thinking (CT) (Wilens, 1991). Thus, as for the functions of questions, they can be used to check students’ understanding, stimulate students’ thinking, or increase classroom interaction.

Recently, developing students’ thinking, especially CT, has become a hot issue. Duron, Limbach and Waugh (2006) carried out a study which aimed at using a

5-step framework to train learners' CT. Angeli and Valanides (2009) conducted a study with the purpose of finding out the effects of teachers' instructions on learners' CT. Since the 1960s some American educators noticed the importance of CT; more and more educators from all over the world begin to regard it as a necessary part of learning. It is known that CT is an important ability which contributes to the development of the human being. It helps learners analyze, evaluate, construct their thinking, solving problems and reasoning (Glaser, 1941; Ennis, 1989). With regard to reading comprehension (RC) which is viewed as the big problem for Chinese language learners (See 1.2.1), CT ability is one of influential factors which can influence RC (Richek, Caldwell, Jennings & Lerner, 1996), because CT includes solving problems, reasoning and so forth which can help students analyze the information from articles. Therefore, it is evident that the development of students' CT can be beneficial to the development of their RC.

In China, unfortunately, CT was ignored by educators and teachers unconsciously for several years because of Chinese ancient culture. Teachers played an authoritative role in the classroom and students had to learn what they were taught passively, which made them get used to being submissive learners; furthermore, teacher-fronted instruction has dominated language classroom for many years. Students were similar to an empty vessel, waiting for knowledge from teachers. Luckily, with the development of Chinese education, more and more Chinese educators have emphasized the role of CT and proposed its importance for students.

As for English majors, there is the Curriculum Requirements for College English Majors (CRCEM) which was published by the Ministry of Education of the People's Republic of China (MOE) in 2000. According to CRCEM, English teachers are required to cultivate students' competences in learning, applying, analyzing problems and CT (MOE, 2000). As a result, cultivating learners' CT has become an imperative issue in Chinese language education.

In conclusion, the MOE has already emphasized the importance of developing learners' thinking, especially CT. CT is a kind of mental process involving many sub-skills, for example inference and evaluation, which can contribute to the development of RC. Apparently, developing CT is regarded as one of the effective ways to facilitate RC. In addition, with stated previously, according to the cognitive domain of Bloom's taxonomy, questions which require students to manipulate knowledge can stimulate learners' CT. Therefore, it is worthwhile doing the study on the relationship between the teachers' questioning behavior and students' CT, and therefore RC can be developed.

1.2 Statement of the Problems

1.2.1 Test for English Majors Band 4 and 8

Test for English Majors Band 4 and 8, TEM 4 and TEM 8 in short, are regarded as two authoritative tests in China, which are held nationally once a year in May since 1990. TEM 4 aims at checking whether second-year students, majoring in English, reach the fundamental level. TEM 8 is used for third/fourth-year students in

order to check whether they achieve the advanced level. In many colleges and universities, getting a certificate in TEM 4 is one of the necessary conditions that students must be qualified for in order to get a diploma. TEM 4 is composed of listening comprehension, reading comprehension, cloze, grammar and vocabulary and writing. After the revision in 2004, the total points for reading comprehension (RC) was changed from 25 into 20; however, the level of difficulty of this part seems to have been increased as can be seen from a decrease in RC scores. In Nanjing College for Population Program Management, the scoring percentage in RC fell from 77.2% (2004) to 66.7% (2005) while in Hunan Institute of Science and Technology, it has dropped from 67.3% (2004) to 58.9% (2005) (Wang & Xu, 2007).

In the present context, with a student population of about 7,600, Kaili University (KU) is a newly founded local comprehensive university² in Kaili city located in the southwest of Guizhou, China, which is a remote mountainous area. There are totally 13 institutes in KU. The Institute of Foreign Language provides English language programs for both English majors and non-English majors. Students who major in English are required to take TEM 4; however, the number of students who can pass TEM 4 is very low, for example, in 2009, only 32 out of 300 students passed and most of the students considered RC is the most difficult part in TEM 4 based on talking with them after the test. Unquestionably, it is evident that RC plays a very crucial role in TEM 4.

² Comprehensive university refers to a university which can offer almost all kinds of subjects concerning art and science for undergraduates or graduates in China.

1.2.2 Factors Influencing Reading Comprehension

With issues concerning TEM 4 and TEM 8 stated above, reading tends to play a very crucial role for Chinese language learners. Poor RC can be a stumbling block for students. Regarding the RC, there are several factors which can affect it. Richek et al. (1996) pointed out that factors contributing to reading problems can be categorized into physical factors, emotional factors and language factors. In terms of language factors which are critical to success in reading, there are many aspects, for example vocabulary recognition, mastering grammar and comprehending. Furthermore, comprehending seems to be the major issue, in which CT is an influential part. Unquestionably, the facilitation of learners' CT has benefits to the development of their RC. This is because CT refers to a kind of mental process containing problems solving and active engagement in certain activities, which can help students read and comprehend materials more efficiently. Therefore, CT is seemed to be an influential factor which can affect students' RC.

1.2.3 Research Studies in Teachers' Questioning Behavior

There were plenty of research studies (Kebede, 1999; Zhou & Zhou, 2002; Hu, 2004; Shomoossi, 2004; Ho, 2005; David, 2007) exploring teachers' questioning behavior in the classroom, and presenting valuable results for language teaching and learning. The functions of different types of questions have been specified more clearly and good questioning strategies have been proposed. However, most of them mainly focused on the influence of teachers' questions on classroom interaction and

learners' oral output (Hu, 2004; Shomoossi, 2004; David, 2007; Lu, 2007). Few research studies took both teachers' questioning behavior and learners' CT into account in order to improve learners' RC in the Chinese context. So the current case study was designed to address this gap.

In conclusion, reading ability is one of the most important language abilities for English learners. With respect to TEM 4 and 8, RC plays a crucial role in determining and assessing English language ability of Chinese learners. According to Wang and Xu (2007), the scoring percentage in RC seemed to decrease after the revision in 2004. Therefore, it is necessary to find approaches which can help students improve their reading ability. As aforementioned in 1.2.2, there are many factors which can influence RC, among which language factors are regarded as the most important ones; furthermore, CT is viewed as a very influential language factor. That is, the level of learners' CT can influence the level of their RC. Additionally, since questioning is a common method used by teachers to stimulate learners' thinking including CT, a study on teacher questioning and CT would have a significant implication on language teaching and learning in reading classes. Especially, it can provide suggestions on the appropriate use of teacher's functions to improve reading ability of learners. However, most of research studies about teachers' questioning focused on the influence of questioning on classroom interaction or learners' oral output, rather than students' CT. So, the study aimed at exploring the current situation of cultivating students' CT by using teacher's questioning behavior so that learners' reading ability can be facilitated with the development of learners' CT.

1.3 Purposes of the Study

With the problems stated in 1.2, the aim of the current case study was to investigate in depth the teacher's questioning behavior and students' CT in the college EFL reading classroom in Chinese context. It intended to explore the common features of teacher's questions and to ascertain whether the teacher's questions can facilitate learners' CT which is considered as a means to develop students' RC. The purposes of this case study are listed as follows:

- 1) To investigate the common features of the teacher's questions in Chinese college EFL reading classroom so that information about teacher's questioning behavior can be obtained.
- 2) To find the frequency of each type of questions so that different types of questions can be compared in order to illustrate the main pattern of the teacher's questions.
- 3) To explore whether the teacher's questioning behavior can facilitate students' CT related to four higher-order thinking levels in the cognitive domain, so that the current situation of cultivating students' CT through teacher's questioning in the classroom can be investigated, and therefore improvement can be suggested.

1.4 Research Questions

Based on the purposes of the case study listed previously, this study was driven by the following research questions:

- 1) What are the common features of questions asked by the teacher in the EFL reading classroom under investigation?
- 2) What is the frequency of each type of questions raised by the teacher in the EFL reading classroom under investigation?
- 3) Can the teacher's questions facilitate learners' critical thinking under investigation? Why or Why not?

1.5 Significance of the Study

CT is regarded as the means to improve learners' RC, which can be stimulated through the teacher's questioning behavior. So the present case study was designed to investigate the relationship of the teacher's questioning and learners' CT. The study could provide the pedagogical suggestions which could resolve reading problems in KU in that it attempted to help teachers find out relatively effective ways to question in order to facilitate students' CT. Due to the crucial role of teachers' questions in the classroom, an effective questioning strategy could help students develop their CT which is often ignored by both teachers and students in China. Therefore, the study would provide significant pedagogical implications to language teaching in improving students' CT.

Furthermore, teachers with limited teaching experiences may also see the positive results of the case study and apply them in the classroom context. Moreover, since this case study mainly focused on the teacher's questioning behavior in a reading classroom, it was expected that the findings could have an implication on

teacher training in KU, and even other universities in China in that they could provide useful and valuable information for teacher trainers so as to improve the quality of English reading teaching in the college EFL classroom.

1.6 Limitations of the Study

The strengths of this study were the use of three research instruments to collect data and the employment of both qualitative and quantitative methods yielding the process of data analysis in order to validate the findings of the study. However, like other studies on the teachers' questioning behavior, the study had some limitations listed as follows:

Firstly, in the current study, the subjects were limited to the college English teachers throughout the entire China, which might not be considered as representatives of English teaching in other provinces.

Secondly, there are three domains in Bloom's taxonomy: cognitive domain, affective domain and psychomotor domain. However, compared with other domains, the cognitive domain has the most impact on CT issue in that each level of cognitive domain explains thinking processes including CT which is a required ability for students (Arends, 1991). So in order to explore the influence of teachers' questioning behavior on learners' CT, this study focused only on using the cognitive domain in Bloom's taxonomy to analyze teacher's questions, not including affective and psychomotor domains.

1.7 Definitions of Terms

The following definitions were used in the present case study:

1.7.1 Question

According to the Longman Dictionary, *question* refers to a command or interrogative expression used to elicit information or a response, or to test knowledge. There are many types of questions based on different criteria, for example, closed and open questions; display and referential questions.

For example:

What is the capital of Thailand? (closed question)

Why did not you submit your homework? (open question)

What is the meaning of “current”? (display question)

What kind of a diet is the best? (referential question)

1.7.2 Critical Thinking (CT)

Critical thinking refers to the thought process which includes problem solving and active engagement in certain activities, besides the process of evaluation statements (McPeck, 1981). More explanations on CT will be presented in Chapter Two. According to Richek et al. (1996), CT can contribute to the development of students' RC.

1.7.3 Curriculum Requirements for College English Majors (CRCEM)

Curriculum Requirements for College English Majors (CRCEM) is a nation-wide curriculum for college English teaching and learning in China. It includes syllabus designing, time allotment, and teaching requirements and so forth.

1.7.4 TEM 4 and 8

Tests for English Majors Bands 4 and 8 are two national tests for college students majoring in English in Chinese college education. TEM consists of Bands 4 and 8. Band 4 aims at assessing students' professional knowledge at a fundamental level, which includes five parts: listening comprehension, cloze, grammar and vocabulary, RC, and writing. Band 8 aims at assessing students' professional knowledge at an advanced level, which includes six parts: listening comprehension, RC, general knowledge, proofreading, error correction, translation, and writing.

1.7.5 Reading Comprehension (RC)

Reading comprehension in the present context refers to students' reading ability and it is also the name of the test technique used in TEM 4 which aims at testing students' reading ability. As a test technique, it often consists of passages and relevant questions.

1.7.6 Cognitive Domain

Cognitive domain is one of the three core elements (cognitive, affective, and psychomotor domains) in Bloom's taxonomy. It is associated with intellect, knowledge and thinking, including the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of intellectual abilities and skills. It is the theoretical framework of the present study. More information will be introduced in Chapter Two.

1.7.7 Item-Objective Congruence Index (IOC)

Item-Objective Congruence Index (IOC) is used to assess the degree to which an item has validity (Hambleton & Rovinelli, 1986). The formula ($IOC = \sum R/N$) is based on the assumption that in the ideal case, an item would be matched with only one objective of the set.

1.8 Summary

This chapter provided a brief introduction to the case study. First, it started with the background of the study. It then, stated the general problems, the purposes of the study, the research questions, the significance and the limitations of the study. Some explanations of useful items were also provided in this chapter respectively. It ended with a summary of this chapter. In the next chapter, the theoretical framework, that is, the cognitive domain of Bloom's taxonomy and a review of related literatures on teachers' questioning behavior and CT will be presented.

CHAPTER 2

RELATED LITERATURE REVIEW

This chapter mainly presents the literature review and related research studies on the cognitive domain of Bloom's taxonomy, teacher's questioning and CT. It consists of three sections: 1) the researcher's rationale of applying the cognitive domain of Bloom's taxonomy as the theoretical framework in the case study and related theory of the cognitive domain; 2) the overview theory of teachers' questioning in the classroom context and the previous research studies on teachers' questioning behavior; and 3) the review of the theory of CT and related research studies.

2.1 Theoretical Framework

The theoretical framework of the present study is the cognitive domain of Bloom's taxonomy.

2.1.1 The Rationale for Using the Cognitive Domain of Bloom's

Taxonomy

As previously mentioned, the theoretical framework of the case study is the cognitive domain of Bloom's Taxonomy. The reasons why the researcher employed it are listed as follows:

Firstly, there have been many researchers who proposed different classification systems used to analyze teachers' questions (Adams, 1964; Aschner, 1961; Bloom, Englehart, Furst, Will, & Krathwohl, 1956; Carner, 1963; Clements, 1964; Gallagher, 1965; Guszak, 1967; Moyer, 1966; Pate & Bremer, 1967; Barnes, 1969; Long & Sato, 1983); however, Bloom's taxonomy is viewed as the best-known and most widely used paradigm in education to categorize and analyze the types of questions (Bernadowski, 2006). Additionally, in fact, most of other question classifications are mainly based on the theory of the cognitive domain of Bloom's taxonomy, for example, open and closed questions (Almeida, 2010).

Secondly, the purpose of the current case study was to explore whether students' CT can get improvement with the help of the teacher's questions. Obviously, with respect to Bloom's taxonomy, Jacobsen, Eggen and Kauchak (1999) pointed out that the domain which has the most impact on the CT issue is the cognitive domain. This is because cognitive domain is concerned with imparting knowledge and thinking skills (Moore, 1998); moreover, higher-cognitive levels in the cognitive domain focus on promoting learners' CT. Therefore, the cognitive domain of Bloom's taxonomy is relatively appropriate and practical for the purposes of the case study.

