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THE STUDY OF VARIABLES INFLUENCING THE EFFECT OF ENGLISH MEDIUM INSTRUCTION ON ACADEMIC CONTENT LEARNING AND ENGLISH PROFICIENCY DEVELOPMENT

A Dissertation in
Curriculum and Instruction

by

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ABSTRACT

The purposes of the study were to identify the influential variables to determine the effects of EMI (English-Medium Instruction) approach on academic content learning (CL) and English proficiency development (EPD), to devise more feasible EMI implemental conditions, and to provide more practical considerations for EMI-based course design at the tertiary level in Korea as EFL (English as a foreign language) context.

An academic course consists of 3 factors: student factor, professor factor, and course factor. Each factor includes several component variables. Through the reviews of the previous studies on EMI effects on CL and EPD, the variables that seemed to be considered as the influential variables were extracted as the research variables of this study and through the consideration of theoretical and conceptual foundations of EMI approach as a teaching/learning approach, the additional variables that might have the possibility to influence EMI effects were added in the list of the research variables.

As the research variables in student factor, the following variables were selected: ‘student year’, ‘student’s English ability’, ‘the reason to take EMI course’, ‘the experience of staying in English-speaking country’, and ‘the number of EMI courses taken’. As the research variable in professor factor, ‘the ethnicity of EMI professor’ was chosen. In course factor, the following variables were picked as the research variables: ‘interaction degree’, ‘feedback degree’, ‘class size’, ‘satisfaction with grade and assessment way’, ‘teaching style’, and ‘professor’s attempt to enhance students’ English ability’.

Based on the analyses of simple and multiple regression analysis using IBM SPSS 20.0, the following results were obtained. First, in the aspect of EMI effect on CL, the variable ‘interaction degree’ between EMI professor and students was identified as the most influential variable to determine EMI effect on CL ahead of ‘students’ current English ability’ variable and
‘feedback degree’ variable. Whereas in terms of EMI effect on EPD, ‘the reason to take EMI course’ variable was the most influential variable and the ‘degree of feedback’ that EMI professor served students was followed.

In accordance with the results of the study, the conditions for more effective EMI implementation and the considerations for more feasible and practical EMI course design and course activity development were suggested. Given the current situations of EMI implementation in Korea that most EMI courses are being conducted by Korean professors, the suggested conditions and considerations will be helpful for Korean EMI professors to design EMI-based academic course and to conduct actual EMI course. Especially, in the aspect of practicality, the suggested measures of the study will help Korean EMI professors who have difficulty conducting EMI-based academic courses due to the lack of English proficiency.
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Chapter 1

INTRODUCTION

1.1 Background

Under top-down system of nation-centered educational policy making and enforcement, recently, the most controversial issue in the process of higher education policy execution in Korea is the adoption of English as a medium of instruction (EMI) across all disciplines. In the age of internationalization and globalization in education field, a growing number of countries whose native language is not English are employing English as a medium of instruction at the tertiary level (Coleman, 2006; Maiworm & Wächter, 2008; Marsh, 2006). In accordance with this global trend\(^1\), the Korean government has continuously emphasized the importance of English communicative competence for the enhancement of international competitive power of the nation (Kim, 2011) and has unilaterally and strongly recommended the employment of English as a medium of instruction at the tertiary level (Byun et al., 2011).

Especially, the official commencement of World Trade Organization (WTO) in 1995 served as a momentum for the Korean government to realize the importance of English as World Language and the government transferred the direction of national curriculum of English education to reinforcement of English proficiency (Byun & Kim, ...)

\(^1\) English teaching and learning have become an important and arguing issue in the educational system of many non-English-speaking countries (Nunan, 2003).
The emphasis on English communicative competence has resulted in the early start of English education even at the elementary level (Moon & Lee, 2002) and led to the execution of English education policy named ‘Teaching English through English’ (TETE) (Kim, 2011). Under the recognition that there is a huge obstacle to developing English proficiency in Korea due to the limitation of English use in EFL (English as a foreign language) context, the government contrived to employ the TETE policy in the elementary and the secondary level for the purpose of augmenting the opportunity for Korean English learners to be exposed to English-speaking contexts.

The TETE policy initially executed only in English subject in the elementary level and the secondary level was expanded to the tertiary level and was applied to across all disciplines, or majors. As manifested in the name of English medium instruction (EMI), EMI is, simply put, to employ English as a main language in teaching students whose mother tongue is not English. In the aspect of English use as an instructional medium for the sake of improving the language proficiency, the TETE and EMI share the same goal, but EMI has an additional objective to learn academic content related to student’s major whereas the purpose of the TETE is to learn English itself. Hence, EMI approach has two explicit purposes: simultaneously to learn academic content and to improve English proficiency.

Until the early 2000s, EMI approach was not actively implemented at the higher education level. The approach was recognized as serviceable, but not suitable to apply to major subject courses. Even though many scholars and professors agreed to the theoretical advantages of EMI approach, they didn’t easily attempt to adopt English as a teaching medium in their classes due to the realistic reasons such as the concern for the
deterioration of academic content learning in EMI classes and the lack of English proficiency of both professors and students. As a result, in spite of the government’s strong recommendation, the implementation of EMI approach has made slow progress.

In the meantime, several universities made an attempt to increase EMI courses in their curricula by means of contriving the mandatory regulation that all university students must take the certain number of EMI courses as a requirement for graduation (Byun et al., 2011; Y-M. Kim, 2009) and the Korean government, on cue, swiftly announced to employ the internationalization index as a crucial element for university evaluation. Naturally, the number of EMI courses that are opened in the curriculum became one of the core items in internationalization index evaluation. The result of university evaluation was announced to the public, especially to high school graduates and their parents and the students as a potential customer of higher education institutions (HEIs) utilized the announcement in setting up the foundation on determination for that which university they will enter.
Figure 1-1 Gap between 18-year-old population and the total freshman enrollment quota in higher education institutes

As shown in Figure 1-1, under the current situation that a lot of universities have a growing apprehension for recruiting new students, university evaluation result is considered as the critical factor to influence the existence of a university. Enforcement of international index in university evaluation has led to the rapid diffusion of EMI practice in HEIs (Kim, 2008; Shim, 2010).

Along with university authority’s willingness for expanding EMI-based courses, students’ expectation for both academic content learning and English proficiency development at the same time through taking EMI course has instigated the diffusion of EMI implementation (Yu & Chung, 2009; Oh & Lee, 2010). The steep expansion of EMI implementation resulted in two main contentious issues: ‘Are our students and professors ready to learn/teach through EMI courses at the tertiary level?’ (Kim, 2008; Lee, 2010) and ‘Is it possible to learn academic knowledge and improve English proficiency simultaneously through EMI course?’ (Shim, 2010)

It is still under debate whether EMI approach should be employed across all disciplines at the tertiary level in Korea. In the approving side, it is generally asserted that EMI approach can afford the chance to improve English proficiency and to learn academic knowledge (Hwang & Ahn, 2011). EMI course helps students to interact and

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2 The figure was directly extracted from the study of Byun and Kim (2010). (Source: Ministry of Education, Science, and Technology & Korean Educational Development Institute (2008); Education Statistics Yearbook 1990-2008)

3 Byun and Kim (2010) assume that the number of high school graduates will be less than the total freshman enrollment quota of HEIs in 2019. The researchers warn that the decrease of high school graduates inevitably will trigger the problem of existence in most universities and furthermore, lots of universities will close the gate due to the lack of new students.

4 The expansion of EMI implementation will be more concretely reviewed in Chapter 2.
communicate more actively with professors and peer-students for the purpose of figuring out academic course content which are delivered in English (Snow, 2001). Also, in EFL context, EMI course can prompt students to more frequently experience English use and create more chances to practice the target language skills (Kim, 2009).