2.1.2 Bloom's Taxonomy

Bloom's taxonomy was first proposed in 1956 at the University of Chicago by Bloom and his colleagues. It is the most commonly used system for classifying the objectives or instructional goals of education (Moore, 1998). In other words, it provides a

framework for the formulation of the learning objectives (Eisner, 2000). The educationists always set the objectives of learning for learners based on Bloom's taxonomy. Arends (1991) pointed out that Bloom's taxonomy has been widely used as an aid in planning as well as for other aspects of teaching. For example, it can be used to assist in test construction and also to choose a questioning strategy. Thus, it is relevant to all types of learning. As Bloom stated in 1956, there is more than one type of learning, so Bloom's taxonomy subsumes three large domains of learning: the cognitive, the affective, and the psychomotor domain. The cognitive domain refers to the mental skills (Knowledge); the affective domain refers to growth in feelings or emotional areas (Attitude and Emotion); and the psychomotor domain refers to manual or physical skills (Skills) (Huitt, 2009). The cognitive domain includes six levels: knowledge, comprehension, application, analysis, synthesis and evaluation, which mainly focuses on intellectual skills. The affective domain contains five levels: receive, respond, value, organize and internalize, which mainly focuses on students' feelings, emotions, and attitudes. The psychomotor domain contains also five levels: imitation, manipulation, precision, articulation and naturalization, which mainly focuses on skills. The levels of each domain are arranged in hierarchical order from the simple to the complex, which means that the first one must be mastered before the next one can take place (Jacobsen et al., 1999).

2.1.3 The Cognitive Domain of Bloom's Taxonomy

Although Bloom's taxonomy contains three domains, only the cognitive domain of Bloom's taxonomy was adopted as the theoretical framework in the case

study. It involves knowledge and the development of intellectual skills, including the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of intellectual abilities and skills (Bloom et al., 1956). As mentioned previously, according to the Bloom's classification system, the cognitive domain is divided into six levels: knowledge, comprehension, application, analysis, synthesis, and evaluation (See Figure 2.1). "Each level specifies the types of cognitive (thinking) process required of students, ranging from the simple to the more complex" (Arends, 1991, p.47).

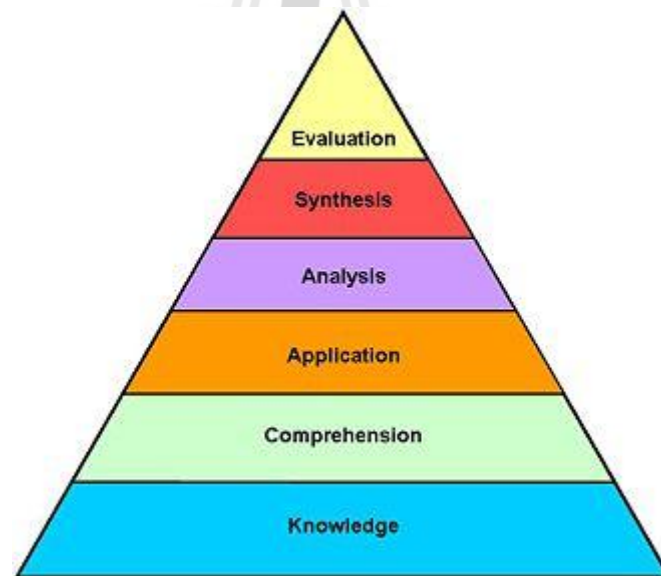


Figure 2.1 Levels of the Cognitive Domain of Bloom's Taxonomy

According to Bloom et al. (1956), the six levels have their own requirements for students which include some activities that can promote students' intellectual abilities and thinking skills in the cognitive domain.

- **Knowledge**

It requires the ability of remembering of previously learnt materials, which involves drawing out the factual answers and the recall of a wide range of material, from specific facts to complete theories. It represents the lowest level of learning outcomes in the cognitive domain because it does not require the processing or manipulating of information (Jacobsen et al., 1999).

For example:

Who invented the automobile? (Knowledge Question)

- **Comprehension**

It requires the ability to grasp the meaning of material, which involves summarizing, explaining, paraphrasing. There are two main forms of comprehension: restating information in one's own words and translation (Jacobsen et al., 1999). It also represents the lowest level of understanding.

For example:

*What is the **main idea** of this article?* (Comprehension Question)

- **Application**

It requires problem solving, for example, applying the learnt knowledge into the new real situation, which includes the application of such things as rules, methods, concepts, principles and so forth. All of these activities require higher- level understanding.

For example:

What would result if the heroine had not chosen leaving?

(Application Question)

- **Analysis**

It requires the ability to break down material into its component parts so that its organizational structure may be understood, which involves identifying each part of the material, analyzing the relationship between parts.

For example:

*Based on our study of Germany, what **inference** of the situation of that country can you make?* (Analysis Question)

- **Synthesis**

It is different from analysis in that analysis requires students to take something apart whereas synthesis requires the process of putting things together to produce a new and unique entity. It emphasizes the creative integration, which means put all elements of material together to form a new pattern.

For example:

*What **changes** would we see in the attitude of society if we were to elect a woman president?* (Synthesis Question)

- **Evaluation**

Evaluation, as the highest and most complex level, requires the ability to judge the value of the material. Furthermore, the judgment should be accompanied by a certain definite criterion.

For example:

*Can you **judge** whether the author of the book developed the main character sufficiently?* (Evaluation Question)

Because Bloom's taxonomy is relevant to all types of learning, there are many researchers who used the cognitive domain to classify teacher's questions raised in the classroom based on lower and higher-cognitive levels (Corey, 1940; Wilen, 1991; Wink, 1993; Tan, 2007; McNeil, 2010). The first two levels, knowledge and comprehension, are often regarded as lower-cognitive levels in that they are limited to memorization with the information being recalled upon demand, while the last four levels, application, analysis, synthesis and evaluation, are deemed as higher-cognitive levels in that they require higher-order thinking involving intellectual processing or the connecting or transforming of ideas of students (Bloom et al., 1956; Wink, 1993; Sellappah, Hussey, Blackmore, & McMurray, 1998; Myrick & Yonge, 2002; McNeil, 2010). This following Figure 2.2 presents two main levels in the cognitive domain of Bloom's taxonomy.

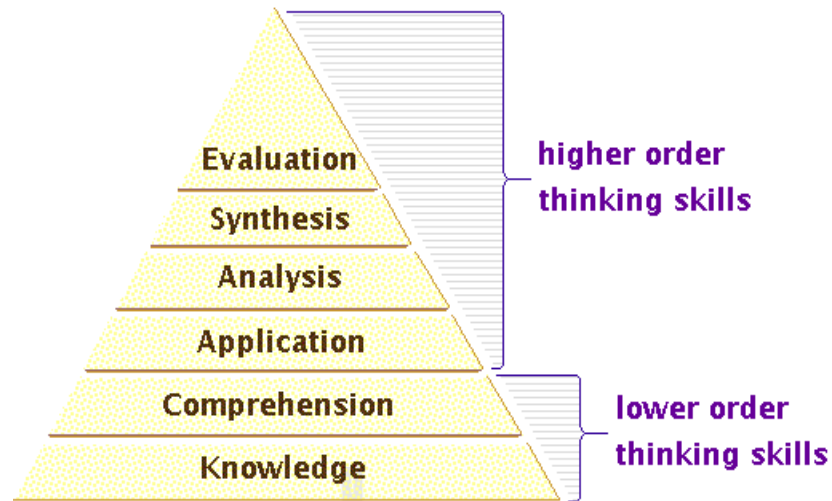


Figure 2.2 The Orders of the Cognitive Domain of Bloom's Taxonomy

With regard to functions of questions, questions belonging to lower-cognitive level are likely to require students to simply recall the prescribed data from memory, concentrating on factual information (Brualdi, 1998; Bernadowski, 2006; McNeil, 2010), which can help learners achieve the learning requirements at the basic understanding level, whereas ones belonging to higher-cognitive level require students to be engaged in “higher-order thinking that is complex, yields multiple solutions, involves the application of multiple criteria, involves uncertainty, requires self-regulation of the thinking process, and the requires effort” (Jacobsen et al., 1999, p. 138), which can assist learners in achieving learning requirements at higher-order thinking level. McNeil (2010) summarized that questions with higher-cognitive level can increase literacy levels, develop thinking skills and lead more target language production than ones with lower-cognitive level. In other words, higher-cognitive

questions (HCQ) require students to engage in independent thinking, for instance problem solving, analyzing or evaluating information (Gall, 1970).

Additionally, Bloom et al. (1956) also defined the key words used to categorize teachers' questions and relevant question samples for each level in the cognitive domain which were utilized as the principal factors in determining the types of questions in the present case study (See Table 2.1).



Table 2.1 Questioning Related to Bloom's Taxonomy (Bloom et al. 1956, p.48)

Levels	Key Words	Sample Questions
Knowledge	choose, define, find, how, label, list, match, name, omit, recall, relate, select, show, spell, tell, what, when, where, which, who	What is...? Where is...? When did...happen? Who was...? Can you list three...? How would you describe...?
Comprehension	classify, demonstrate, explain, summarize, translate, outline, show, restate, recognize	How would you classify...? Which statement supports...? What is the main idea of...? What facts or ideas show...? How would you rephrase the meaning...?
Application	apply, build, choose, construct, develop, identify, make use of, organize, plan, solve, utilize, model	What approach would you use to ...? What would result if...? How would you use...? How would you organize ...to show...?
Analysis	analyze, assume, categorize, compare, contrast, discover, divide, inspect, inference, survey, theme, examine, relationship, evidence	What do you think...? What inferences can you make...? How is ...related to ...? Can you make the distinction between ...?
Synthesis	adapt, build, change, choose, combine, compose, construct, create, design, invent, improve, solve, propose, solution, predict	What changes would you make to solve...? How would you improve...? Can you elaborate on the reason...? Can you formulate a theory...? Can you predict the outcome if...?
Evaluation	agree, appraise, assess, award, criticize, defend, deduct, decide, mark, opinion, judge, justify, prove, rate, select, value, support	Do you agree with...? How would you justify...? Would it be better if...? How would you evaluate...? What choice would you have made...?

To sum up, Bloom's taxonomy is the classification of learning objectives. Educationists often use it to set learning goals of education in different areas (cognitive, affective, and psychomotor) for learners. It is also viewed as the most common type of instructional goals, because it focuses on transmission of knowledge and strategies which constitute the most prevalent view of the role of the school (Jacobsen et al., 1999). Furthermore, the cognitive domain is also utilized to analyze teachers' questions by classifying levels of questions based on lower and higher cognitive levels, by which both researchers and teachers can understand the effect of teachers' questioning on learners' learning. Thus, in the case study, the cognitive domain of Bloom's taxonomy is employed as the theoretical framework.

2.2 Teacher's Questioning

2.2.1 Definition of Question

Questioning is one of the functional features of teacher talk. In order to study teacher's questioning behavior, it is useful to know what *question* means. In the field of second language acquisition, there are many researchers who defined *question* in light of different perspectives.

Quirk, Greenbaum, Leech, and Svartvik (1985) defined *question* as a semantic class that is primarily used to seek information on a specific point. According to Caesin (1995), *question* means any sentence, regardless of grammatical form, intends to elicit an answer.

However, the definition from *Longman Dictionary of English Language* is deemed as the relatively general one. *Question* refers to a command or interrogative expression used to elicit information or a response, or to test knowledge, which not only explains the syntactic form of question but also its functional form (Shomoosi, 1997). The reasons why the definition is the general one are listed below:

Firstly, *question* refers to the command or interrogative expression since not all questions are interrogative expression, and conversely, not all interrogative expressions are questions, for example, “*how do you do?*” is more likely to be greeting expression rather than question; “*Please explain your reasons.*” is not the interrogative sentence, but it still has the function of question.

Secondly, in terms of its functional form, question can be used to both elicit information or a response and test knowledge which is the key role of question in the classroom.

In the present case study, adapted from the definition of Longman dictionary, *question* refers to the commands or interrogative sentences used by the teacher to elicit information from students or test knowledge in the reading classroom, which is mainly related to the content. *Question* can be classified into non-content-related and content-related based on its content. The non-content-related question is often associated with rhetoric, routine and management, for example, “*Did you have a relaxed holiday?*” “*How are you today?*” “*Are you ready?*” Unlike the non-content-related question, content-related one is about the teaching content. For

example, “*What is the topic of the article?*” (Almeida, 2010). Thus, in order to fulfill purposes of the present study stated in Chapter One, only content –related questions which were mainly associated with the reading articles were examined.

2.2.2 Functions of Question

In the classroom, a question has certain functions which can affect teachers’ teaching and students’ learning. During the past few years, there were some researchers who generalized functions of question in different ways (Chritenbury & Kelly, 1983; Donald & Eggen, 1989; Amin & Eng, 2003; Brown, 2005). Although none defined a question in exactly the same way, they emphasized the main characteristics of functions of question which are generalized as follows (adapted from Donald & Eggen, 1989):

- **Motivational Function**

The question used at the beginning of the class can draw students’ attention immediately, which may contribute to the success of the lesson. During the lesson, teacher’s question can help students participate actively in that it can provide impetus and opportunities for students to promote their thinking and develop them to discover their own opinions about different things. Furthermore, it can also serve to initiate the chain reaction of interaction between teachers and students or students and students.

- **Diagnostic Function**

It is the traditional and basic function of question. It can give the instructor immediate feedback about students comprehension. Teachers always use question to

evaluate how well the students' learning is and find out what problems they still have. Therefore, through questioning, the teacher can evaluate the current state of student thinking, identifying not only what students know but also gaps and misconceptions.

- **Instructional Function**

Unlike the motivational and diagnostic function, instructional function of question emphasizes helping students learn the new contents in the lessons. Question can be used to guide students to understand the new materials better and more deeply. In addition, it can make students pay attention to the information of materials.

2.2.3 Classifications of Question

Based on diverse criteria, there are lots of different systems or classifications used to categorize questions. Barnes (1969) classified the questions into two main types: "closed" and "open" questions. Long and Sato (1983) categorized questions into "display" and "referential" questions based on the answers. Hakansson and Lindberg (1988) classified questions into three main categories based on the form and cognitive level as well as communication: "formal categories", "cognitive level" and "communicative value". Richards and Lockhart (1994) classified the questions into three categories in terms of the purpose of questions in the classroom: "procedural", "convergent", and "divergent". Procedural question is often used to ensure the smooth of the teaching process, for example, "*Have you had a good holiday?*". Convergent question requires short answer and it is often yes/no or recalling question, for example, "*What are the names of some computer companies?*". Divergent question belongs to

high-thinking level which encourages students to provide their own idea rather than to recall previously presented information. For instance, “*Do you think computers have had any negative effects on society?*”. As for these classifications aforementioned, plenty of researchers incline to pay more attention to the classifications of Barnes and Long and Sato (Gall, 1970; Ho, 2005; David, 2007; Sun, 2009).

2.2.3.1 “Closed” and “Open” Classification

An early study of question classification is Barnes’ (1969), in which questions were categorized into four types based on words used to construct the question: 1) factual question, which focuses the factual matters and often begins with ‘what’; 2) reasoning question, which often begins with ‘how’ and ‘why’; 3) open question, which is often with a number of different acceptable answers; and 4) social question for communication which can affect or control the behavior of learners (Ellis, 1994). Later, Barnes only focused on the two types of question, that is, closed and open questions. Ellis (1994) explained that closed question is often with only one acceptable answer, for example, “*Who invented the airplane?*”, while open question is with more than one acceptable answer, for example, “*Why did not you submit your homework?*”. That is to say, the basic principle of classifying closed and open question is depending on the answers.

2.2.3.2 “Display” and “Referential” Classification

Long and Sato (1983) classified questions into two main types based on the different functions of question, that is, echoic and epistemic questions (See Table 2.2).

Table 2.2 A Taxonomy of the Teachers' Questions (Ellis, 1994, p. 588)

Type	Sub-category	Example
Echoic	1. comprehension checks	Does everyone understand 'polite'?
	2. clarification requests	What do you mean? I don't understand.
	3. confirmation checks	S: Carefully T: Carefully?
Epistemic	1. referential	Why didn't you do your homework?
	2. display	What's the opposite of 'up' in English?
	3. expressive	It's interesting the different pronunciations we have now, but isn't it?
	4. rhetorical	Why did I do that? Because...

There are also some sub-categories under each one. Echoic questions aim at "asking for the repetition of an utterance or confirmation that it has been properly understood" which includes comprehension checks, clarification requests and confirmation checks; epistemic questions "serve the purpose of acquiring information" (Ellis, 1994, p. 587) which includes referential, display, expressive and rhetorical questions. With respect to Long and Sato's classification, display question and referential question which are associated with communicative competence have been drawing researchers' attention. According to Lynch (1991), display question means the questioner knows the answer before hand and such questions are usually asked for specific answer, for example, "*What's the meaning of current?*". Conversely, referential question is a question used for genuinely information-seeking and usually the questioner does not know the answer (Ellis, 1994), for example, "*What kind of a diet is the best?*".

2.2.4 Related Studies on Teachers' Questioning

Because of the importance of teachers' questioning behavior, there have been many research studies about it both from China and other countries.

Quan and Zhu (2002) carried out an investigation in the middle school in China in order to explore teacher's questioning behavior in the classroom. The researchers employed closed and open questions to classify the questions. The finding showed that 90% of questions proposed by teachers were closed and only 10% were open. The result indicated the teachers in the middle school paid more attention to developing students' understanding of the contents but ignored to develop creative abilities of learners. Closed question just has only one acceptable answer which is limited to development of the diversity of students' thinking.

Ho (2005) conducted a study in which three non-native ESL teachers in the upper secondary school in Brunei were observed. A total of six classroom observations were carried out over a three-week period, one for each teacher during a one-hour reading comprehension lessons. The finding indicated that excessive use of closed questions by teachers in the classroom was not beneficial to the overall development of learners, because the closed questions, belonging to low-cognitive level, only make learners recall or memorize the previous knowledge and can not improve students' further thinking.

Shomoossi (2004) carried out the qualitative-quantitative study which focused on the effects of display and referential questions on classroom interaction.

Forty reading comprehension classes in the University were observed by the investigator. Data were collected through non-participant observation. The results indicated that out of 1628 questions, 1335 had been display and only 293 belonged to referential. The observed teachers asked more display questions than referential ones. In addition, considering the time of question-and-answer interaction, most of referential questions, not all, created more interaction than display ones do, because display questions just required shorter answers and after them there was a period of silence or topic-change.

A study of David (2007) examined the impact of English language teachers' use of display and referential questions on teachers and students interaction in ESL classroom. The total of 20 teachers and 400 students from six randomly selected secondary schools were research objects. Classroom observation was used to collect data. David also found out that the use of display questions was much greater than that of referential questions. Unlike Shomoossi's findings (2004), David argued that display questions could create more classroom interaction than referential questions did. This can be accounted for by different groups of participants in the two studies. In Shomoossi's study, the participants were university students, whereas David adopted junior secondary school students as his research objects.

Lu (2007) investigated the effect of teacher's questioning behavior on classroom interaction. Four teachers' lessons in the secondary school were observed. The researcher classified the teachers' questions based on display and referential classification

and found that the number of display questions was much greater than that of referential questions and the display questions could not create more classroom interaction than referential questions did according to student talk time. The researcher suggested that “as referential questions are more effective in classroom interaction and thus in language learning, the number of such questions should be increased consciously” (Lu, 2007, p. 28).

2.2.5 Discussion on Question Classifications

Closed/open and display/referential questions are the common classifications that researchers often use to study teachers’ questions in the classroom. Furthermore, both of them are classified based on the same system, that is, the cognitive domain of Bloom’s taxonomy. Closed and display questions are regarded as lower-cognitive questions (LCQ) in that they often require students to recall the previous materials taught by teachers, while open and referential questions are viewed as HCQ because they often require students to manipulate the learnt knowledge mentally (Cotton, 1983; Moore, 1998; Tan, 2007). As previously mentioned, most of researchers found out that teachers both in the middle school and university often used closed and display questions which belong to lower-cognitive level. Those questions can not create more classroom interaction than HCQ (higher-cognitive question) do; however, for the beginners, more classroom interaction can be created by open and display questions (David, 2007).

Most of research studies focused on the effects of teachers’ questioning on classroom interaction. It can be seen that very few of research studies focus on

developing learners' CT in the Chinese college context. Furthermore, there is no research study which research teachers' questioning behavior based on the cognitive domain of Bloom's taxonomy in the Chinese context. Therefore, in order to address this gap, the current case study analyzed teacher's questions in light of the cognitive domain and investigated the influence of teacher's questioning on development of learners' CT in the Chinese college reading context, which brought forth the significance of the present study.

In conclusion, questioning, as one of features of teacher talk, is always considered as a valuable tool to stimulate students' learning. Thus, it has drawn most of researchers' attention increasingly. Researchers always analyzed teachers' questioning behavior based on different question classifications, for example, "closed"/"open" and "display"/"referential". Actually, numerous systems or classifications have been proposed, but none more influential than Bloom's taxonomy (Sun, 2009).

2.3 Critical Thinking (CT)

2.3.1 Definition of CT

As mentioned in Chapter One, as early as in the 1960s, CT has already increasingly drawn some American educators' attention. The requirement of cultivating CT was issued by American government in 1980 (Wang, 2008). After that, the cultivation of CT has gradually come into the classrooms of both middle/ higher schools and universities all over the world. Educators worldwide have realized how

important CT is, because “it enables one to analyze, evaluate, explain, and restructure our thinking, decreasing thereby the risk of acting on, or thinking with a false premise” (Glaser, 1941, p. 28).

What is CT? Many definitions about it have been conceptualized based on different perceptions by different researchers.

The famous American philosopher, psychologist and educator, John Dewey, is widely regarded as the ‘father’ of the modern CT (1909, as cited in Fisher 2001). He defined CT as “active, persistent, and careful consideration of a belief or supposed form of knowledge in the light of the grounds which support it...” (as cited in Fisher, 2001, p.2). Dewey also emphasized the key element in CT, that is, skillful reasoning.

In 1981, McPeck defined CT in another way: CT refers to the thought processes which include problem solving and active engagement in certain activities, for example the process of evaluating statements. McPeck’s definition is regarded as the specific one since he described certain activities involving in CT.

Ennis (1989) claimed CT as a kind of reflective thinking of making sound or reasonable decisions focusing on what to believe or do, such as the ability of figuring out the misleading of the advertisement.

Facione (1990) summarized the definition of CT which is regarded as an important consensus. CT is the process of purposeful, self-regulatory judgment which requires consideration of evidence, context, conceptualizations, methods, and criteria. It was designed based on the cognitive domain of Bloom’s taxonomy.

In light of the theoretical framework of the present study, the last four levels in the cognitive domain are related to CT skills. Bloom and other researchers indicated that questions belonging to these levels can facilitate students' CT skills because they can help students to utilize CT skills, for instance, applying, analyzing, synthesizing, and evaluating, rather than direct recalling (Bloom et al., 1956; Sellappah et al., 1998; Nagappan, 2001; Myrick & Yonge, 2002; McNeil, 2010). In the present context, therefore, CT mainly refers to a kind of ability of manipulating or processing knowledge learnt in the classroom, which contains certain CT skills related to higher-cognitive levels in the cognitive domain of Bloom's taxonomy. In other words, CT is deemed to take place when students are required to perform in answering application, analysis, synthesis and evaluation questions.

2.3.2 Related Research Studies on CT

There were many research works related to the development of students' CT, most of which mainly focused on how to use instructions to achieve this competence.

Sellappah et al. (1998) carried out a study in order to investigate the use of questioning strategies by teachers in the university. They adopted the cognitive domain of Bloom's taxonomy as the framework to guide their study. The finding showed that teachers asked more lower-level questions (91.2%), in particular knowledge questions, than higher-level questions (4.4%). Based on the analysis of students' answers to questions, the result implicated that "the limited use of higher level questions by teachers may limit the extent to which CT skills in students are facilitated" (Sellappah et al., 1998, p.148).

Guo (2002) conducted a study on teachers' questioning behavior in the middle school and found that teachers asked 387 questions in total during 16 lessons. The results indicated that most of teachers' questions aimed at developing memory or recalling ability of students, rather than comprehension and the ability of CT. Therefore, Guo claimed that lack of asking HCQ would impede the overall development of learners' abilities which include the ability of higher-order thinking.

Duron et al. (2006) conducted a study which aimed at improving students' CT. The researchers believed that the last four levels of cognitive domain belong to higher-cognitive level where CT can take place. So, based on the cognitive theory, the researchers designed a 5-step framework which was implemented in any classroom or training setting to help students gain CT skills. The 5 steps were the instructional techniques which include 5 steps; that is, 1) determine learning objectives; 2) teach through questioning; 3) practice before you assess; 4) review, refine and improve; and 5) provide feedback and assessment of learning. As for these steps, questioning was regarded as the main teaching technique used to elicit students' CT. Based on the comparison of pretest and protest from students, the result of the study indicated a 5-step framework could assist students in learning CT skills.

In a study by Almeida (2010), she examined classroom questioning in secondary education. Based on cognitive domain of Bloom's taxonomy, Almeida classified the questions into acquisition, specialization, and integration categories. According to Almeida, acquisition questions are those questions related to

straightforward ideas, objects, processes, or concepts; specialization questions contain the building the relations and the understanding and interpretation of the meaning of related issues, which go beyond a basic search of information; integration questions require reorganization of concepts into novel patterns or different applications of principles. The finding showed that during a 45-minute class, the teachers raised plenty of acquisition questions, but only one integration question was asked by one teacher. The researcher indicated that “all kinds of questions are important and relevant, and of course teachers need to ask low-level or acquisition questions, before they ask higher-level questions” (Almeida, 2010, p. 4). However, the teachers observed did not ask higher-level questions after low-level or acquisition questions. Thus, the researcher suggested that after the teacher asks LCQ to check students’ understanding, he/she should ask HCQ in order to produce deeper levels of learning and thinking.

Based on the research studies reviewed above, the evidence of LCQ indicated that teachers paid more attention to checking students’ understanding than developing their CT and teachers always ignored to improve students’ CT unconsciously through instructional technique which is regarded as one of the effective ways to stimulate CT. It is known that CT is very important for the overall development of learners. According to Almeida (2010), learners’ CT can be achieved through the stimulation of students’ deep learning, namely, questioning, which is actually one of functions of questions. However, in terms of the studies related to CT mentioned above, although all of them indicated teachers preferred to ask plenty of LCQ, there was no research

study which examined the reasons for this. To address this gap, the present study investigated the reasons behind teacher's questioning so that further valuable information can be obtained.

In conclusion, CT is an important and necessary skill for language learners. Confucius, a Chinese well-known educator, stated that "learning without CT is labor lost; thinking without learning is perilous" (Liu, 2002, p.58). This is because CT includes the mental process to apply, analyze, synthesize and evaluate the information. It can help us comprehend the information from articles further; moreover, our thinking can get improvement through this mental process. Therefore, it is believed that the development of CT can contribute to the development of learners' RC (Richek et al., 1996).

2.4 Summary

Chapter Two presented an overall picture of literature review related to the theoretical framework, questioning behavior, and CT. It, first of all, stated the theoretical framework of the present case study including the rationale of applying it as the framework and related theories. Then, it provided the theory related to teacher's questioning behavior. It ended with the review of CT theory. In the next chapter, it will concentrate on the design, research instruments and method to data analysis implemented in the current case study.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter presents the procedure of the case study and discusses the principles of the research methodology. It consists of the whole research design and the participants of the case study. Then, research instruments, data collection, and ways to analyze the data are also presented. It ends with the summary of this chapter.

3.1 Research Design

3.1.1 The Case Study

The present study was a case study which is a kind of research design. According to Nunan (1992), “case study is the investigation of the way a single instance or phenomenon functions in the context. In applied linguistics, it usually involves the investigation of the language behavior of a single individual or limited number of individuals over a period of time” (p.229). In other words, case study always adopts the limited individual as the subject in order to study a certain phenomenon in depth. Compared with other types of research studies, in terms of the naturalness of case study, it has some disadvantages. For example, the results of the case study may not be applied to the general population since it only focuses on a single individual. However, it still has own advantages which also can contribute to the research studies in the field of applied linguistics. The case study is a detailed

study that requires an intensive analysis of a single individual or classroom, which can provide more reliable information for the researchers who want to resolve problems or enhance their understanding related to their own professional workplace (Creswell, 2003). Therefore, case study is viewed as a research method which is particularly suited to the types of action-oriented research studies (Nunan, 1992).

Schumann's case study in 1978 is one of the widely cited studies in the second language area. He aimed at investigating a hypothesis that second language development would be governed by the extent to which the learner identifies with and wishes to acculturate with the target language community. According to Schumann (1978), the reason why he adopted case study was that it could generate very detailed accounts of the process of second language development.

In conclusion, the case study is more likely to provide an in-depth and detailed description on some aspects of the second language performance of individuals. Having considered the advantages of case study, the researcher employed it as the research design in the present action-oriented research study in order to investigate the teacher's questioning behavior in depth, and then students' reading comprehension could be improved in the present context, KU.

3.1.2 The Research Design of the Present Research Study

The current case study was also a classroom-based research project which was conducted in order to investigate the teacher's questioning behavior and students' CT in the college EFL reading classroom. With problems stated in Chapter One, the

study aimed at investigating the current situation of improving students' CT through the teacher's questioning behavior. It was hoped that the result of analyzing questions would be helpful for both teachers and students to cultivate students' CT which is beneficial to the development of their RC. The teacher's questioning behavior in the classroom was observed by the researcher. The cognitive domain of Bloom's taxonomy was employed to analyze the teacher's questions. Then, the teacher's retrospection was used to collect the data about the teacher's perceptions on her questioning behavior. Semi-structured interview was employed for students in order to get further information about the influences of the teacher's questions, in particular HCQ, on the development of students' CT.