In the disapproving side, some scholars state that it is premature to administer EMI approach at the tertiary level in Korea due to the deficient English proficiency of Korean students, proclaiming that the execution of English immersion education without sufficient preparation might ruin students’ academic motivation (Johnson, 1997; Kim, 2010). Without systematic provision for EMI implementation, the effects of EMI approach will be degreed (Maeng, Han, Kim, & Kim, 2011) and students’ academic motivation will be reduced. Even worse, students may express disbelief and hostility to EMI courses. The attempt to apply EMI approach even to some courses such as Korean Language and Korean History is provoking the serious disputes over EMI policy (Kim, 2010).

However, in spite of the continuing controversies, it is widely accepted that EMI approach is a fairly attractive teaching method for English learners in EFL context to foster cognitive and academic English ability (Oh & Lee, 2010). Also, the instruction to use English as a teaching/learning medium is an indispensable educational trend these days (Coleman, 2006). Given the current atmosphere, EMI implementation is not a pro’s and con’s issue. The point is to devise the way to implement EMI course more effectively and appropriately for Korean students.
1.2 Previous Studies on EMI Implementation at Tertiary Level in Korea

With rapid expansion of EMI implementation, a body of EMI research was conducted. The first attention of the research was directed to the practicality of EMI approach and the reactions of students/professors to EMI approach were investigated. By means of survey research method and the result of EMI course evaluation, the most studies on EMI investigated the general reactions of students to EMI approach and a small number of the studies dealt the actual effects of EMI course in specific major or department in order to reveal the actual EMI effects on content learning and English proficiency development. The early EMI implementations were mainly conducted in English-related majors for the reason that other majors were not ready to implement EMI approach due to the lack of English ability of both professors and students. In the meanwhile, many universities unilaterally diffused EMI implementation across all disciplines by means of enacting the mandatory regulation for graduation and as a result, EMI studies were conducted in the various majors and departments.

The main focuses of the previous EMI studies are largely divided into 4 aspects:

(1) Perception and reaction of students to EMI approach (Kang & Park, 2004a; Kim, Han, Maeng, & Kim, 2012; Kim, 2002; Kim, 2011; M-S. Kim, 2009; Shim, 2010),

(2) Perception and reaction of professors to EMI approach (Kim, 2011; Maeng et al., 2011; Oh & Lee, 2010),
(3) Effects of EMI approach in one specific major or department (Byun et al., 2011; Hwang & Ahn, 2011; Jin & Shin, 2011; Kang & Park, 2004b; Park, 2006; Shim, 2012), and


In the research on students’ perception and reaction to EMI approach, some researchers reported students’ positive responses to EMI approach whereas others revealed the negative response to EMI approach. The results varied depending on the features of students in EMI courses: students’ English proficiency level, student year (what year is a student in), the ethnicity of EMI professor, student’s major, the previous experience of staying in an English-speaking country, the degree of student’s native language use as a supplementary medium of instruction, and so on.

The results of the studies on professors’ reactions illustrated what EMI professors felt in the course, what EMI professors need in order to conduct more effective EMI implementation, and what university authority should support for EMI professors.

In the studies on the effects of EMI approach, the researchers described the degree of EMI effectiveness for content learning and English proficiency development under the specific conditions. Some researchers reported that EMI approach is beneficial for learning academic content (Hwang & Ahn, 2011) whereas others strongly stated that to employ EMI approach in student’s major courses deteriorated students’ understanding of the content (Kang & Park, 2004b; Park, 2006; Yu & Chung, 2009). In terms of one specific variable, for example, student major, one study reported that EMI approach had
positive effects in the specific major whereas the other study mentioned that EMI approach revealed the negative effect in the major.

The comparative studies displayed the difference of the effects between EMI and KMI. Some studies mentioned that there is a definite difference on the degree of students’ content learning between EMI and KMI whereas others insisted that there is no difference between the two approaches in terms of the amount of content learning.

Through the results of the previous studies, the identified problems related to EMI implementation can be largely categorized as 3 types: 1) Impediment to learning academic content, 2) Inefficiency of improving English proficiency, and 3) Emotional problems such as burden for study load, anxiety for English use, passive attitude to course activities, and so on.

In respect of the problems concerning academic content learning, only a few studies (Hwang & Ahn, 2011; Jeon, 2002) indicated EMI approach is beneficial whereas most other research criticized the decrease of content learning, the downgraded quality of lecture, and the difficulties understanding the content due to the deficient English proficiency. Many studies on the effectiveness of EMI course generally illustrated that there were negative results about academic content learning. The studies mentioned that EMI professor had to explain the same content repeatedly in order to solve the miscommunication between EMI professor and students and this resulted in the lack of class hours. In terms of the degree of understanding content, most studies displayed negative efficacy of EMI course.

Fundamentally, the students are supposed to have the opportunities to use English in EMI course. The students in EMI course have to read course textbooks in English,
have to listen what EMI professor delivers in English, have to answer and ask in English, and have to write course assignment and examination in English. As a result, the students in EMI course naturally get to develop their English ability through EMI course taking. However, only a few studies uttered that students’ English reading and listening skills were improved through EMI approach. Also, there is scarcely mention that the current EMI practice fosters students’ English speaking and writing skill. Rather, many studies criticized that in the case of the students with low level of English proficiency they felt frustrated at their English proficiency development.

Researchers state that the emotional problems identified in the previous studies were largely caused by the deficient English ability of students. Students’ insufficient English ability brought about the passive attitude to course activities, emotional burden for understanding course lecture, and uncomfortable relationship between EMI professor and students.

Through the results of the previous studies, several “feasible” suggestions are offered as the solutions for the indicated instructional problems. Many researchers assert that it is necessary for university authority to provide systematic supports. They mention that the current English level of students is not sufficient to take EMI course. Thus, they insist that prerequisite English program is needed for improving students’ English ability. They report that professors in EMI courses request the support of university authority for editing and revising students’ writing products. All the responsibilities for the revealed problems are attributed to external factors such as students’ low level of English ability and insufficient systematic support of university authority. Is it possible to solve the problems with the presented solutions?
1.3 Statement of the Problem

In the current EMI practices, the most EMI courses are administered by Korean professors\(^5\). In order to teach student’s major subjects in English, the professor in EMI course should understand what EMI approach is and how they should teach in EMI course. EMI professors should teach students academic content and English simultaneously. The professors should grasp the principles to teach content and language at the same time, not to teach the two things separately. Although EMI approach is to employ English as the medium of instruction for academic content learning, EMI approach doesn’t mean the simple change of the instructional medium from Korean to English. It is suspicious that the professors in EMI courses understand the core principles of EMI approach.

As a teaching approach, EMI approach retains several salient features that are evidently manifested in other teaching/learning approaches. First, English dealt in EMI courses is specific, not general. The content dealt in EMI course is related to the academic information and knowledge based on the majors of students and English in EMI course covers the specific content. The purpose of English use is aimed at teaching/learning academic content, not casual communication. Based on the classification of Hutchinson and Waters (1987), the English generated in EMI course is much closer to English for specific purposes (ESP) than English for General Purposes (EGP).

\(^5\) The proportion of EMI courses that are administered by English-native professors is quite a bit low. The detailed information on the current EMI implementation in terms of the ethnicity of EMI professor will be presented in Chapter 2.
Second, EMI is a teaching approach based on Content-based instruction (CBI). In EMI course, the teaching/learning entirely focuses on academic content learning and English teaching/learning occurs incidentally in the process of teaching/learning the content. Accordingly, the principles of EMI approach have the foundation on the principles of CBI approach.

Last, English generated in EMI course is not for basic and social interaction. The language uses in EMI course are mainly ‘reduced context’ and ‘cognitively demanding’. Therefore, the language uses demand intensified and sophisticated English proficiency for understanding academic course content. Cummins (1980) coined the term “CALP: Cognitive Academic Language Proficiency” to distinguish it from “BICS: Basic Interpersonal Communicative Skill”. The required language ability for taking EMI course can be categorized as CALP.

How many professors are conducting EMI courses with the complete understanding of EMI approach? If they understand the principles of EMI approach, they will certainly identify that just teaching in English is not EMI approach. Inevitably, they will devise some teaching methods and course activities tailored to their EMI classes. In order to maximize the effects of EMI approach, they will employ somewhat different course materials. However, there is scarce EMI study describing that how the EMI course should be conducted, what kind of course activities should be developed and employed, and what specific supports are needed to solve the instructional problems derived from EMI implementation. There is no study on development of EMI teaching methods and designing EMI course activities in the previous studies. Under the current circumstances, most EMI professors as a novice professor at EMI approach seldom find the appropriate
teaching methods and course activities for more effective EMI practice. Most EMI professors are not majored in English education and they don’t possess enough knowledge and information on language learning development.

To sum up, the problems of the current studies on EMI implementation are as follows:

(1) Researchers mainly recognize the reason of the current problems derived from EMI classes as the lack of English ability.

(2) Most professors in EMI classes don’t fully understand what EMI approach is and how they should teach.

(3) There is scare research on the development of teaching methods and course activities tailored to EMI approach.

(4) Most EMI studies do not present feasible and practical suggestions for effective EMI operation.

1.4 Purpose of the Study

Based on the recognition of the above problems, the purposes of this study are as follows: to identify conditions and considerations for effective EMI implementation and to devise the way to enhance the effects of EMI approach. In order to fulfill the purposes, the study will proceed in accordance with the following steps.
Step 1: Through literature reviews, the variables that influence the effects of EMI approach will be extracted. In the study, the variables will be divided into 3 factors: student factor, professor factor, and course factor.

Step 2: With the extracted variables, the relation between the variables and the effects of EMI approach will be explored. The effects of EMI approach will be divided into 2 parts: content learning and English proficiency development. To accomplish it, student’s survey research method will be employed.

Step 3: Based on the results of the study, the conditions and considerations for more effective EMI implementation will be considered.

Step 4: Based on the conditions and considerations, feasible and practical suggestions will be presented.

This study addresses the following research questions:

1. What variables in student factor influence EMI effects on CL and EPD?
2. What variables in professor factor influence EMI effects on CL and EPD?
3. What variables in course factor influence EMI effects on CL and EPD?
4. What variable is the most influential variable to determine EMI effects on CL and EPD?
Chapter 2

REVIEWS OF THE LITERATURE

The primary purpose of this study is to explore the conditions and the considerations for more effective EMI implementation at the tertiary level in Korea. To accomplish the purpose, the study will discover the variables that influence EMI effects, based on the reviews of the previous studies on EMI practices in Korea. Also, through the reviews of the theoretical foundations of EMI approach: content-based instruction (CBI), English for specific purposes (ESP), and cognitive academic language proficiency (CALP), the instructional characteristics that should be carefully deliberated in case of applying EMI approach to Korean higher education situation will be identified. The comprehension of the features in the foundations will shed light on resolving the current problems in EMI implementation.

The first section of this review will briefly give an overview of the transition of English education focus and present the current trend in English education field in Korea. The emphasis on English communicative competence in National English education curriculum will be described. Also, the current practice of Teaching English through English (TITE) policy in the elementary and the secondary level and English medium instruction implementation (EMI) at the tertiary level will be depicted.

The next section will focus on theoretical foundations on several English teaching/learning approaches that support the basis of EMI approach. The concepts of
CBI, ESP, and CALP will be explored and the core instructional characteristics from the approaches will be identified.

The final section will analyze the previous studies on EMI practices in Korean HEIs. By means of reviewing the previous studies, the features of EMI implementation and the variables that are reported as the variable to influence EMI effects on CL and EPD will be extracted.

2.1 Transition of English Education in Korea

Since the introduction of English in Korean education field, the importance of English ability has been steeply growing. Under the top-down system of educational policy making and execution, English education has been completely influenced by National English curriculum that is designed by government organization, or the Ministry of Education (hereafter referred as MOE).

After the announcement of the Revised 6th National English curriculum of 1992 (MOE), English communicative competence has occupied the cardinal position in English education in Korea. Under the realization of the barrier to impede English proficiency development in Korea, the Korean government has attempted to implement a plan named ‘Teaching English through English (TETE)’ for the purpose of augmenting the authentic opportunity available to verbally practice what students learned in English class and has continually stressed the policy from the 7th National English Curriculum of 1997 (MOE) to the Revised 7th National English Curriculum of 2006 (Ministry of
Education and Human Resources Development) and the newly Revised 7th National English Curriculum of 2008 (Ministry of Education, Science, and Technology).

At the beginning of the TETE policy execution, English classes based on the TETE approach started from 3 and 4 grade of elementary school and the first year of middle school and the TETE execution was expanded up to high school in 2004 (Kim, 2011). In the tertiary level, the approach that adopts English as an instructional medium has been applied to all disciplines and the application was named EMI. Currently, EMI implementation is competitively and rapidly administered in many universities (Kang & Park, 2004a).

2.1.1 EMI Fever in higher education field and Korean universities in Crisis

The adoption of the TETE policy at the elementary and the secondary level led to EMI implementation at the tertiary level. Along with the contemporary world trend, or globalization and internationalization in education, the importance of English ability as a lingua franca in the various fields such as business and academia enforced many countries whose native language is not English to pay more attention to a working knowledge of English. As a result, a growing number of countries especially in European and Asian countries are adopting English as a medium of instruction at higher education level (Coleman, 2006; Jensen & Thøgersen, 2011). Korea is no exception for this global trend.

The implementation of English-medium instruction (EMI) in Korea is recognized as one of the most critical efforts to make the country more competitive in global higher
education market (Byun et al., 2011). By adopting EMI in university classes, the Korean government anticipates that 1) Korean students have the chance to prepare for business jobs and academic achievements in the internationalized field, 2) EMI permits domestic educational institutions to hire visiting scholars from abroad and to attract more international students, and 3) through the instruction delivered in English, Korean professors and students can develop their English proficiency.

With these anticipations, the rate of EMI implementation at the tertiary level has sharply risen. To activate EMI implementation more aggressively, the Korean government began investing financial supports to the universities that follow the government the policy (Byun et al., 2011). As a result, the percentage of EMI courses being provided by the Korean HEIs increased from 2.2% in 2006 to 3.1% in 2010. At a glimpse, the percentages of 2.2 and 3.1 seem to be not enormous, but the actual situation is serious. The percentages 2.2 and 3.1 were obtained from all universities and colleges in Korea. Even though there are a fair number of universities and colleges that don’t adopt EMI policy in their curricula, they are included in the percentage. Therefore, the small numbers 2.2 and 3.1 can lead to misunderstanding about that average EMI implementation rates are 2.2% in 2006 and 3.1% in 2010 every college or university. The small numbers don’t reflect the actual situation. The existing controversial issues regarding EMI implementation will not occur from the small numbers. Therefore, it is required to probe the real figures of the current EMI implementation.

As English is a foreign language in Korea, it is extremely challenging for Korean students to develop English proficiency up to the level enough to take academic courses delivered in English. In Korea, almost all high school graduates enter HEIs such as
universities, colleges, and community colleges\(^6\). Even though some students have extremely low level of academic aptitudes, they can enter some colleges or community colleges. To the students, EMI implementation is fundamentally impossible. Therefore, in order to reflect the actual situation of EMI implementation, research on EMI should be based on the colleges and the universities that are actually implementing EMI policy. Also, to guarantee the generality of the result, it is desirable to exclude some colleges and universities that are originally founded for those who are non-native Korean students and that initially employed English as the instructional medium for a small number of students who are extremely talented academically and linguistically.

On the basis of several objective factors such as location (city or suburb), size of student enrollment quota, history of university, level of public awareness, and university ranking, 37 universities and colleges were selected in order to reflect the actual EMI situation\(^7\).

**Table 2-1**

*Proportions of EMI courses in the curriculum during the past 5 years (2007-2011)*

> Retrieved from Joongang Education Development Institute (JEDI) ([http://jedi.re.kr/](http://jedi.re.kr/))

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\(^6\) According to the data of Korea institute for curriculum and evaluation (KICE), the number of test takers in National College Entrance Examination (NCEE) in 2010 was roughly 670,000. Compared to the total entrance quota of the year (approximately 590,000), more than 80% of high school graduates enter a school of higher grade in Korea.