3.2 Participants of the Study

In the present context, Kaili University (KU), there is one teacher who is in charge of the Reading Course for one grade. Thus, based on the convenience and availability sampling method, in the case study, one English teacher who taught Reading for sophomore was involved as the subject. Her 40 college students with English major in KU were also subjects.

The teacher, a non-native speaker, had been teaching Intensive Reading for four years in the Institute of Foreign Language of KU. She, at the age of 29, had a M.A. degree in Applied Linguistics.

A total of 40 Chinese students participated in this study. All of them were between 19 to 22 years of age. They were second-year students majoring in English

and in the same English class. All of them had studied English for 6 years in junior and senior middle schools, and do not have any experiences of going abroad. Although they had different language proficiency levels according to the results they attained in the college entrance examination, the case study would not take this variable into account. This is because the case study merely focused on the general teacher's questioning behavior. The students were involved in semi-structured interview since they got used to the ritual of language teaching in the university and were familiar with the teaching style of their reading teacher.

3.3 Research Instruments

According to Allwright and Bailey (1991), there are three approaches in doing classroom-based research: experimental study, action research, and naturalistic inquiry. Experimental study refers to "the treatment administered to some subjects in order to test a hypothesis about a cause-and-effect relationship" (p.41). Action research refers to taking an action and then observing what happens. Naturalistic inquiry means the researcher does not intervene in the research setting or control the naturally occurring events; simply speaking, it refers to seeing what happens.

In the case study, the researcher employed naturalistic inquiry as the research methodology since the purpose of the study was to investigate and describe the natural teacher's questioning behavior and the researcher did not do anything to intervene or control the class. There are some instruments which can be used to fulfill naturalistic inquiry, for example, classroom observation, questionnaire and interview.

In order to achieve the purpose of the study, classroom observation, teacher's retrospection, and semi-structured interview were employed.

3.3.1 Classroom Observation

Classroom observation refers to a systemic procedure during which classroom events are recorded in such a way that it can be studied later (Allwright, 1988). It involves the researcher observing, recording and analyzing events that happen in the classroom. It was the main instrument for collecting data in the case study. The reasons why the researcher adopted classroom observation are that observation can provide the opportunity to record information as it occurs in a setting and it is fruitful and workable to reveal the classroom teaching and learning strategies (Chesterfield & Chesterfield, 1985; Creswell, 2005). Therefore, teacher's questioning behavior could be observed when it occurred by using classroom observation. There are two types of classroom observation: participant and non-participant observation, which are distinguished by whether the observer participates in the observed activity in the classroom. In the case study, the researcher adopted non-participant classroom observation which meant the researcher was merely an observer rather than a participant in the classroom activities.

3.3.2 Teacher's Retrospection

Retrospection refers to a stimulated recall technique used to elicit retrospective data which are collected some time after the event under investigation has taken place already (Nunan, 1992). In other words, retrospection means to take a look back at the events that have already taken place. It can be used to elicit fresh

memory from the subjects which can provide multiple outcomes for the researchers to study in depth the subjects' performance (Hess, 2004). Therefore, in the present case study, teacher's retrospection was employed to investigate the teacher's perceptions on questioning and the reasons behind her questioning behavior in the classes. According to the data from classroom observation, the teacher was expected to explain in depth why she asked such questions. The researcher designed some why-and what-questions to explore the teacher's reasons of asking LCQ and HCQ collected from the classroom. During the teacher's retrospection, recording technique, MP3, was utilized to collect the data.

3.3.3 Semi-Structured Interview

A semi-structured face-to-face interview was conducted for students in the case study (See Appendices A & B). Interview, as a kind of data collection technique, is used to elicit the data by one person from another through the person-to-person encounters (Nunan, 1992). According to Creswell (2003), interview can make the interviewees provide the historical information and allow the researcher to control over the line of questioning. Furthermore, a face-to-face interview offers the researcher more opportunities to ask participants directly about what is going on (Robson, 1993). Thus, a face-to-face interview was adopted in the study. In terms of its formality, interview can be categorized into unstructured, semi-structured, and structured interview. Semi-structured interview was adopted to elicit information from students in the case study, because

“...in the first instance, it gives the interviewee a degree of power and control over the

course of the interview. Secondly, it gives the interviewer a great deal of flexibility. Finally, and most profoundly, this form of interview gives one privileged access to other people's lives..." (Nunan, 1992, p.150)

The purpose of the interview was to elicit in depth information from students on their attitudes towards teacher's questions, mainly focusing on HCQ which are related to CT. The interview consisted of 5 question items which were designed by the researcher based on four higher-cognitive levels of the cognitive domain (See 2.1.3). No. 1 item was related to application question. No. 2 item belonged to analysis question. No. 3 item was related to synthesis question, and No.4 was designed based on evaluation question. The last item, No. 5, was designed to investigate students' overviews on teacher's questioning behavior.

3.3.4 The Content Validity Check

In order to check whether the interview questions can measure what they are supposed to measure, the list of interview questions and evaluation form were sent to three language experts who were academically qualified in China. One of them was a teacher with Doctoral Degree in Guizhou University. The other two were associate professors in KU. All of them have been teaching Language Teaching Methodology and Reading over a decade. Then, the experts used Item-Objective Congruence Index (IOC) to check the validity of the interview questions based on the objectives of the interview stated in the evaluation form. IOC is a validation method for the relevancy of the content and the purpose of the interview. The evaluation form used a 3-point scale

(1=relevant, 0=uncertain, -1=irrelevant) (See Appendix D). The formula of IOC is:

$$IOC = \sum R/N$$

R= the total scores from the experts

N= the number of experts

The result of current interview questions is 0.94. According to Pinyoanantapongs (1974), the acceptable value should be equal to or greater than 0.5. That is to say, all the interview questions were relevant to the case study.

In conclusion, the case study adopted classroom observation, teacher's retrospection and interview for students as the research instruments in order to answer three research questions. Furthermore, classroom observation was the main instrument in this study, which aimed at collecting the data about teacher's questions in the reading classroom. Teacher's retrospection was employed to investigate teacher's perceptions on questioning behavior and the reasons behind her questioning. Semi-structured interview was utilized for collecting information from students which was related to the influence of teacher's questions on the development of students' CT in depth and students' overviews on teacher's questioning behavior.

3.4 Data Collection

Before collecting data, all participants were required to sign consent form (See Appendix E) based on their own wills. It was used to obtain participants' consent for getting involved in the current research study.

3.4.1 Procedure for Classroom Observation

One English reading teacher and their students (N=40) were included in the classroom observation. The observations were conducted from April to June, a total of 20 hours in the Institute of Foreign Language of KU. The teacher was told that the observations were merely for learning the normality rather than for evaluation. During the observation, as aforementioned, the researcher only focused on the questions related to the teaching contents and asked by teachers in the classroom. Audio-and video-recording techniques were used to record teacher's questions in the classroom. In addition, the researcher also took notes about teacher's questions, for instance, the sequence of questions and students' responses to questions in case something wrong might happen with the recorder. As mentioned above, non-participant classroom observation was employed so the researcher played the role as an observer rather than a participant in the classroom. After 20-hour observations, data analysis was carried out.

3.4.2 Procedure for Teacher's Retrospection

There were totally ten lessons (20 hours) included in the classroom observation. The four lessons (Lesson Three: Music; Lesson Four: Generation; Lesson Five: Work; and Lesson Seven: Greek Stories), totally 8 hours, were video recorded in order to help the teacher do retrospection. The reasons why the researcher employed those four lessons are listed in the following. As for Reading course, the textbook, published by Shanghai Foreign Language Education Press, is adopted by the Institute of Foreign Language in KU. This textbook consists of ten units, each of which

contains different topic and article which different genre; furthermore, these four articles represented two types of genres; that is, recount genre and exposition genre. Lessons Four and Seven represented recount genre; Lessons Three and Five represented exposition genre. This could help the researcher investigate teacher's questioning behavior when she taught different types of articles. In order to guarantee the authenticity of teacher's performance and the reliability of the data from teacher's retrospection, the teacher was not informed that they would be required to retrospect after completing the teaching. After the data regarding teacher's questions transcribed verbatim, the lesson's transcript and the video were sent to the teacher. She was required to explain the decisions she made during the lesson based on some questions raised by the researcher. During teacher's retrospection, MP3 was employed to collect data.

3.4.3 Procedure for Semi-Structured Interview

The interviewees were selected based on the criterion proposed by Alberta Municipal Health and Safety Association (AMHSA) in 2010 for determining a representative interview sample (See Appendix C) which is suitable for any fields of studies including social science (AMHSA, 2010). It presents the minimum interviewees in terms of different numbers of participants, which can make the interview sample size is representative. There were totally 40 students involved in the study. According to that criterion mentioned above, as for 40 participants, 17 students would be a minimum and proper number for the interview. Therefore, a total of 17 students were randomly selected by the researcher from the class to be interviewees in

the present study. Since it was semi-structured interview, in the real interview, there might be some questions to be asked beyond the list of questions based on interviewees' responses. Furthermore, the questions might not be asked in the same sequence or with the exact words as in the outlined questions for all interviewees. The responses from the students were recorded by using MP3. Note-taking was also employed in case of the tape recorder malfunctions.

3.5 Data Analysis

3.5.1 Data from Classroom Observation

After collecting the data from classroom observation, the audio-recorded data related to teacher's questions were transcribed verbatim. Then, the questions collected were categorized based on the theoretical framework of the case study, namely, the cognitive domain of Bloom's taxonomy. In order to guarantee the reliability of categorization, the inter-rater reliability (measured by percent agreement) in question categorization was checked by the researcher. Holsti's coefficient of reliability (C.R.) was employed to calculate percent agreement. The formula is listed as follows (Rourke, Anderson, Garrison, & Archer, 2000):

$$C.R. = \frac{2m}{n_1+n_2}$$

m = the number of coding decisions upon which the two coders agree

*n*₁ = number of coding decisions made by rater 1

*n*₂ = number of coding decisions made by rater 2

The questions collected in the classroom were sent to the other rater, who is English teacher with Doctoral Degree in English. Then, two raters, using the cognitive domain of Bloom's taxonomy, independently categorized questions collected from classroom observations. The percent agreement was checked by using the Holsti's formula mentioned above which can reflect the number of agreements per total number of coding decisions. If the value is greater than 0.75 ($C.R. > 0.75$), it means excellent agreement beyond chance (Capozzoli, McSweeney & Sinha, 1999, as cited in Rourke et al., 2000).

3.5.2 Data from Teacher's Retrospection

The data from the teacher's retrospection were analyzed in a qualitative way, which could help the researcher understand why the teacher asked such questions observed in the classroom. The data collected were analyzed based on the following purposes. It, first, investigated teacher's perceptions on questioning behavior, and then explored reasons of her questioning in the reading classroom so that teacher's questioning behavior could be illustrated better. As for the qualitative way to analyze the data, after transcribing, the data were categorized based on three main classifications: 1) teacher's perceptions on questioning behavior; 2) teacher's reasons of asking LCQ; and 3) teacher's reasons of asking HCQ in the classroom. For example, as for the second one, teacher's reasons of asking LCQ, there were some retrospective questions provided for the teacher in order to investigate her reasons of asking LCQ. Then the answers were categorized based on different contents of the answers.

3.5.3 Data from Semi-Structured Interview

The data from the interview were about students' perceptions on teacher's questioning behavior, mainly focusing on the cultivation of students' CT through HCQ. The data collected were analyzed and described in qualitative and quantitative ways based on four higher-cognitive levels in the cognitive domain. Additionally, the data from interview were compared with the one from classroom observation and also teacher's retrospections so that the consistency of teacher's questioning behavior and its influence on students' CT could be checked. In terms of the quantitative analysis, the answers to the first four interview questions were counted by the numbers of interviewees based on yes and no answers, which could provide the general pictures of students' perceptions on teacher's HCQ. For example, 2 students answered yes while other students answered no. As for the qualitative analysis, the data were categorized based on different classifications, for example, students' reasons of answering yes and their reasons of answering no. In terms of the last interview question, the answers were also classified based on different reasons provided by students.

3.6 Summary

In conclusion, this chapter introduced the research methodology employed in the case study. The non-participant classroom observation, teacher's retrospection, and semi-structured interview were used to investigate teacher's questioning behavior and its influence on the development of learners' CT. The validity check of the

interview questions was also presented. It followed with the description of procedures of the data collection. Then, the analysis of data including the reliability of categorizing was provided. It ended with the summary of this chapter. In the next chapter, the results of three research questions for the current case study and discussion section will be presented.



CHAPTER 4

RESULTS AND DISCUSSION

This chapter presents the results and discussion of the case study, which is organized according to the three research questions listed in Chapter One:

1. What are the common features of questions asked by the teacher in EFL reading classroom?
2. What is the frequency of each type of questions raised by the teacher in EFL reading classroom?
3. Can the teacher's questions facilitate learners' critical thinking under investigation? Why or Why not?

4.1 Results of the Case Study

To answer three research questions, there were three research instruments employed in the case study: classroom observation, teacher's retrospection, and semi-structured interview. The first two instruments aimed at collecting data from the teacher, in which classroom observation was regarded as the main instrument, while the interview was used to collect data from students. Using teacher's retrospection and semi-structured interview could avoid the subjectivity and unilateralness of the use of classroom observation as the only one instrument.

4.1.1 Research Question 1: What are the common features of questions asked by the teacher in EFL reading classroom?

To answer research question 1, data from classroom observation and semi-structured interview were used.

As mentioned in Chapter Three, classroom observation was used to collect teacher's questioning behavior in the reading classroom. One English teacher's questioning behavior was observed by the researcher. The observation started from April to June, totally 20 hours. In the reading classes, the teacher always teaches reading in the following certain procedures: 1) topic or vocabulary preview or previous knowledge review before reading; 2) asking students to read; and 3) checking students' understanding after reading.

4.1.1.1 The Result of Reliability in Question Categorization

After transcribing the data from classroom observation verbatim, the researcher collected totally 288 content-related questions (See Appendix F). All questions were categorized by using the research analytical framework, that is, six levels (knowledge, comprehension, application, analysis, synthesis and evaluation) in the cognitive domain of Bloom's taxonomy. In order to guarantee the reliability of question categorization as mentioned in Chapter Three, there were two independent raters employed to classify those questions. One was the researcher; the other one was an associate professor with Doctoral Degree in KU. Her research field is Applied Linguistics and Second Language Acquisition. She was familiar with the cognitive

domain of Bloom's taxonomy since her dissertation content was concerning Bloom's taxonomy, which could contribute to the accuracy of her question categorization. The list of 288 questions and Table 2.1 presented in Chapter Two were sent to her, in which Table 2.1 was regarded as the key principle for question categorization as mentioned in Chapter Two. Based on the formula, the result of Holsti's coefficient of reliability was:

$$\begin{aligned} \text{C.R.} &= \frac{2m}{n_1+n_2} \\ &= \frac{2*238}{288+288} = 0.83 \end{aligned}$$

Of 288 questions, the independent raters achieved an 83% inter-rater reliability (measured by percent agreement) in question categorization. The result of 0.83 is greater than 0.75 (C.R. > 0.75), which means the categorization is excellent agreement and reliable. Of those questions which did not achieve agreement, the two raters discussed and then modified decisions based on the theory of the cognitive domain of Bloom's taxonomy.

4.1.1.2 The Result of Categorization in Teacher's Questions

After discussion between two raters, the categorization of teacher's questions was adjusted successfully. Table 4.1 presents some examples of questions asked by the teacher.

Table 4.1 Samples of Questions Asked by the Teacher

Types of Questions	Examples from Classroom Observation
Knowledge	1. <i>What happened in the passage?</i> 2. <i>What does CPU stand for?</i>
Comprehension	1. <i>Why did the father want Susie to follow his career?</i> 2. <i>Please translate this paragraph.</i>
Application	1. <i>What kind of pattern do you think is the second paragraph?</i> 2. <i>What should we do when things go bad?</i>
Analysis	1. <i>What is the topic of this passage?</i> 2. <i>What's your evidence in the passage about whether Beethoven composed music in a shocking ways from the very beginning?</i>
Synthesis	1. <i>What can you learn from the title?</i> 2. <i>Can you predict the relationship between the father and the daughter in the article?</i>
Evaluation	1. <i>Do you agree with her?</i> 2. <i>What's your impression on all things in the article?</i>

As Table 4.1 shows, in the reading classes, the teacher asked knowledge, comprehension, application, analysis, synthesis and evaluation questions. In other words, both LCQ and HCQ were raised by the teacher.

4.1.1.3 The Result of Students' Views on Teacher's Questions

In terms of semi-structured interview, the fifth interview question aimed at exploring students' views on teacher's questioning behavior. Based on the records of interview, all interviewees held the same attitude that in the reading classes the teacher asked plenty of questions related to factual and specific information in articles. For example, "*What happened in the article?*". Additionally, they also indicated sometimes the teacher also asked a few questions which could provide chances to them to express their ideas on the reading passages. For example, "*What's your impression on all things in the article?*". To illustrate:

Excerpt 1

“...in the reading class, the teacher often asks questions. Some questions help us review the knowledge; some questions help us understand articles better. General speaking, the teacher prefers to ask us lots of questions after reading articles related to the specific contents of articles. Sometimes, she also asks some questions which required us to think of our impression on the content of the article...”

(Student 1)

Excerpt 2

“...as for reading class, the teacher always asks questions about factual details in the article, for example, ‘What happened in the article?’ or ‘What is the end of the article?’ I think teacher wants to use those questions to check our reading comprehension. Whether we understand the article...”

(Student 2)

Excerpt 3

“...she always asked questions before and after reading. Most of questions are about the specific information from articles. Apart from those, sometimes she also asks a few questions which require us to express our opinions about the articles...”

(Student 5)

Therefore, obviously, from the views of students, the teacher asked excessive questions related to factual and specific information which belonged to lower-cognitive level because those questions required students to remember previously learnt materials and grasp the meaning of materials, for example, *“What’s the end of the story?”*; meanwhile, she also asked a few questions to lead students to express their opinions which belonged to higher-cognitive levels because those questions could promote students’ attitudes towards different values, for instance,

“What do you think of the author’s claim?”. This result can be the support of the data from classroom observation which also indicated the teacher asked both LCQ and HCQ in the reading classes; furthermore, the teacher was inclined to ask more LCQ than HCQ.

In conclusion, in terms of the common features of teacher’s questions, the researcher found that the teacher asked knowledge, comprehension, application, analysis, synthesis, and evaluation questions; that is, both LCQ and HCQ were raised for the students during the 20-hour reading classes, which can get support from the result of semi-structured interview. This is because from the views of interviewees, they also indicated that the teacher asked both LCQ and HCQ in the lessons. Furthermore, from the records of students’ interview, the teacher preferred to propose much more LCQ than HCQ.

4.1.2 Research Question 2: What is the frequency of each type of questions raised by the teacher in EFL reading classroom?

To answer research question 2, the data from classroom observation and teacher’s retrospection were employed, in which data from classroom observation was mainly utilized to answer this question.

4.1.2.1 The Result of the Frequency of Each Type of Questions

This result mainly derives from the data collected from classroom observation. Quantitatively, as mentioned earlier, totally 288 content-related questions were collected by the researcher. Table 4.2 presents the frequency of each type of questions.

Table 4.2 Frequency of Each Type of Questions

Levels	Types	Frequencies (%)
Lower-Cognitive	Knowledge	190 (66.0)
	Comprehension	38 (13.2)
Total		228 (79.2)
Higher-Cognitive	Application	11 (3.8)
	Analysis	24 (8.3)
	Synthesis	5 (1.7)
	Evaluation	20 (7.0)
Total		60 (20.8)
Grand Total		288

As Table 4.2 presents, the teacher asked 190 (66.0%) knowledge questions, 38 (13.2%) comprehension questions, 11 (3.8%) application questions, 24 (8.3%) analysis questions, 5 (1.7%) synthesis questions, and 20 (7.0%) evaluation questions. Furthermore, with regard to each type of questions, the numbers of either knowledge or comprehension questions in lower-cognitive level are higher than each type of questions in higher-cognitive level. In terms of lower-cognitive level, it is evident that the number of knowledge questions is much higher than that of comprehension ones. As for higher-cognitive level, it is interesting to see that the number of analysis questions is the highest while that of synthesis ones is the lowest.

With respect to the cognitive levels, the teacher asked more LCQ (79.2%), particularly knowledge questions, than HCQ (20.8%). The following Figure 4.1 shows the percentages of LCQ and HCQ asked by the teacher, which can directly reveal that the teacher asked more LCQ than HCQ during the period of 20-hour classes.

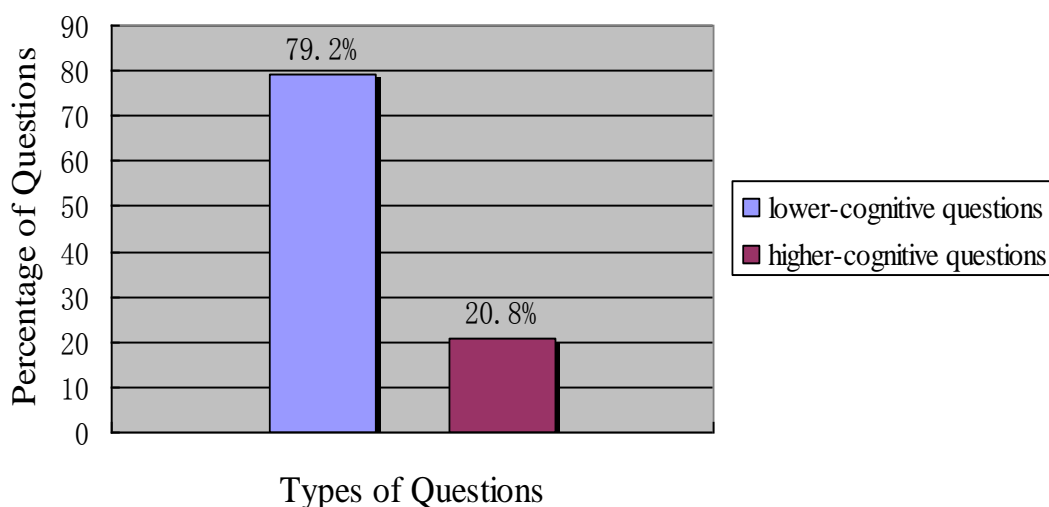


Figure 4.1 Percentages of Questions Asked by the Teacher

Additionally, classroom observation covered ten lessons. Teacher's questioning behavior in each lesson was also analyzed separately. The following Table 4.3 shows the distribution of each type of teacher's questions in each lesson.

Table 4.3 Distribution of Each Type of Questions in Each Lesson

Levels Lessons	Types	Lower-cognitive			Higher-cognitive				Grand Total (N)	
		K (N)	C (N)	Total (N%)	A (N)	An (N)	S (N)	E (N)		Total (N%)
Lesson 1	Friendship	20	6	26 (96.3)	0	0	0	1	1 (3.7)	27
Lesson 2	Reading	19	4	23 (85.2)	0	4	0	0	4 (14.8)	27
Lesson 3	Music	19	1	20 (76.9)	0	5	1	0	6 (23.1)	26
Lesson 4	Generation	11	3	14 (60.9)	0	5	2	2	9 (39.1)	23

Lesson 5 Work	19	2	21 (75.0)	0	2	0	5	7 (25.0)	28
Lesson 6 The African -Americans	16	1	17 (85.0)	2	1	0	0	3 (15.0)	20
Lesson 7 Greek Stories	26	3	29 (93.5)	1	1	0	0	2 (6.5)	31
Lesson 8 Attitude Towards Life	17	5	22 (66.7)	3	1	0	7	11 (33.3)	33
Lesson 9 First Aid	22	4	26 (78.8)	2	3	1	1	7 (21.2)	33
Lesson 10 Marriage	21	9	30 (75.0)	3	2	1	4	10 (25.0)	40
	190	38	228 (79.2)	11	24	5	20	60 (20.8)	288

(Notes: K=Knowledge; C=Comprehension; A=Application; An=Analysis; S=Synthesis; E= Evaluation; N=Number)

Table 4.3 presents the specific distribution of teacher's questions in each lesson. It shows that during the period of every lesson, the teacher also asked more LCQ, especially knowledge questions, than HCQ, which is consistent with the general picture of teacher's questioning behavior in 20-hour reading lessons.

4.1.2.2 The Result of Teacher's Views on Teacher's Questions

This section mainly focuses on the data collected from teacher's retrospection, which aimed at investigating teacher's perceptions on her questioning behavior in the reading classes. As mentioned in Chapter Three, four lessons (Lesson Three Music, Lesson Four Generation, Lesson Five Work, and Lesson Seven Greek Stories), totally 8 hours, were used for retrospection.

After each of four lessons, the researcher sent the video and transcript of questions to the teacher. The teacher then answered the questions provided by the researcher (See Appendix G). The results of teacher's views on teacher's questions are summarized as follows.

Firstly, for recount genre (Lessons Four and Seven), in teacher's opinion:

1. Questions related to specific information should be asked, for instance, the time, the place. This is because recount genre mainly focuses on specific information which forms the main plot. Understanding the specific information (such as characters, place, and event) can help students grasp the general information of the article. Such kinds of questions belong to lower-cognitive level in that they require students to comprehend the factual information from articles.

2. Questions asking for students' discussion based on different topics also should be raised to lead students to express their own ideas about recount genres. This is because after understanding the main ideas of articles generally, questions asking for discussion can provide chance for students to facilitate their further thinking.

Secondly, for exposition genre (Lessons Three and Five), in teacher's opinion:

1. Questions concerning understanding the new conception, for example, terminology, and analyzing the organizational structure of the expositive passage should be asked, because 1) as for exposition genre, there must be some new

conceptions related to the topics of passages, which can always affect students' understanding directly; 2) analyzing the organizational structure of articles accurately can help students understand the relationship between paragraphs so as to facilitate their analyzing ability. Moreover, according to the cognitive domain, the questions related to conception belong to lower-cognitive level while the ones related to organizational structure belong to higher-cognitive level.

2. Questions which ask “why” and “reasons” should be asked since they can help student understand and explain different ideas or claims occurring in the article in depth. In light of the cognitive domain, such questions belong to lower-cognitive level in that they require students to explain and understand the article, which are related to comprehension level.

To sum up, the specific frequencies of types of questions were examined from classroom observation. From the records of teacher's retrospection, it is evident that no matter what types of articles were, the teacher thought LCQ should be asked in order to help students achieve their better understanding of the articles. Obviously, this finding could be the support of the data from classroom observation which indicated the teacher indeed asked plenty of LCQ in reading classes.

4.1.3 Research Question 3: Can the teacher's questions facilitate learners' critical thinking under investigation? Why or Why not?

To answer research question 3, data from classroom observation, teacher's retrospection, and semi-structured interview were utilized.

4.1.3.1 The Result of the Influence of Teacher's LCQ on Students' CT

From the record of classroom observation, the teacher asked plenty of LCQ in the classrooms. All of these questions mainly focused on vocabulary, sentence structures and understanding on the specific contents of texts, which always required students to locate answers from memory or textbooks directly, instead of the process of higher-order thinking. The finding is in line with the one from teacher's retrospection. In teacher's retrospection, teacher's purpose of asking LCQ was investigated. From the view of teacher, the purposes of asking LCQ were to help students review their previous knowledge, for instance, vocabulary and grammar structures, and also to check students' comprehension on the articles so that the teacher could know how well the students understood. Additionally, if students could not answer teacher's questions, she had to change them into easier ones. As for the teacher, asking plenty of LCQ was to help students achieve the basic requirements of reading course; that is, understanding the general ideas of articles. Therefore, LCQ can help learners review learnt knowledge and understand the main ideas of articles, rather than processing or manipulating the knowledge which is related to higher-order thinking, namely, CT.

To sum up, in Chapter Two, Related Literature Review, it was mentioned that questions belonging to lower-cognitive level can require students to simply recall or memorize the previous knowledge from memory, concentrating on factual information, while questions belonging to higher-cognitive level require learners to be engaged in higher-order thinking, in particular CT, for example problem

solving, analyzing and evaluating information (Bloom et al., 1956; Schrag, 1989; Brualdi, 1998; Bernadowski, 2006; McNeil, 2010). Furthermore, from the records of classroom observation and teacher's retrospection, teacher's LCQ were often related to the process of recalling students' previous knowledge and the understanding the general ideas of articles, rather than process of higher-order thinking. Therefore, these questions could not make students be engaged in higher-order thinking; that is processing or manipulating knowledge. Unquestionably, it can be concluded that excessive use of LCQ could not facilitate students' CT, because students' CT did not take place when they answered LCQ.

4.1.3.2 The Result of the Influence of Teacher's HCQ on Students' CT

The records of semi-structured interview revealed the interviewees' views on teacher's questions, especially HCQ, which were associated with application, analysis, synthesis, and evaluation questions. All of these questions were related to CT skills. The result of the interview is shown in Table 4.4.