\(^7\) The number of all HEIs was 204. The number includes universities, colleges, and community colleges in Korea.
Table 2-1 exhibits the transition of the proportion of EMI courses in the curriculum during the past 5 years. Unlike the small number of 2.2% in Byun et al.’s research, the actual results of EMI implementation are quite a bit higher than the numbers in Byun et al.’s study and the proportion of EMI courses continues to increase.

In the result of the total 37 universities, the EMI proportion was 5.59% in 2007 and rapidly increased up to 17.14% in 2011. Especially, in the results of high 20 universities and high 10 universities, the percentages of EMI course rose up 27.65% and 37% in 2011. Therefore, research on EMI is not a specific issue related only to small number of students, but a general topic that many scholars should agonize together.

Why are many HEIs in Korea striving to sharply expand EMI implementation? Does the importance of English proficiency suddenly increase? There might be several reasons for this steep growth of EMI implementation. As mentioned in the chapter 1, Byun and Kim (2010) find the reason for the growth in the decline of high school graduates. High school graduates are the potential customers of HEIs. The comparison between the number of high school graduates and the freshman enrollment quota explicitly implies the concern of HEIs for the survival in the future.

As seen in Figure 1-1 in chapter 1, from the late 1990s the shrinking of high school graduates started and in 2004, the entire freshman quota in HEIs was almost
equivalent to the number of high school graduates and then, the Korean HEIs experienced the first crisis for survival. From 2004, quite a few numbers of HEIs closed until 2008.

Through Figure 1-1, the second crisis is expected to happen sooner or later. Most HEIs are making efforts to survive and they recognize the importance of international students’ inflow and the consequence of social reputation marked as the ranking in the result of university evaluation. In order to occupy the high position of the ranking order, many universities and colleges have competitively expanded the proportion of EMI course since the internationalization index of a university became a critical factor to gain high point in the evaluation. Hence, even though there are negative opinions on EMI expansion, many HEIs are expanding the proportions of EMI course in their curricula. It is necessary to conduct more detailed investigation on the phenomena of EMI expansion in HEIs in Korea.

Through the execution of EMI policy at the tertiary level, the Korean government anticipated that 1) many foreign students will in-pour into domestic higher education markets, 2) the competitive power of Korean universities will go up, and consequently, 3) the outflow of Korean students into foreign universities will lower.

Table 2-2
Proportions of foreign professor, foreign student in diploma program, and exchange student at the 37 universities during the past 5 years (2007-2011)
: Retrieved from JEDI (http://jedi.re.kr/)
Table 2-2 reveals that the transition of the proportions of foreign professor, foreign student in diploma program, and exchange student during the past 2007-2011. First, in the section of foreign professor, the proportion of foreign professors slightly rose from 4.99% in 2007 to 6.93% in 2011. One interesting fact to consider in the section is the drop between 2008 and 2009. The increased proportion of foreign professor in 2008 reversely declined in 2009. Why did this drop happen? It can be assumed that the newly hired foreign professors for the increased EMI classes might have the problems to administer EMI classes and as a result, the professors failed to renew their contracts. This result implies that to recruit foreign professors for EMI class is not an easy administration.

Compared to the increased proportions of opened EMI courses during past 2007-2011 (5.59% in 2007 to 17.14% in 2011), the growth of foreign professor was relatively low (4.99% in 2007 to 6.93% in 2011). This difference implies that the newly opened EMI courses are being administered by Korean professors.

In the sections of foreign students in diploma program and exchange student, the growths were slow. Unlike the anticipation of the Korean government that more international students can be attracted into the domestic education fields through the implementation of EMI policy, the effect of EMI implementation was sluggish.
Based on the fact above, it is certain that most EMI courses are mainly administered by Korean professors and the students in EMI classes are mostly Korean students. Eventually, the studies on EMI implementation should be focused on Korean EMI professors and Korean students and the conditions and considerations for more effective EMI implementation should reflect the current EMI context.

2.1.2 Concepts and Characteristics of Teaching English through English (TETE)

Since the emphasis on English communicative competence in the 7\textsuperscript{th} educational curriculum, Korea MOE has recommended the TETE approach to the secondary education field and even in elementary school class, the use of English has started in 2001 (Moon & Lee, 2002).

Proposed as an effective teaching/learning method for Korean English learners to authentically improve English proficiency in EFL context, the TETE shares the similar principle with EMI approach in that to employ English as a teaching/learning medium in class is beneficial for improving the target language. To explain the concept of the TETE approach, Willis (1997) states as follows:

“Teaching English through English means speaking and using English in the classroom as often as you possibly can, for example, when organizing teaching activities or chatting to your students socially. In other words, it means establishing English as the main language of communication between your students and yourself: your students must know that it does not matter if they make mistakes when they are talking or they fail to understand every word that you say.”

\footnote{Korean Ministry of Education has administered government-driven and top-down National Education curriculum. The main feature of the 7\textsuperscript{th} educational curriculum (2000) in English subject is the emphasis on enhancing communicative competence.}
As manifested in Willis’ utterance, the purpose of the TETE is to increase the frequency of the exposure to English in classroom when teaching English. Not only teacher’s utterance and instruction, but interaction between teacher and students, if possible, all language utterances comprising the entire course are based on the use of English. As the purpose of the TETE is to increase the opportunity to use the target language, errors and mistakes that students and teacher make in the class are not on serious consideration. Accordingly, the TETE approach mainly focuses on the development of the spoken language skills such as listening and speaking.

In the aspect of the target language use during class time for more effective teaching/learning English, the TETE approach is supported by several theories concerning second language/foreign language acquisition. Krashen’s Input Hypothesis (1981) states that language input plays an important role in inducing the target language acquisition. Krashen distinguishes language acquisition and language learning and emphasizes on frequent exposure to the target language for natural acquisition like the first language acquisition. Swain (2005) underlines comprehensible output as important as input. In the aspect that it is important to increase language input and output in order to effectively learn the target language, the TETE approach corresponds with the concepts of Krashen and Swain.

Second language (L2) learners often experience the linguistic gap between what they want to say and what they can say. This gap can be seen as the difference between receptive language input and productive language output and this dissimilarity results in many linguistic difficulties that L2 learners experience in speaking and writing in the
target language. By using the target language as a means of interaction, learners are naturally immersed in an authentic environment (Johnson, 1995).

In the national English curriculum in Korea, the TETE policy clarifies definite the directions of English education as follows (Ministry of Education and Human Resource Development, 2006):

1. English education stresses on the significance of daily English.
2. For learning better communicative competence, spoken forms of English should be given more frequently.
3. More emphasis should be placed on course activities and task-based learning.
   In the process of performing course activities, English teachers should provide students with an environment where students can learn English in natural way.
4. English teachers should design more accurate and specific achievement criteria to assess students’ English ability.
5. English teachers should prepare the appropriate studying environment for each level.

In the directions above, the purpose of the TETE implementation is clarified: improvement of English communicative competence based on the natural use of English. For more frequent use of the target language, the directions recommend to employ the various types of course activities and tasks which the language learners can/should participate in. On the basis of understanding the concepts and characteristics of the TETE approach, the next section will explore the theoretical foundations of EMI approach.
2.2 Theoretical Foundations of EMI approach

EMI approach is employed at the tertiary level in Korea. The purposes of EMI approach are simultaneously to learn academic content and to improve English skills. EMI approach aims at the natural acquisition of the target language in the process of teaching/learning academic content. The language used in EMI class is not general, but specific and academic. The language in EMI course is cognitively demanding and context-reduced. Accordingly, EMI approach shares several noticeable features from some other language teaching/learning approaches: CBI, ESP, and CALP.