Table 4.4 The 17 Interviewees' Responses on Teacher's HCQ

Interview Question Items	Interviewees' Responses			N
	Yes (%)	No (%)	Not Sure (%)	
Question Item 1 (related to application questions)	0 (0.0)	17 (100.0)	0 (0.0)	17
Question Item 2 (related to analysis questions)	0 (0.0)	14 (82.4)	3 (17.6)	17
Question Item 3 (related to synthesis questions)	0 (0.0)	16 (94.1)	1 (5.9)	17
Question Item 4 (related to evaluation questions)	0 (0.0)	15 (88.2)	2 (11.8)	17

(Note: N= Number of the Interviewees)

As Table 4.4 indicates, apparently, excepting indecisiveness from a few interviewees, the majority of them held the same attitude that they did not get any improvement on abilities of problem solving, organizational structure analyzing, imagination, creation, and judgment which were related to CT. Their reasons were examined and summarized as follows:

1. The small quantity of teacher's HCQ. The interviewees admitted the teacher asked a few questions which required them to analyze the organizational structures of articles, evaluate the articles and predict the endings of articles; however, in terms of the improvement on these abilities, the number of such questions was so limited that they did not think their abilities could get any development.

2. Unclear instruction of teacher's questions. The interviewees also indicated sometimes they could not follow the teacher's questions because of some unfamiliar words used in the questioning instruction and the teacher's fast speaking speed. To illustrate:

Excerpt 4

"...sometimes she also uses a few questions to guide us learn articles step by step. But I think they are not enough to improve my ability of analysis. So I think if possible, the teacher can pay more attention to this ability and ask many questions which can help us improve it."

(Student 6)

Excerpt 5

"...I think in the classroom the teacher asks such questions related to evaluation, but not often, for example, what is your attitude towards the writer's main claim? But because of the limited questions, it is difficult to see my improvement on this ability..."

(Student 8)

Excerpt 6

“...analyzing the organizational structures is not an easy job for me. But in the class, the teacher just asks a few questions about it. I think it is not enough to improve this ability. So I hope she can spend more time on asking such questions to improve us... ”

(Student 11)

Excerpt 7

“...teacher sometimes asks some questions which make us predict. But I can not follow the question when she uses difficult sentences. If a good classmate gives the answer immediately, at this time, the teacher always praises her/him, and then move to next part. Sometimes, she always speaks fast so that I can not follow... ”

(Student 12)

Excerpt 8

“...in one class, the teacher asked us to evaluate author’s claim. I can not remember exactly her question, but I did not understand her question at that time because of some difficult words. After asking, she nominated a student to answer it, and then moved to another part after providing feedback. So, although the teacher asked us to evaluate, I don’t think I get any improvement on such ability because of the way that she questioned... ”

(Student 15)

Therefore, from the views of interviewees, it is concluded that the teacher HCQ in the classes could not improve their abilities related to CT. Additionally, from the records of classroom observation, the misuse of HCQ was identified by the researcher which also can support the conclusion mentioned above. To illustrate:

Excerpt 9

T: *What kind of life do you prefer “eat-to-live” or “live-to-eat”?*

S1: *Eat-to-live.*

T: *Eat-to-live. En... good. Do you know what the meanings of “eat-to-live” and “live-to-eat” are?*

Ss: 为吃而生活，为生活而吃。

T: *Yes, well done.*

...

The excerpt above presents a chain of question and answer.

Based on the research framework, the teacher’s question (*What kind of life do you prefer “eat-to-live” or “live-to-eat”?*) was categorized as evaluation question since it required students to judge these two types of lives and express their opinions. Sellappah et al. (1998) suggested that questions required to be asked in a logical format in order to facilitate a chain of reasoning so that they could prompt the development of CT. Additionally, as Dewey emphasized in 1909 (as cited in Fisher, 2001), skillful reasoning is viewed as the key element in CT. Nevertheless, it is evident that there is no chain of reasoning in this excerpt. In other words, the teacher did not require students to justify their answers. Considering students’ answer, the researcher found the way that the students answered this question was similar to doing multiple-choice. Thus, although this question was classified as HCQ, its role seemed to be LCQ.

In conclusion, in the current study, there were a few HCQ raised by the teacher. However, in terms of their influence on students’ CT, they were too limited to facilitate CT. Furthermore, the misuse of HCQ was also identified. The

effects of HCQ, without the chain of reasoning and explicit instructions, on students' CT were not as satisfied as they were supposed to be. Therefore, it comes to a conclusion that the teacher's HCQ could not facilitate learners' CT under investigation.

4.2 Discussion

This section provides a discussion of the results of the case study, which is also organized based on three research questions. It includes two parts: 4.2.1 mainly discusses teacher's questioning behavior in classrooms under investigation, which is related to the first two research questions; 4.2.2 mainly discusses the influence of teacher's questions on students' CT, which is related to the last research question.

4.2.1 Teacher's Questioning Behavior in the Classroom

In this current case study, it is shown that both LCQ (knowledge and comprehension) and HCQ (application, analysis, synthesis, and evaluation) were raised by the teacher. Moreover, with regard to frequencies of questions, the teacher was inclined to ask much more LCQ (79.2%), especially knowledge questions (66.0%), than higher ones (20.8%). This result is in line with those from studies of Sellappah et al. (1998), Guo (2002), Quan and Zhu (2002), Ho (2005), and Almeida (2010) which indicated that teachers always asked more LCQ than higher ones in classes. In the study of Quan and Zhu (2002), although they used closed and open questions to classify teachers' questions, this categorization was also based on the cognitive domain since Almeida (2010) pointed out most of questions classifications,

including closed and open, are proposed according to the cognitive levels of Bloom's taxonomy. Furthermore, Almeida also indicated that the closed question is viewed as LCQ while the open one is regarded as HCQ. In these studies mentioned above, the researchers adopted different teachers who taught different grades as their participants. The subjects in the studies of Ho, Quan and Zhu, and Almeida involved teachers who taught in secondary schools; in the studies of Sellappah and Guo, they observed teachers who taught at universities. Additionally, the university teacher was subject in the present study. Therefore, apparently, it is a common phenomenon that teachers are inclined to ask more LCQ in the classes.

4.2.2 Relationship between Teacher's Questions and Students' CT

4.2.2.1 Relationship between Teacher's LCQ and Students' CT

Unfortunately, those studies mentioned above did not investigate the reasons why teachers always asked plenty of LCQ. In order to address this gap and investigate further information about teacher's questioning, the current case study has already examined the reasons behind the teacher's questioning by using teacher's retrospection. As presented previously, the teacher asked LCQ mainly in order to review knowledge related to topics or vocabulary and also check students' comprehension on the articles after reading. In terms of the view of teacher, these questions can help students achieve the relevant background of the topic so that they can comprehend the main contents of articles better.

For example:

(Reviewing previous knowledge)

1. *Do you remember some phrases about fiction we have learnt last week?*
2. *Could you tell me the six patterns we have learnt last time?*

(Checking understanding)

3. *How many layers of reading process in this passage?*
4. *What did Tom get from his friends?*

The findings are consistent with the theory of the cognitive domain which indicates that in terms of functions of questions, LCQ are likely to require students to simply recall the prescribed data from memory, concentrating on factual information, and also to grasp the meanings of materials (Bloom et al., 1956; Brualdi, 1998; Bernadowski, 2006; McNeil, 2010). Furthermore, sometimes, when students could not answer difficult questions, the teacher also changed them into lower-cognitive ones, for example, when the teacher taught a unit named “Work”, she asked a question related to the theme of the passage which belonged to HCQ, but no response from students. So the teacher changed it into the easier one belonging to lower-cognitive level (See Appendix F No. 124, 125). That is to say, when students’ could not follow the teacher’s higher-order thinking instruction or the teacher’s questioning instruction is beyond students’ language proficiency, the teacher would adopt questions with lower-cognitive level which could help students achieve the learning at the lowest level.

Therefore, with respect to the relationship between LCQ and CT, Bloom et al. (1956) pointed out that LCQ (knowledge and comprehension) represent the lowest level of understanding which require students to recall previous knowledge directly instead of any process of manipulating knowledge; so the use of these questions could not make student be engaged in any process of CT. That is to say, LCQ could not be beneficial to the development of CT. This finding is consistent with the study of Sellappah et al.'s (1998) which also indicated that the excessive use of LCQ could not facilitate students' CT since they merely required students' recalling the knowledge directly rather than processing or manipulating knowledge learnt in the class.

In conclusion, according to the cognitive domain in Bloom's taxonomy and the results of the case study, LCQ can not make contribution to the facilitation of students' CT; however, they are still necessary to be asked in the classrooms. This is because they can help students achieve the learning requirements at the lowest level. As for promoting students' CT, although the teacher knew to change questions into lower-cognitive level when the student could not follow, she seldom asked HCQ to prompt students' higher-level learning after they already comprehended. Therefore, it is recommended that teachers are expected to pay more attention to HCQ after asking a series of LCQ in order to facilitate students' learning at the higher-cognitive level, namely, CT, so that their RC can get improvement.

4.2.2.2. Relationship between Teacher's HCQ and Students' CT

This section discusses the relationship between teacher's HCQ and students' CT under investigation in the case study.

The teacher asked a small quantity of HCQ (20.8%) throughout the reading classes. From the records of students' interview, they did not think that they received enough higher-order thinking instructions in classes so that their CT could not get improvement with the help of limited HCQ. This finding is consistent with those in the studies of Au (2006) and Dong (2006) which indicated that not sufficient higher-order thinking instructions may limit the development of students' higher-order thinking. Furthermore, the results of the study of Sellappah et al. (1998) also implied that the limited use of higher-level questions by teachers may limit the extent to develop students' CT.

Moreover, in terms of teacher's view, it is interesting to note that the teacher realized both LCQ and HCQ should be asked in the classes. However the proportion of LCQ asked was much larger. Additionally, when investigating the reasons of asking HCQ in the classroom by using teacher's retrospection, the researcher found as for most of HCQ, the teacher did not have specific purposes of asking and she just asked impromptu. After the education and teaching experience of the teacher investigated, the reason why the teacher did not ask more HCQ could be that she did not prepare questions well prior to the class and had never been taught how to ask those questions appropriately. As aforementioned in Chapter One and

Chapter Two, CT is a kind of indispensable competence for language learners to develop their language abilities and strategies in a creative way. That is to say, CT can promote students' intelligence, emotion and attitude towards different values. As for RC, CT can help language learners develop their abilities of RC since it can require them to be engaged in thought processes involved in problem solving, analyzing, synthesizing knowledge, as well as evaluating statements (McPeck, 1981). Evidently, the development of students' CT can be beneficial to the development of their RC, so it is quite important in reading class. Furthermore, teachers' questions, particularly HCQ, are regarded as one effective way to lead students to higher-order thinking. Therefore, more attention from teachers needs to be given to develop students' CT. It is recommended that teachers are expected to use effective questioning strategy to maximize the effects of questions on students' learning, in particular HCQ.

In conclusion, teacher's questioning is regarded as one of the most important activities in EFL classroom. Based on the theoretical framework, the cognitive domain, the most important thing is that HCQ can stimulate students' higher-order thinking. In the present case study, it was assumed that the teacher would stress the use of HCQ because of the curriculum requirements (CRCEM) mentioned in Chapter One. However the findings of the study are in contrast with this assumption. The teacher asked the majority of questions related to recalling facts. Although the teacher realized the importance of HCQ, she still did not ask more and even misused them. Obviously, limited use of HCQ from the teacher, lacking in a

chain of reasoning and explicit instruction, could not contribute to the development of students' CT. This was an unexpected result. Therefore, it is recommended that teachers should pay more attention to asking HCQ to assist students in higher-cognitive level learning after a series of LCQ. They would better prepare questions that they would use beforehand; moreover, teachers, especially inexperienced ones, are expected to be trained how to ask those questions appropriately. This finding further reinforces Gall's (1970) belief that teachers have to be taught the skill of questioning, and how to use questioning strategy effectively.

4.3 Summary

In conclusion, this chapter presented the results of the case study and the discussion section. After collecting the data, the data were analyzed in order to answer three research questions. It started with the results of research questions. It then followed with discussion section which was presented based on the common features of teacher's questions and the influence of teacher's questions on students' CT. This chapter ended with the summary. In the next chapter, conclusion, pedagogical implications, limitations, and recommendations of the case study will be presented.

CHAPTER 5

CONCLUSIONS

This chapter draws a conclusion of the case study. It consists of five sections. The first section summarizes all the results of the case study in terms of the common features of teacher's questions and the influence of teacher's questions on students' CT. It follows with pedagogical implications in the college EFL classroom. Then, limitations of the study and the recommendations for further studies are also proposed. The last section is the concluding remarks of this study.

5.1 Conclusions

This case study aimed at investigating teacher's questioning behavior and students' CT in the college EFL reading classroom. Based on the convenience and availability sampling method, one English teacher and her forty students majoring in English were involved in the study. The researcher collected the data from both the teacher and students by using three research instruments: classroom observation, teacher' retrospection, and semi-structured interview. The purposes of the study were to investigate the common features of teacher's questions and to ascertain whether teacher's questions can facilitate the development of students' CT under investigation. The findings of the case study could provide useful and valuable information for language teaching and learning in college English education.

The data collected from three research instruments were analyzed in quantitative and qualitative ways. The findings showed that the teacher asked both LCQ and HCQ and much more LCQ (79.2%) were proposed than HCQ (20.8%). Additionally, all of teacher's LCQ were mainly related to recalling students' previous knowledge and understanding factual contents of articles, which required learners to get the answers from memory or textbook directly, rather than any process of high-order thinking. Thus, excessive use of LCQ could not contribute to the development of students' high-order thinking, namely, CT.

Moreover, the results of this case study also indicated that the limited use of HCQ could limit the extent to develop students' CT. The misuses of HCQ were also identified. Teacher's HCQ, lacking of a chain of reasoning which is viewed as a crucial part in CT and unclear questioning instructions, for example, fast speed of instruction and the use of unfamiliar words, could not contribute to the development of students' CT. Although some questions were categorized as HCQ, their roles played in the question-and-answer chain were seemed to be LCQ or procedure questions. So, the effects of teacher's HCQ on students' CT were not as satisfied as they were supposed to be.

In conclusion, teacher's questioning is regarded as one of the most important activities in EFL classroom. Based on the theory of the cognitive domain, the most important thing is that HCQ can promote students' higher-order thinking since HCQ can require students to engage in independent thinking for instance problem solving,

analyzing or evaluating information. In the present case study, it was assumed that the teacher would pay more attention to HCQ in order to promote students' CT because of the curriculum requirements (CRCEM) as aforementioned in Chapter One. However the findings of the study are in contrast with this assumption. The teacher was inclined to ask plenty of LCQ in classrooms under investigation, which could not contribute the development of students' CT.