2.2.1 Content-based Instruction (CBI)

In company with the growing necessity for English proficiency, the various studies on ESL/EFL teaching have proliferated. Many researchers have consequently focused on the effective teaching approaches and their attentions have been shifted to the content that is dealt in language courses (Jourdenais & Shaw, 2005).

As the previous teaching approaches and methods have dealt with English itself as the purpose of teaching, the general and unspecific purpose of language teaching has been criticized as ineffective in both motivating students and improving the effect of English teaching (Stryker & Leaver, 1997). For English learners’ motivation on language learning, the use of the content available to capture language learners’ interests can stimulate language learners to more concentrate on the language teaching and this results in the successful target language development.
2.2.1.1 Definition and Classification of CBI

ESL/EFL educators have devoted scholarly attention on the integration of language and content and the various types of teaching approaches have been devised under the name of CBI (Met, 1999). CBI as an umbrella term signifies a teaching approach to integrating content instruction and language instruction, but in the definition of ‘Content’, scholars have different stances. Crandall and Tucker (1990) restrict content to ‘academic subject matter’ whereas Genesee (1994) admits any topic or theme that is not related academic content. Met (1999) delineates the features of ‘content’ in CBI as follows:

“Content in content-based programs represents material that is cognitively engaging and demanding for the learner, and is material that extends beyond the target language or target culture”.

Met (1999) probes the various types of CBI programs and proposes the concept of a continuum of content and language integration. The continuum is divided into two teaching purposes: Which is the main purpose of the teaching, content or language?

<table>
<thead>
<tr>
<th>Content-Driven</th>
<th>Language-Driven</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Content is taught in L2.</td>
<td>• Content is used to learn L2.</td>
</tr>
<tr>
<td>• Content learning is priority.</td>
<td>• Language learning is priority.</td>
</tr>
<tr>
<td>• Language learning is secondary.</td>
<td>• Content learning is incidental.</td>
</tr>
<tr>
<td>• Content objectives are determined by course goals or curriculum.</td>
<td>• Language objectives are determined by L2 course goals or curriculum.</td>
</tr>
<tr>
<td>• Teachers must select language objectives.</td>
<td>• Students are evaluated on content to</td>
</tr>
</tbody>
</table>
Students are evaluated by mastery on content. • Students are evaluated on language skills/proficiency.

**Figure 2-1** Comparison of Content-driven and Language-driven in CBI program (Met, 1999)

As presented above in Figure 2-1, in case of content-driven CBI program, the primary purpose of the program is to learn content. Teachers in the program must select language objectives and students are assessed on content mastery. On the other hand, in case of language-driven CBI program, content is just used to teach the target language. Language development is priority and content learning is the by-product in the process of language learning. In the program, students are assessed on language proficiency.

Through the recognition of the two concepts, content-driven and language-driven, Met (1999) devises a continuum to categorize many CBI programs that have been implemented in many places under the various names. The continuum categorizes the various CBI-related programs and models according to the characteristics of each program or model.

<table>
<thead>
<tr>
<th>Content-Driven</th>
<th>Language-Driven</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total immersion</td>
<td>Language classes with</td>
</tr>
<tr>
<td>Partial Immersion</td>
<td>frequent use of content for</td>
</tr>
<tr>
<td>Sheltered Course</td>
<td>language practice</td>
</tr>
<tr>
<td>Adjunct Model</td>
<td></td>
</tr>
<tr>
<td>Theme-Based Courses</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 2-2** A Continuum of Content and Language Integration Program (Met, 1999)
In Met’s continuum, a CBI program whose focus is entirely centered to learn content is characterized as content-driven. On the contrary, the case that main purpose of a CBI program is to learn the target language skills is described as language-driven.

In immersion program recognized as a typical CBI approach based on content-driven way, language learners are taught entirely in the target language and the purpose of the program is to learn content. A representative example of immersion program is the immersion program conducted in Quebec, Canada. In the program, students were taught subject matter in the target language, or English. As all academic school subjects are delivered in the target language in immersion program, the primary purpose of the program is to learn academic content and language learning incidentally happens in the process of learning content (Swain & Johnson, 1997). According to the degree of the proportion to use the immersion method in entire curriculum, immersion program is divided into total immersion and partial immersion.

In Met’s continuum, the focus of CBI program shifts from content-driven to language-driven to the right. In sheltered course next to immersion program, content instructor specially designs the subject content with the aim of helping students understand the content (Brinton, Snow, & Wesche, 1989). Sheltered course is primarily conducted in L2 context. The learners in sheltered courses are separated from the native learners and the instructor in the course adjusts the target language at understandable level for non-native students. Sheltered course is characterized by the contextualization of subject matter, the use of visual aid, modified texts and assignments, and etc.

In adjunct course, students are enrolled into two courses: content class and language class (Brinton et al., 1989). Adjunct course puts the focus equally on both
content learning and language development. Therefore, students in the course are required to acquire subject content and simultaneously to achieve academic language proficiency (Met, 1999). The responsibility for students’ learning is devolved to both language teacher and content teacher and the evaluations for the subject matter mastery and the target language proficiency development are separately administered.

Theme-based instruction is much closer to language-driven way than adjunct course. Met (1999) expresses the main goal of theme-based instruction is to develop the target language skills. The reason to be called theme-based is that the selection of the themes used in the instruction is decided for the purpose of language development. Unlike sheltered course taught by content instructor and adjunct model lectured by both content instructor and language instructor, theme-based instruction is conducted by language instructor. The assessment for student’s achievement is confined to the target language development. Stoller and Grabe (1997) assert that all CBI instructions are theme-based. Given the selection of themes, it is valid to recognize theme-based instruction and other CBI programs as different one. In theme-based instruction, the selection of theme depends on the development of the target language whereas the selection of theme in other CBI programs follows the aimed goal for the mastery of academic content.

2.2.1.2 Theories and instructional principles for CBI adoption in ESL/EFL context

CBI adoption is supported by Krashen’s theory (1981, 1982). Krashen hypothesizes that language acquisition is achieved through meaningful and
understandable input. Meaningful input helps the learners understand the target language and increases the opportunity for the learners to use and practice the language skills that they learned. Meaningful input decreases the anxiety of language learners and it is helpful to learn the new language. Krashen posits the dichotomy between ‘acquisition’ and ‘learning’. The former happens in all native language acquisitions whereas the latter is accomplished only in the case that language learners pay direct attention to the target language.

Larsen-Freeman (2000) specifies the instructional principles of CBI programs. In CBI approach, the teacher should clarify that course content is employed for the target language teaching. For the motivation of language learning, teacher should impress students with the relevance of language use. Teaching should be based on students’ previous experience. Teacher should help students say what they want to say. For more effective language learning, teacher should use informative content that interests students. For easier acquisition of vocabulary, contextual clues should be helpful to convey meaning. When dealing with authentic subject matter, teacher should give students language supports to ensure students to comprehend.

Larsen-Freeman (2000) also states that the students in the class delivered in non-native language need a great deal of supports for understanding subject matter. Appropriate class materials should be used in CBI approach such as visual aids and realia to promote students’ understanding. De Avila and Duncan (1984) report that the use of these materials can help students with low level of language proficiency to more actively participate in the class activities. For example, the teacher that deals with the new concepts in mathematics can clarify and reinforce the mathematical meanings by using
graphics and figures. Their research results reveal that even students with low level of English proficiency can learn the knowledge of mathematics and English skills when they are led to participated in the interactive class activities.

2.2.1.3 Concepts of content and language integrated learning (CLIL)

While CBI teaching approach was getting more attention in the United States, fairly equivalent attempts to teach a new language as L2 were made in several European countries. On the basis of Immersion program’s success in Canada, the various programs and approaches related to the principles of the immersion program were developed under the name of CLIL\(^9\) as an umbrella term.

Likewise other countries around the world, European countries have recognized the consequence of English proficiency and English ability beyond casual communication has been needed in the specific situations such as business filed and academia. The original purpose of CLIL approach was to learn the languages of other EU countries, but in the age of globalization and internationalization, English was recognized as the most urgent target language to be dealt in CLIL programs. Scholars such as Graddol (2006) and Greenall (2006) mention English as an international language (EIL) and recognize CLIL as the part of the trend of EIL. According to Graddol (2006) English is recognized not as a subject in curriculum, but as a generic social ability like reading, writing, and math.

\(^9\) CLIL is mentioned as an alternative term for EMI and the term is commonly used in European countries (Stoller, 2004).
The main assumption for language learning in CLIL approach is the exposure to the target language use as well as the increase of learning motivation (Pavesi et al., 2001). Research on L2 acquisition has revealed that substantial exposure to the L2 is necessary to ensure the achievement of L2. L2 learners need to be exposed to natural language use within an interactive context.

CLIL programs call for an interactive teaching style. Students have more opportunities to verbally use the target language by interacting with the teacher and other students in the L2. Students can try out what they know of the target language. When using the L2 in order to understand and learn subject matter, a wide range of cognitive processes are activated in the L2 like in L1.

CLIL relies on intrinsic motivation. The learners are involved in the interesting and meaningful activities while using the language. CLIL provides the enough opportunities for incidental language learning. Incidental language learning has been considered as very effective, deep, and long-lasting (Pavesi et al., 2001). Incidental language learning positively complements the intentional language learning which typically occurs in traditional language classroom.

According to Coyle (1999), there is 4Cs framework for effective designing CLIL type of lesson: content, communication, cognition, and culture. The 4Cs framework explains integrating content learning (Content and Cognition) and language learning (Communication and Culture). Coyle (1999) explains the function of 4Cs framework as follows:

It is through progression in knowledge, skills and understanding of the content, engagement in associated cognitive processing, interaction in the communicative context, developing appropriate language knowledge and skills as
well as acquiring a deepening intercultural awareness through the positioning of self and ‘otherness’, that effective CLIL takes place.

Coyle (2007) adds the explanation on 4Cs framework. The 4Cs framework emphasizes on the interrelationship between content (subject matter), communication (language), cognition (learning and thinking), and culture (social awareness of self and ‘otherness’). It takes account of ‘integration’ on different levels: learning (content and cognition), language learning (communication and cultures) and intercultural experiences.

2.2.1.4 Relation between CBI approach and EMI implementation in Korea

As shown in the previous section, CBI approach is divided into 2 categories according to teaching purpose: content-driven and language-driven. Given the current EMI implementation at the tertiary level in Korea, where is EMI practice in Korea placed in Met’s Continuum of Content and Language Integration Program? And what characteristics of CBI approach should be considered in order to effectively implement EMI in Korea as EFL context?

The primary purpose of the current EMI implementation in Korea is to teach students academic major content. In EMI course, English proficiency development is considered as the by-product of content learning. Also, most EMI courses are taught by Korean professor alone and there is no additional language program as a supplementary course for EMI course. Therefore, current EMI course in Korea can be placed in the middle of sheltered course and adjunct model in the continuum in Met’s model.
The features that Korean EMI professor should pay attention to are as follows:

1. Professor in EMI class should specially design subject content.
2. Professor in EMI class should make the target language level comprehensible for Korean students.
3. Professor in EMI class should employ visual aids, modified texts, assignments, and tasks tailored to EMI approach in order to help students better understand the course content.
4. Professor in EMI class should conduct the course, based on students’ previous background knowledge.
5. Professor in EMI class should employ the interactional course activities in order to make sure that students develop English ability.

### 2.2.2 English for Specific Purposes (ESP) and English for Academic Purposes (EAP)

The emergence of English for Specific Purposes (ESP) is based on the request of the various and specific needs of English learners across all situations. It is generally believed that the systematic approaches to Language for Specific Purposes (LSP) were materialized during the 1960s and 1970s (Dudley-Evans & St. John, 1998). At that time, English occupied the most influential status as a lingua franca and became the necessary medium for communication and learning. Diverse English learners with different and specific purposes have requested more specified English lessons tailored to their needs.

The distinction between English for General Purposes (EGP) and ESP is fundamentally based on the recognition and reflection of language learners’ needs.
(Dudley-Evans & St. John, 1998; Strevens, 1988). Reversely speaking, all ESP programs should be based on the analysis of the specific needs of the individual learners. Swales (2000) mentions that Halliday, McIntosh, and Strevens (1964) first revealed the necessity for the research on language education with specific purposes and since then, ESP took its place in the field of applied linguistics as an independent domain.

As manifested in the name of ESP, the purpose of ESP approach is to meet the specific needs of English learners in specific contexts. As a result, the analysis of language learners’ needs is the first considered condition that educators in ESP programs should consider. In accordance with the results of the needs analysis, the educators should make up a syllabus, design program activities, and develop the textbook used in the course.

2.2.2.1 Classification of ESP

The explanation of ESP classification is materialized by Hutchinson and Waters (1987).
As Hutchinson and Waters identified, the fundamental purpose of English teaching is largely based on two purposes: for learning something and for communication with others. Hutchinson and Waters’ ELT model divides English teaching into two sub-categories: English for General Purposes (EGP) and English for Specific Purposes (ESP). On the basis of ESL/EFL context, English teaching also has two main purposes: EGP and ESP. In the case of ESP in ESL/EFL context, Hutchinson and Waters divide English teaching field into three sub-categories: English for Science and Technology (EST), English for Business and Economics (EBE), and English for Social Science (ESS). In each field, the purpose of English teaching is divided into two parts: English for Academic Purposes (EAP) and English for Occupational Purposes (EOP).

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10 In the entire form of Hutchinson and Waters’ model, English is one of all languages and all the cases are divided into 3 categories: native language, second language, and foreign language. As this research mainly focuses on English as a foreign language, the researcher mainly focuses on ESL/EFL case. Therefore, the original model was simplified.
The point of Hutchinson and Waters’ description is to recognize that all purposes of English teaching are specified in accordance with English learners’ specific needs. In other words, according to specific purposes that English learners aim at, English teaching should be identified as the separate cases and the focus of English teaching should be differently placed according to students’ needs. Therefore, the purpose of ESP is recognized as differentiated from English learning for academic situation (EAP) to English learning for occupation situation (EOP). As a result, English teaching in each case should be differently conducted in attempt to meet the various needs.

2.2.2.2 Characteristics of ESP

Hutchinson and Waters (1987) feature the characteristics of ESP as follows:

1. ESP is not a matter of teaching specialized varieties of English.

2. ESP is not just a matter of related words and grammars such as science words and grammar for scientists and hotel words and grammar for hotel staff.

3. ESP is not different from any other form of language teaching, in that it should be based on effective and efficient learning principles. (p.18)

As presented above, Hutchinson and Waters adopt a passive stand in defining ESP’s characteristics. Basically, it is not distinct to classify English teaching into EGP or ESP. What is apparent is that ESP does not simply signify teaching specific English forms such as vocabularies and expressions that are frequently used in the specific situations.
For defining ESP concepts, Dudley-Evans and St. John (1998) employ 3 absolute and 4 variable characteristics of ESP.

A. Absolute Characteristics
1. ESP is designed to meet specific needs of English learners.
2. ESP utilizes the underlying methodologies and activities of the disciplines that it serves.
3. ESP is centered on the language (grammar, lexis, and register), skills, discourses, and genre approaches.

B. Variable Characteristics
1. ESP may be related to or be designed for specific disciplines.
2. ESP may use a different methodology in specific teaching situation unlike the methodology of general English teaching.
3. ESP is likely to be designed for adult language learners, either at the tertiary level of institutions or in professional work situations. It could, however, be used for learners at secondary school level.
4. ESP is generally designed for the *intermediate* or *advanced* level of students. Most ESP courses assume basic knowledge of English system, but it can be used with beginners. (p.5)

In order to supplement Strevens’ explanation with reference to the characteristics of ESP, Dudley-Evans and St. John attempt to limit a range of application of ESP program to intermediate or advanced level of adult language learners. Robinson (1991) also adds the degree of students’ expertise on the subject in variable characteristics of
ESP. Robinson recognizes that academic background knowledge on major subject affects the effectiveness of ESP course.