5.2 Pedagogical Implications

The findings of the present case study have some pedagogical implications for English teaching in KU and other universities in China as well. As MOE proposed, developing college students' CT is the requirement for language teachers. Moreover, questioning is regarded as one of strategies to promote CT. According to the results, the teacher asked more LCQ than HCQ, which could limit the extent to develop students' language abilities at higher level, namely, CT. Therefore it is necessary to train English teachers in terms of the study of questioning strategy.

The findings of the case study can provide an implication on teacher training in KU. The training, focusing on English teachers' questioning strategy, can be categorized into two types: 1) in-service training for English teachers, for example, training teachers at KU; 2) training for students majoring in English who study at Teachers' College or Normal University, for example, training students from Guizhou Normal University. The reason why the students from Teachers' College or Normal

University should be trained is that all of them are expected to be teachers after graduation. These two kinds of trainings mainly focus on teachers' questioning strategy. For trainers, they can train the teachers and students in the following suggested procedures:

1. Training what LCQ and HCQ are. This part includes specific explanations of six levels of questions (knowledge, comprehension, application, analysis, synthesis, and evaluation questions), for instance, conceptions, functions, and examples as well.
2. Showing authentic teaching videos for trainees and asking them to assess teachers' questions, in particular HCQ. If necessary, the trainers can provide hints for trainees, for example, whether the teacher's HCQ contain chains of reasoning, or whether the instructions of teachers' questioning are explicit enough so that students can follow them.
3. Assigning some articles for trainees. They are required to discuss how to design the relatively proper questions for these articles based on their teaching purposes. The trainers must pay more attention to how teachers use HCQ to help their students achieve higher-order thinking.

5.3 Limitations of the Case Study

As previously mentioned in Chapter One, the strengths of the study were not only using three instruments to collect the data, but also employing qualitative and

quantitative methods to analyze the data in order to validate the findings of the case study. However, like other research studies so far in the field of second language acquisition, the study brought in certain limitations which should be clarified to overcome doubts about the reliability and validity of the study. The following limitations applied to the present case study.

Firstly, since it was a case study, the subjects were limited to the college English teachers in China. It might not be considered as representatives of English teaching in other provinces.

Secondly, the purpose of the present case study was to investigate the influence of teacher's questioning behavior on students' CT. This study only focused on the cognitive domain in Bloom's taxonomy which is regarded as the domain that has the most impact on CT. Thus, the research did not consider using the affective and psychomotor domains to analyze teacher's questions.

5.4 Recommendations for Further Studies

Based on the limitations discussed previously, the researcher suggests some recommendations for further studies on teachers' questioning behavior and students' CT in college EFL classroom.

Firstly, the current study adopted only one teacher as the subject which made the ungeneralizability of the results. In order to increase the generalizability, a large-scale research study is recommended. More teachers from the same university

or different regions in China can be involved. Furthermore, teachers' questioning behavior of different teachers can be compared based on different variables, for example, teachers' teaching experience (experienced or inexperienced), native English teachers and non-native English teacher. Such comparison can provide valuable information for improving teachers' questioning behavior.

Secondly, the case study investigated whether teacher's questions could facilitate students' CT and also explored the teacher's reasons of asking questioning. It is recommended to conduct an experimental study which can demonstrate how to use questioning strategy to improve students' CT. The experimental study can help researchers test a hypothesis by setting up a situation. Pre-test can be employed for students which can test students' CT. Then based on the results of the present case study, researchers can design a model of questioning strategy. Researchers can use this model to teach students. After one-term teaching, post-test can be used to check whether students' CT can get improvement. These two tests can prove whether the model works. This kind of study may not only strengthen the theory that teachers' HCQ can facilitate students' CT, but also further explore how to use questioning strategy to improve CT, which can provide practical and valuable information for language teaching.

5.5 Concluding Remarks

In conclusion, the current case study aimed at investigating teacher's questioning behavior in the reading class and its influence on the development of students' CT. It derived from the problem of poor reading comprehension which is the big stumbling block for students who want to pass TEM 4 or 8 in China. The reasons why the researcher investigate both teacher's questioning behavior and students' CT are listed as follows: 1) CT is seemed to be an influential part which can affect students' RC; 2) teacher's questions are regarded as one of the most effective ways to facilitate students' CT. Thereby, the researcher intended to develop students' CT by using teacher's questions so that students' CT can get improvement. The findings of the study revealed the teacher inclined to ask more substantive LCQ than HCQ, which did not have any benefits on the improvement of students' CT. Additionally, teacher's HCQ, lacking in the chain of reasoning and explicit instructions, could also not facilitate students' CT. This case study provided valuable information for language teachers, particularly for the teachers who teach reading course, other researchers who study teachers' questioning behavior, and also training agents including training for students in Normal University and in-service training for English teachers.

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APPENDIX A

List of Questions for the Semi-structured Interview

(English Version)

1. In reading classes, do you get any improvement on problem solving skill (e.g. applying a reading theory or developing a new result of an article) with the help of teacher's questions? Why or Why not?
2. Do your get any improvement on the skill of analyzing organizational structure of the article with the help of teacher's questions? Why or Why not?
3. Could you get any improvement on abilities of imagination and creation through teacher's questions? Why or Why not?
4. Please tell me whether you get any improvement on the evaluation skill with the help of teacher's questions. Why or Why not?
5. What do you think of your teacher's questions in the reading class?

APPENDIX B

List of Questions for the Semi-structured Interview (Chinese Version)

学生对高校阅读教师课堂提问行为的看法访谈题目

1. 在教阅读时，老师所提的问题有没有促进你的应用能力的提高（例如：阅读理论的应用或者设计故事的结果）？为什么？
2. 在老师课堂提问的帮助下，你认为自己分析文章组织结构的能力有没有得到提高？为什么？
3. 在阅读课上，你的想象能力和创造能力有没有通过老师的课堂提问得到提高？为什么？
4. 请告诉我在阅读老师课堂提问的帮助下，你对事物的评价能力有没有得到提高。为什么？
5. 请说说你对阅读课上教师所提出的课堂问题的看法。

APPENDIX C

Criterion for Determining a Representative Interview Sample

Participants	Minimum Interviews	Participants	Minimum Interviews	Participants	Minimum Interviews
0-9	ALL	86-99	22	339-369	53
10-12	9	100-149	24	370-475	58
13-17	11	150-199	26	476-550	65
18-24	13	200-220	30	551-600	70
25-30	15	221-240	35	601-700	80
<u>31-44</u>	<u>17</u>	241-299	37	701-800	86
45-64	19	300-320	42	801-900	90
65-85	21	321-338	47	901-1,000	100

(Source: <http://www.amhsa.net>, 2010)

APPENDIX D

Item-Objective Congruence Index (IOC) Check of the Interview Questions

No.	Expert No.1	Expert No.2	Expert No. 3	Result
1.....	1	1	1	✓
2.....	1	1	0	✓
3.....	1	1	1	✓
4.....	1	1	1	✓
5.....	1	1	1	✓
Total	5	5	4	

Notes:

- 1: "1" for the item is congruence with objective
2. "-1" for the item is not congruence with objective
3. "0" for the expert not sure

Result of IOC:

$$(IOC = \sum R/N)$$

Item number= 5

R= 5+5+ 4= 14(total scores from experts)

N=3 (the number of experts)

IOC=14/3=4.7

Percentage: $4.7/5 \times 100\% = 94\%$

APPENDIX E

Consent Form for Participants

Title of Research: *TEACHER QUESTIONING BEHAVIOR AND STUDENTS CRITICAL THINKING IN THE COLLEGE EFL READING CLASSROOM: A CASE STUDY*

Researcher: *Ping Shen*

The researcher is required to obtain signed consent for participation in research involving human subjects.

The case study aims at investigating teachers' questioning behavior in college EFL reading classroom and exploring its influence on the development of learners' critical thinking skill. The results and findings of the study will be beneficial to the quality of teachers' teaching and the development of learners' reading ability.

To participant in this study, you just need to do what you always do in the reading class. The researcher just observes what happens in the classroom, mainly focusing on teacher's questions. The information collected will not be used for any other uses, which will be treated with the strictest confidence.

If you have any questions regarding the research, please contact the researcher by sending E-mail (spring198450@sina.com).

After reading the statements above, please indicate your consent by signing this form.

I certify that I have read and understand this consent form and agree to participate as a subject in the research described. My participation in this research is given voluntarily.

Signature _____

Date _____

APPENDIX F

List of Content-related Questions from Classroom Observation

1. What happened in the passage?
2. Would you tell us what happened in the story?
3. What kind of good ideas does Tom have to make Joe paint the house for him?
4. Is the work really interesting?
5. Can you summarize how Tom made Ben be interesting?
6. What is the truth in the story?
7. Can you use your own words to summarize the truth?
8. 得到容易，失去容易英语怎么说？(What is “easy come, easy go” in English?)
9. Whose fence did Tom sawyer paint?
10. And how was the fence?
11. How did Tom feel about painting the fence?
12. What was Tom’s plan to buy some help?
13. Who came up to Tom first?
14. Where was Ben going?
15. Who enjoyed the life, Ben or Tom?
16. Why?
17. What did Ben say to Tom?
18. Did Tom hear it?
19. How did Tom trap Ben into volunteering the paint the fence and give the whole apple to him?
20. Who can summarize the answer?
21. Where did Tom sit and what did he do while Ben painted the fence under the hot sun?
22. How did the other boys in the village respond to Ben’s work when they saw it?
23. How many times was the fence painted?
24. And why did the boys stop painting?
25. What did Tom get from his friends?
26. What was the human nature Tom discovered?
27. What’s your impression on all things in the article?
28. What is the topic of this article?
29. What is the main idea of this article?
30. When you see “Read”, what kind of materials do you read?
31. What kinds of stories do you read?
32. Do you remember we’ve learnt some phrases about fiction last week?

33. 爱情小说，恐怖小说用英文怎么说？(How to say “romantic and horrible novels” in English?)
34. When you read, what kind of reading skills do you use?
35. Would you please tell me what is reading process in this passage?
36. How many layers of reading process in this passage?
37. What is the first layer?
38. What is word knowledge?
39. What is experience in this passage?
40. What is your idea about the experience in this passage?
41. Why do you read the reading questions firstly? (answer: establishing a purpose for reading)
42. What are the comprehensions in the passage?
43. Why the developmental reading course is necessary for almost anyone?
44. What does reading faster require?
45. How many eye stops does the average reader make per second?
46. What does a slow reader do?
47. What is “aesthetic”?
48. What are the rhetoric methods?
49. “拟人” 英语怎么说？(What is “personification” in English?)
50. What’s the topic of the passage?
51. What’s your idea about the topic?
52. What’s the main idea of this passage? Use your own words.
53. Where is the answer to this question in the passage?
54. What is the topic of this passage?
55. What kinds of music do you know?
56. Anything else?(related to No.1)
57. 民间音乐英语怎么说？(What is “folk music” in English?)
58. 说唱呢？(How about “Rap”?)
59. When can we hear Waltz?
60. 五线谱英语怎么说？(How to say “staff” in English?)
61. What can you learn from the title?
62. What development is closely related to the development of music?
63. What’s the topic of this short paragraph?
64. If you disagree, what is your idea about the topic of the short paragraph?
65. What’s the topic of the second passage?
66. It talks about a phenomenon. What kind of phenomenon is it?
67. What kind of music lovers are they?
68. In your own words, what’s the main idea of the passage?
69. Which sentence is the topic sentence?
70. What does MTV stand for?
71. What does CPU stand for?
72. What does AIDS stand for?

73. Was R&B also called soul?
74. What kind of person did the man want to find?
75. Did he get it?
76. What does “instrument” mean?
77. What kind of instruments can you remember in English?
78. What’s your evidence in the passage about whether Beethoven composed music in a shocking way from the very beginning?
79. What does “withdraw” mean?
80. Where can you find the answer to this question the passage?
81. What’s your impression when you see “Generation”?
82. What are the main reasons do you think which can lead to generation gap?
83. Do you have other reasons? (Related to No. 2)
84. According to the title, what can you learn from the title? (*The Law v.s. the Piano*)
85. Can you guess what happened between the father and the daughter according to the title?
86. Can you guess what the relationship is between the law and the piano?
87. What’s the result of the argument between the father and the daughter?
88. What happened in the end in the article between the father and the daughter?
89. Why did the father want Susie to follow his career?
90. How about Susie’s reaction to father’s decision?
91. What was father’s response when Susie announced that she would like to take piano lessons?
92. Why did the father agree to the afternoon lesson?
93. What did father do when Susie finally became a successful concert pianist?
94. What does “reasonable” mean?
95. What does “compromise” mean?
96. What kind of “compromise” is in the passage?
97. Whom did the writer of the article seems to agree with?
98. Can you find any topic sentence in the passage?
99. What is the topic of paragraph 7?
100. What is the main idea of paragraph 7?
101. What does “client” mean?
102. What is different between customer and client?
103. What does “promotion” mean?
104. What is work?
105. Why people work? (before reading)
106. What’s your feeling when you achieve something for work?
107. What’s a sense of achievement?
108. What kind of life do you prefer “eat-to-live” or “live-to-eat”?
109. Would you please discuss these two kinds of life and then give your reasons?
110. Is there anyone who wants to express your idea?
111. Anyone else?

112. What kind of work can you think?
113. Who can tell me the jobs that you know?
114. What does CEO stand for?
115. Anything else (job)?
116. What is spy?
117. 导游英语怎么说? (What is “tour guide” in English?)
118. What are the functions of work?
119. Do you remember this word “illustration”?
120. What can jobs and work provide?
121. What did free citizens in ancient Greece expect to spend their lives in?
122. Why did some institutions dealing with mental health problems establish workshop?
123. Do you think there is any topic sentence in the 8th paragraph?
124. What is the topic of this passage?
125. What does this passage tell us?
126. What happened to the absence of work?
127. What kind of problems?
128. Can you summarize the main idea of this paragraph?
129. What is non-material culture heritage?
130. Do you still remember the phrases you check in the dictionary?
131. What does impulse mean?
132. What is the African-American?
133. How to say 亚裔美籍人 in English? (Asian-Americans)
134. When it comes to Americans, who do you remember?
135. Which word can you use to describe Africans’ skin?
136. Look at the picture on p.77. Who is he?
137. What’s the purpose of this famous speech? (*I have a dream*)
138. Why do Negroes need liberation?
139. If the male discriminate the female, what kind of discrimination is it?
140. What preposition can we use after discriminate?
141. Which one is the topic sentence in paragraph two?
142. What kind of pattern do you think is the second paragraph?
143. What kind of pattern do you think is the third paragraph?
144. What is civil right? (Explain the words and phrases in the text.)
145. Are you familiar with civil?
146. Could you give me another example about civil?
147. What does “be destined for sth” mean?
148. Please look at this sentence: “According to King’s wife, the segregation on buses wouldn’t have been stopped were it not for the efforts of King and his supporters”, what kind of grammar structure is it?
149. Why the following sentence is false, King believed that education should train people with both efficiency and morals?