Strevens (1988) mentions that ESP is not taught in the pattern of any predetermined methodology. In ESP program, language instructors should detect students’ target and situational needs through the various analyses of students. ESP is interrelated with many other fields of research within applied linguistics. Swales (2000) expresses the close relation between ESP and pragmatics, language assessment, and communicative language teaching.

Robinson (1991) materializes the characteristics of ESP as follows: goal-directed based on a needs analysis, clearly specified time period for the course, adult students who are not beginner level of English proficiency, specialist language, and specialized activities.

2.2.2.3 Various approaches to identifying Students’ Needs

As described above, the salient feature of distinction between EGP and ESP is the recognition of language learners’ needs for English learning. Both Strevens (1988) and Dudley-Evans and St. John (1998) assign the top priority in defining ESP and assert that all ESP programs should begin with analyzing the specific needs of the language learners.

According to West (1997) Target-Situation analysis is conducted through investigating 1) which language the learners want to learn, 2) what language skills the learners want to learn, and 3) what kinds of situation, function, or tasks the learners want
to learn. On the other hand, Present Situation analysis is performed to identify the level of the target language development of the learners at the beginning of ESP program.

Hutchinson and Waters (1987) advocate a learning-centered approach in ESP needs analysis. They distinguish the concepts of ‘learner-centeredness’ from ‘learning-centeredness’. Learner-centeredness implies that learning is totally determined and controlled by the learners themselves whereas learning-centeredness signifies that learning is a process of negotiation between the learner and the learning environment. Hutchinson and Waters (1987) explain the importance of learning-centeredness approach like this:

“Language learning in ESP should be directed toward the more comprehensive learning-centered concept rather than the narrower learner-centeredness.”

Strategy analysis focuses on the methodology employed in ESP program. This analysis pays attention to preferred learning styles and strategies of the learners. Hutchinson and Waters assert that ESP instructors should implement the program in an attempt to encourage the learners to utilize their preferred learning styles and strategies in order to reduce the gap between the language skills that the learner wants to develop and the student’s current level of language proficiency.

Means analysis is designed to detect the various constraints in ESP learning: cultural attitudes, resources, materials, equipment, and methods. The purpose of Means analysis is to make ESP course more effective (Jordan, 1997). West (1997) mentions four domains in Means analysis of ESP program: 1) classroom culture/learner factors: what is or is not possible within a particular educational contexts, 2) staff profiles/teacher profiles: what is or is not possible with the staff available, considering numbers, language
level, and training, 3) status of language teaching profiles: what is or is not possible, given the considering timetable and resource allocation, etc., and 4) change agents/change management: an assessment of what innovations are necessary or possible in order to establish an effective ESP program.

### 2.2.2.4 English for Academic Purposes (EAP)

In Figure 2-3 of Hutchinson and Waters’ ELT model (1987), the purpose of ESP is divided into two parts: English for academic purposes (EAP) and English for occupational purposes (EOP). EAP as one of the two main branches of ESP is normally recognized as English with the purpose of assisting learners’ studying in English (Flowerdew & Peacock, 2001; Jordan, 1997). In this sense, Hyland (2006) defines the range of EAP as all academic communicative practices such as:

1. Pre-tertiary, undergraduate and postgraduate teaching (from the design of class materials to lectures and class tasks)
2. Classroom interactions (from teacher feedback to tutorials and seminar discussions)
3. Research genres (from journal articles to conference papers and grant proposals)
4. Student writing (from essays to examination papers and graduate theses)
5. Administrative practice (from course documents to doctoral oral defenses)

Jordan (1997) divides EAP into two more detailed sub-categories: English for General Academic Purposes (EGAP) and English for Specific Academic Purposes (ESAP). The distinction between EGAP and ESAP is clearly expressed by Dudley-Evans and St. John (1998). EGAP isolates the skills associated with study activities such as 1)}
listening to lectures, 2) participating in supervisions, seminar and tutorials, 3) reading textbooks, articles, and other reading materials, 4) and writing essays, examination answers, dissertations and reports.

On the other hand, ESAP adopts a developmental role by showing how students can transfer the skills they have learned in the EGAP courses to the understanding of their actual lectures or reading texts, or in writing the essays and reports required by the department (pp.41-42).

2.2.2.5 Relation between ESP approach and EMI implementation in Korea

As mentioned in the above sections, ESP approach is English teaching/learning with specific purposes. The purpose of language teaching/learning in ESP is not to make social interaction based on the casual conversation but to accomplish specific purposes such as academic purpose and occupational purpose. Given the purpose of English learning, ESP approach and EMI implementation in Korea share the similar instructional conditions and features. In order to more effectively administer EMI policy, it is necessary to fully grasp the characteristics and requirements of ESP approach. Through the salient features of ESP approach, the features of EMI approach that Korean EMI professors should pay more attention to are as follows:

1. Professor in EMI class should identify the needs of students in EMI class. The professor should explicitly identify what kinds of English skills the students want to learn and what skills the students need to learn in order to achieve the class goals.
2. Professor in EMI class should devise specific syllabus, design program activities, and develop the textbook tailored to the purpose of the course. This should be based on the analysis of students’ specific needs.

3. Professor in EMI class should consider the characteristics of adult language learner. Originally, the language approach based on ESP was developed for adult language learners. Also, the English proficiency level of the learners in ESP course should be intermediate or advanced.

4. Professor in EMI class should devise and employ the teaching methodology different from the one used in general English course. The teaching based on ESP approach should not be conducted on the basis of any predetermined methodology.

5. Professor in EMI class should understand that academic background knowledge can be the critical factor to influence the effect of the approach.

2.2.3 Basic Interpersonal Communicative Skills (BICS) and Cognitive Academic Language Proficiency (CALP)

The purposes of EMI approach are to learn academic content and to improve the target language (English) ability simultaneously. For the sake of achieving the two goals, it is necessary for university students to possess the appropriate level of English ability to decode and comprehend academic lecture content delivered in English. In other words, only students who have already attained a certain level of English proficiency can effectively take EMI course and they can learn academic knowledge in EMI course. It is
somewhat ironic that student must attain the certain level of English proficiency to take the course whose purpose is to improve English proficiency.

This section will explore the concepts of English proficiency based on Cummins’ distinction between Basic Interpersonal Communicative Skills (BICS) and Cognitive Academic Language Proficiency (CALP).

2.2.3.1 What are BICS and CALP?

Bilingual researchers and ESL researchers frequently have mentioned two types of English proficiency: BICS and CALP. The two terms coined by Cummins show the necessity for specifying the concept of language proficiency (Cummins, 1979). Through the extensive research in Quebec, Cummins notices that children who are fluent and proficient in the dialogues of social situations may not catch up with the level of ordinary native peer students in the utterances of academic, context-reduced, and cognitive situations (Cummins, 1980).

In the study of immigrant children, Cummins witnesses that some children were fully fluent in casual conversation, but they were not prepared to 1) take the academic courses and 2) intake the content of the course. The children recorded very low level of academic content achievement and due to the low scores, they was identified as having low cognitive ability and intelligence. In the similar research on the distinction of language proficiency, Vincent (1996) reported that students can attain BICS as native speakers in the immersion contexts within 2-3 years. However, Vincent asserts that the fluency in BICS doesn’t guarantee the fluency in CALP.
The misunderstandings about language proficiency also happened in the United States. In the 1980s and 1990s many non-native students in bilingual programs and ESL programs were transferred to the mainstream English-only programs, on the basis of the fact that they showed enough English fluency in casual conversations. With the “not-prepared” status, the students who were enrolled into the English-only program experienced serious academic difficulties due to the deficient language proficiency necessary for learning academic content. As a result, the students were regarded as academically problematic and retarded.