150. What was king's belief on education?
151. What is denounce?
152. When we talk about story, what kind of patterns should we use?
153. Do you know something about Greek stories?
154. Are you familiar with Zeus?
155. Do you know Zeus?
156. Is Zeus he or she?
157. Who is Zeus?
158. What kind of god is Zeus?
159. What is flea?
160. What is flea market?
161. Who are the characters in the story?
162. What kind of order is the story?
163. Who is Pluto?
164. What kind of animal is Cerberus?
165. Is there anyone who can retell the story?
166. How did Orpheus overcome the hardship?
167. What happened in the end?
168. Did Orpheus die eventually?
169. What is the function of sweet music?
170. What does "spring" mean?
171. What kind of names can be used to describe the land of the dead?
172. Why did Orpheus lose Eurydice on the return journey?
173. What are the characters of Cupid?
174. What does "take place" mean?
175. What is the story between Apollo and sun flower?
176. What is the original form of sun flower?
177. Why was the girl transformed into a sunflower by Apollo?
178. What does "march" mean?
179. When it comes to Pandora, what can you think of?
180. Who made Pandora?
181. Are you familiar with Narcissus?
182. What is another meaning of "echo"?
183. Who is Apollo?
184. What's his sister's name?
185. Do you remember Narcissus?
186. What's his personality?
187. If you encounter something bad, such as failure in exam, what's your response?
188. What's your idea to these kinds of things (things mentioned in No.6)?
189. What's your attitude towards yourself?
190. Who would like to talk about your attitude towards yourself?
191. What's your choice?

192. Do you think we need self-criticism?
193. What's self-criticism?
194. If you say "yes", why?
195. Do you do self-criticism everyday?
196. Who can translate this sentence, "The living standards of people have been greatly elevated in the past twenty years."?
197. What could attitude do in our lives?
198. What kinds of attitude should we have?
199. Should we respect each other?
200. Should we be respectable or respectful?
201. Where are the attitudes that we have from?
202. What are the three basic types of attitudes?
203. Why did the woman in the second example get a full time job finally?
204. In daily life, what's the result if you use an angry reaction to a difficult circumstance?
205. What we should do when things go bad?
206. To enjoy life, what things must be healthy?
207. Please translate this sentence: "A positive attitude can overcome a negative situation, and enable positive circumstances to suddenly emerge."
208. Can you translate this sentence: "If it is going to be, it's up to me"?
209. What does "it" refer to in this sentence?
210. Could you tell me the six patterns we've learnt last time?
211. What organizational patterns are in paragraph 7?
212. What's the topic of this short passage?
213. What is stress?
214. What does "range from...to..." mean?
215. What is "overwhelming"?
216. Are you panic when you see someone is ill suddenly?
217. Have you ever learnt how to do first aid?
218. Do you have any experience of first aid?
219. From the title, please guess the content of this passage?
220. What is the author's main purpose of writing this text?
221. What's the main idea of this article?
222. Do you agree with her?
223. Who can tell us some basic rules of first aid?
224. Anything else?
225. What should you do first when someone is unconscious?
226. When a victim's clothes or hair are on fire, what can you do?
227. Could you tell us the order of the CPR?
228. When is better if we stop doing CPR?
229. How many steps are there in Airway Clearance?
230. What are they?

231. How about the order of these steps?
232. When can we do chest compression?
233. How many times should you take a deep breath and then blow quickly and deeply into the mouth of victim?
234. As for paragraph 6, please identify the organizational patterns with the help of the signal words or phrases.
235. Please look at the first step of Breathing. Who can translate this paragraph?
236. What does “uptilt” mean?
The following questions are related to five short passages.
237. What is the topic of this short passage?
238. How many people died in USA as a result of home accidents in 1986?
239. What may cause an accident in the home?
240. What is the largest single cause of home accidents?
241. What is the main idea of this passage?
242. When a patient is knocked down in the road, what should people do?
243. What should you do when a plugged-in appliance has a strange smell?
244. What kinds of fires are the fire extinguishers useful for?
245. When you try to escape an apartment fire, what should you do?
246. Before touching the eyelids to examine or flush the eye, what you must do?
247. What is the topic of this passage?
248. Can you summarize what you have learnt in this passage?
249. What kinds of words related to marriage can you remember?
250. Anything else? (Related to question 249: What kinds of words related to marriage can you remember?)
251. What does “proposal” mean?
252. What do you think is the meaning of marriage?
253. According to the title, could you predict the content of this passage?
254. In your opinion, what kinds of life can be called “good life”?
255. What is the main idea of this passage?
256. Do you agree with her?
257. What do you think is the main idea?
258. What happened to the couple?
259. Why were the lines from Elizabeth Jolley’s Cabin Fever painful?
260. To the bride, why was everything a blur?
261. Who were not pleased at the wedding?
262. What was the married life the couple had lived?
263. What did the husband believe?
264. What was contained in that worn, yellowing envelop?
265. Why did the husband say that Aunt Esther Gubbins was the wrong shape for a heavenly messenger?
266. According to the husband, what was the problem of the couple?
267. Let’s review patterns. Please tell me what kinds of patterns we’ve learnt before?

268. Please look at paragraph 4, what are patterns of this paragraph?
269. Anything else? (Related to No. 268: What are patterns of this paragraph?)
270. How about the next paragraph? (related to knowledge about pattern)
271. What's your impression on the life of the couple?
272. Is there anyone who wants to express your impression?
273. What is the topic of this passage?
274. What did marriage mean in the past?
275. Did the social custom accept the desirability of bachelorhood?
276. Is the marriage popular in the 20th century?
277. What is the government's reaction to the divorce?
278. Where does the Muslim wedding take place?
279. Where does a Buddhist marriage take place?
280. What does a minister present at a Buddhist wedding ceremony?
281. What does the bride often wear in the Shinto wedding?
282. What is the wine-drinking ceremony called?
283. Why do the couple throw rice and coconut shells into a small fire?
284. What is the main idea of the article?
285. Why are the veil and lasso used in the ceremony?
286. Why are the bride and her wedding party all dressed in the same color in Filipino custom?
287. After learning different cultures in marriage, could you please tell us the wedding custom in China?
288. How about the wedding custom in other places in China?

APPENDIX G

Questions for Teacher's Retrospection

Questions Transcript in Lesson Three Music (Exposition genre)	Retrospective Questions
<ol style="list-style-type: none"> 1. What kinds of music do you know? (K.) 2. Anything else ?(related to No.1) (K.) 3. 民间音乐英语怎么说? (K.) (What is "folk music" in English?) 4. 说唱呢? (K.) (How about "Rap"?) 5. When can we hear Waltz? (K.) 6. 五线谱英语怎么说? (K.) (How to say "staff" in English?) 7. What can you learn from the title? (S.) 8. What development is closely related to the development of music? (K.) 9. What's the topic of this short paragraph? (An.) 10. If you disagree, what is your idea about the topic of the short paragraph? (An.) 11. What's the topic of the second passage? (An.) 12. It talks about a phenomenon. What kind of phenomenon is it? (K.) 13. What kind of music lovers are they? (K.) 14. In your own words, what's the main idea of the passage? (C.) 15. Which sentence is the topic sentence? (An.) 16. What does MTV stand for? (K.) 17. What does CPU stand for? (K.) 18. What does AIDS stand for? (K.) 19. Was R&B also called soul? (K.) 20. What kind of person did the man want to find? (K.) 21. Did he get it? (K.) 22. What does "instrument" mean? (K.) 23. What kind of instruments can you remember in English? (K.) 24. What's your evidence in the passage about whether Beethoven composed music in a shocking way from the very beginning? (An.) 25. What does "withdraw" mean? (K.) 26. Where can you find the answer to this question the passage? (K.) 	<p>This article was an exposition genre, named "<i>Music</i>". The teacher totally asked 26 questions related to the content, 20 out of which were LCQ and 6 out of which belonged to higher ones.</p> <p>In the post-lesson retrospection, the teacher was asked to explain the following questions:</p> <ol style="list-style-type: none"> 1. In your opinion, what types of questions should be used for expository passages? Why? 2. Have you already prepared those questions prior to this class? 3. Why did you ask lots of questions related to specific or factual information in the article, for example, No. 8, No.11, No. 19? 4. What's your objective of asking No. 7 question before reading?

Questions Transcript in Lesson Four Generation (Recount genre)	Retrospective Questions
<ol style="list-style-type: none"> 1. What's your impression when you see "Generation"? (E.) 2. What are the main reasons do you think which can lead to generation gap? (An.) 3. Do you have other reasons? (Related to No. 2) (An.) 4. According to the title, what can you learn from the title? (<i>The Law v.s. the Piano</i>) (S.) 5. Can you guess what happed between the father and the daughter according to the title? (S.) 6. Can you guess what the relationship is between the law and the piano? (An.) 7. What's the result of the argument between the father and the daughter? (K.) 8. What happened in the end in the article between the father and the daughter? (K.) 9. Why did the father want Susie to follow his career? (C.) 10. How about Susie's reaction to father's decision? (K.) 11. What was father's response when Susie announced that she would like to take piano lessons? (K.) 12. Why did the father agree to the afternoon lesson? (C.) 13. What did father do when Susie finally became a successful concert pianist? (K.) 14. What does "reasonable" mean? (K.) 15. What does "compromise" mean? (K.) 16. What kind of "compromise" is in the passage? (K.) 17. Whom did the writer of the article seems to agree with? (E.) 18. Can you find any topic sentence in the passage? (An.) 19. What is the topic of paragraph 7? (An.) 20. What is the main idea of paragraph 7? (C.) 21. What does "client" mean? (K.) 22. What is different between customer and client? (K.) 23. What does "promotion" mean? (K.) 	<p>This article was a recount genre, named "<i>Generation</i>". The teacher totally asked 23 questions related to the content, 14 out of which were LCQ and 9 out of which belonged to higher ones.</p> <p>In the post-lesson retrospection, the teacher was asked to explain the following questions:</p> <ol style="list-style-type: none"> 1. In your opinion, what kinds of questions should be used for teaching a narration? Why? 2. Why did you ask lots of questions related to specific or factual information in the article? 3. Before reading, why did you ask those questions related to the content? For example, No. 1, No. 2, No. 3.

Questions Transcript in Lesson Five Work (Exposition genre)	Retrospective Questions
<ol style="list-style-type: none"> 1. What is work? (K.) 2. Why people work? (K.) 3. What's your feeling when you achieve something for work? (E.) 4. What's a sense of achievement? (K.) 5. What kind of life do you prefer "eat-to-live" or "live-to-eat"? (E.) 6. Would you please discuss these two kinds of life and then give your reasons? (E.) 7. Is there anyone who wants to express your idea? (E.) 8. Anyone else? (E.) 9. What kind of work can you think? (K.) 10. Who can tell me the jobs that you know? (K.) 11. What does CEO stand for? (K.) 12. Anything else (job)? (K.) 13. What is spy? (K.) 14. 导游英语怎么说? (How to say "tour guide" in English?) 15. What are the functions of work? (K.) 16. Do you remember this word "illustration"? (K.) 17. What can jobs and work provide? (K.) 18. What did free citizens in ancient Greece expect to spend their lives in? (K.) 19. Why did some institutions dealing with mental health problems establish workshop? (C.) 20. Do you think there is any topic sentence in the 8th paragraph? (An.) 21. What is the topic of this passage? (An.) 22. What does this passage tell us? (K.) 23. What happened to the absence of work? (K.) 24. What kind of problems? (K.) 25. Can you summarize the main idea of this paragraph? (C.) 26. What is non-material culture heritage? (K.) 27. Do you still remember the phrases you check in the dictionary? (K.) 28. What does impulse mean? (K.) 	<p>This article was an exposition genre, named "Work". The teacher totally asked 28 questions related to the content, 21 out of which were LCQ and 7 out of which belonged to higher ones.</p> <p>In the post-lesson retrospection, the teacher was asked to explain the following questions:</p> <ol style="list-style-type: none"> 1. What kinds of questions do you think should be used for argumentative passages in order to improve students' reading comprehension? Why? 2. Before reading, you asked lots of questions for students related to their previous knowledge (e.g. <i>What is work?</i>) and opinions (e.g. <i>What is your feelings when you achieve something for work?</i>). Are there any purposes for asking those questions and shifting them? 3. Why did you shift No. 21 into No. 22? 4. What's your purpose of asking students factual questions (e.g. <i>What happened to the absence of work?</i>) after asking them to find the topic?

Questions Transcript in Lesson Seven Greek Stories (Recount genre)	Retrospective Questions
<ol style="list-style-type: none"> 1. When we talk about story, what kind of patterns should we use? (A.) 2. Do you know something about Greek stories? (K.) 3. Are you familiar with Zeus? (K.) 4. Do you know Zeus? (K.) 5. Is Zeus he or she? (K.) 6. Who is Zeus? (K.) 7. What kind of god is Zeus? (K.) 8. What is flea? (K.) 9. What is flea market? (K.) 10. Who are the characters in the story? (K.) 11. What kind of order is the story? (An.) 12. Who is Pluto? (K.) 13. What kind of animal is Cerberus? (K.) 14. Is there anyone who can retell the story? (C.) 15. How did Orpheus overcome the hardship? (K.) 16. What happened in the end? (K.) 17. Did Orpheus die eventually? (K.) 18. What is the function of sweet music? (K.) 19. What does “spring” mean? (K.) 20. What kind of names can be used to describe the land of the dead? (K.) 21. Why did Orpheus lose Eurydice on the return journey? (C.) 22. What are the characters of Cupid? (K.) 23. What does “take place” mean? (K.) 24. What is the story between Apollo and sun flower? (K.) 25. What is the original form of sun flower? (K.) 26. Why was the girl transformed into a sunflower by Apollo? (C.) 27. What does “march” mean? (K.) 28. When it comes to Pandora, what can you think of? (K.) 29. Who made Pandora? (K.) 30. Are you familiar with Narcissus? (K.) 31. What is another meaning of “echo”? (K.) 	<p>This article was recount genre, named “<i>Greek Stories</i>”. The teacher totally asked 31 questions related to the content, 29 out of which were LCQ and 2 out of which belonged to higher ones.</p> <p>In the post-lesson retrospection, the teacher was asked to explain the following questions:</p> <ol style="list-style-type: none"> 1. In terms of stories, what types of questions do you think should be used? Could you provide some examples? Why? 2. Why did you ask lots of factual questions in the class, for example, <i>Who is Zeus? What happened in the end?</i> 3. In the class, why did you ask students the order of the story (No.11) before asking them some factual questions (e.g. <i>Who is Pluto?; What kind of animal is Cerberus?</i>) 4. What’s your purpose of asking students to retell the story (No. 14) before some factual questions (No. 15, 16.17 etc.)?

CURRICULUM VETAE

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