Gauging a student’s language proficiency based on the fluency in social conversations might mislead language teachers into judging that the student is prepared to take academic courses with native speakers, leaving the possibility that the student might have problems in performing academic tasks. For the reason above, Cummins identified the necessity for distinction of language proficiency and devised the concepts of BICS and CALP.

### 2.2.3.2 Distinction between BICS and CALP

Basic interpersonal communicative skills (BICS) are the language ability used in social contexts such as daily conversation with friends and social interactions with other people around us. BICS is related to the fluency in casual conversation and includes the mastery of pronunciation, vocabulary, and grammar tailored to casual conversations with other people. Most language learners normally acquire conversational (general) language skills before they develop more specific, conceptual, and academic proficiency.
Figure 2-4 Distinction between BICS and CALP

The initial BICS/CALP distinction was elaborated into two intersecting continua (Cummins, 1981) that highlighted the range of cognitive demands and contextual support involved in particular language tasks or activities (context-embedded/context-reduced and cognitively undemanding/cognitively demanding). Social interaction is usually context-embedded (Cummins, 1980). It is not cognitively demanding and the language in social interaction is not specialized. Therefore, it is generally said that it just takes 6 months to 2 years to master BICS in immersion situation up to the level of native speakers (Collier, 1987; Cummins, 1980).

Cognitive academic language proficiency (CALP) is the language proficiency usually used in the academic circumstances like school setting. CALP basically indicates
the language ability to learn formal academic content and encompasses whole language skills: reading, listening, speaking, and writing related to academic content.

As indispensable requisites for successful school works it takes more time to master CALP than BICS. It takes 5-7 years to master CALP up to the standard of native speakers (Collier, 1987; Cummins, 1980). Thomas and Collier (1995) mention that it may take 7-10 years for non-native English learners to reach up to CALP’s level of native speakers.

The exaggerated dichotomous distinction of language proficiency through the concept of BICS/CALP is criticized as somewhat imprecise and value-laden (Baker, 1993). Given the multi-dimensional features of language proficiency, to divide language proficiency into two concepts is not appropriate. However, in spite of the criticism of the distinction, it is beneficial to identify the difference of language abilities that Cummins called as BICS and CALP for effective EMI implementation. It is definite that BICS is more literal language ability whereas CALP is more abstract and specific proficiency. For example, the word “skim” can be differently explained by BICS and CALP. In the sense of BICS, the word “skim” is “to glide on a surface” whereas “to read quickly for identifying a main point” in the sense of CALP. The same word can be used as a different meaning in each specific situation. The understanding of the language proficiencies that are frequently needed in specific situation, for example academic situation is necessary for the successful interaction and communication with other people.
2.2.3.3 Relation between BICS/CALP and EMI implementation in Korea

The students in EMI course should possess CALP along with BICS. EMI course has the main purpose to learn academic content and the language used in the course includes the features of CALP. Therefore, in order to take EMI course, students should possess a certain level of CALP. Given the current figures of EMI implementation in Korea, Korean students are not ready to take EMI course in the aspect of CALP.

In order to conduct effective EMI course, the features of ESP approach that Korean professors should pay more attention to are as follows:

1. Professor in EMI class should assure whether the students in EMI class attain the appropriate level of English proficiency that is necessary to take EMI class.

2. A student who doesn’t have any difficulty interacting with others in daily casual situations might have a serious problem to take EMI course. Therefore, the professor in EMI class should conduct the suitable, in other words, comprehensible level of academic lectures and adjust the lecture speed and vocabulary level in order to help students understand the content.

3. As the language proficiency that is frequently needed in EMI class has a context-reduced and cognitively demanding feature, EMI professor should utilize additional and supplementary course materials for better understanding of the content.

4. For the reason that it is substantial amount of time to develop the language proficiency that is needed for taking EMI course, EMI professor should
develop continuous and long-term teaching curriculum compatible with other EMI classes.

2.3 Previous studies on EMI implementation in Korea

Since the necessity for the use of English as a medium of instruction at higher education level in Korea was driven by political and social demands, a small number of universities have made attempts to open EMI courses in their curricula (Kim, 2011) and EMI-related studies have been conducted. The primary attention of the initial studies was placed on the feasibility of EMI implementation at the level of higher education. Most of the studies expressed concerns about two matters: 1) the lack of professors who are capable of teaching academic content in English and 2) students’ English ability to digest academic lectures delivered in English. On the basis of the concerns, the effects of EMI approach on content learning and English proficiency development were doubted and the concerns led to fierce arguments over the implementation of EMI approach at the tertiary level. However, in spite of the opposition to EMI implementation, as described in chapter 1, the implementation of EMI approach was recognized as inevitable educational trends and the existing studies are mainly focusing on finding the conditions and considerations to improve the effect of EMI approach.

The following section, in accordance with the purpose of this study, will first identify the variables mentioned in or inferred from the previous studies as the variables that influence the effects of EMI approach on content learning and English proficiency development through literature reviews.
2.3.1 Variables mentioned in the previous studies as the factor to influence the effects of EMI approach at the tertiary level in Korea

As Smith (2004) asserts that in spite of several instructional problems, the benefits from EMI implementation far outweigh the losses, the academic courses based on EMI approach are recognized as the best way for ESL/EFL learners to improve their English skills.

The variables to influence the effects of EMI approach can be divided into 3 factors: student factor, professor factor, and course factor (Song, 2008). Student factor indicates the variables pertaining to student’s personal features. The following variables can be included as the examples of student factor: major of student, student year (what year is a student in), gender, current English ability, the experience of staying in an English-speaking country, the number of EMI courses taken, the reason to take EMI-based course, and so on. In professor factor as in student factors, the following variables can be included: professor’s gender, age, major, the experience to conduct EMI-based course, English proficiency, professor’s ethnicity, and so on. Course factor designates all the variables except for the variables of student variables and professor variables. Course factor can be the internal/external variables that comprise the whole process of teaching/learning in EMI course. The following variables can be recognized as course factor: class size (the number of students in one class), types of course activities that students participate in (presentation, group discussion, and so on), teaching style (lecture-style or discussion-style), satisfaction with assessment, the frequency of interaction/feedback, syllabus, students’ course evaluation results, and so on.
The variables that influence the effects of EMI approach have been identified through the previous studies in 2 ways: direct way and indirect way. In a direct way, the main purpose of the studies was to discover the variables and the researchers in direct studies mainly compare the effects of EMI approach according to the difference of the variables. Accordingly, the results of the direct studies explicitly manifested what variables influenced the effects of EMI approach.

In indirect study, on the other hand, researchers designed the studies in specific situations and the purpose of the studies wasn’t to find out the variables to influence EMI effects. In a specific situation, EMI related-study or experiment was conducted and the researcher described and analyzed the results of the study. Through the results, the researcher concluded that in some specific conditions, the effects of EMI approach were positive or negative and the specific conditions can be recognized as the variables that influences the effects of EMI approach.

In the following section, the variables that influence the effect of EMI approach will be identified and inferred through the reviews of the previous studies on EMI implementation in Korea.

2.3.2 Variables pertaining to Student Factor

The variables pertaining to student factor that influence EMI effects are normally represented by student year, student’s English ability, the reason to take EMI course, the experience of staying in an English-speaking country, and student’s major.
Among the variables related to student factor, the most predictable variable that influences the effect of EMI approach is student’s English ability. In EMI course, the instructional medium is English and student’s English ability is the critical element to determine the effect of EMI approach. The point to contemplate is the association between student’s English ability and EMI effect on academic content learning. More specifically, the reasonable amount of the content that students in EMI course have learned should be guaranteed, compared to the amount in KMI course that deals with the same academic content. The deficient English ability inevitably results in the difficulty grasping the content of EMI courses.

The student year variable means what year a student is in. The student year variable exhibits the difference of EMI effect according to student year. The general assumption for the difference of EMI effects is that the upper-grade students such as junior and senior will present more positive reaction to EMI effect because they have more background knowledge and information on their major content. As upper-grade students have taken more academic courses even though the courses were conducted in Korean, they might learn more academic knowledge related to their major.

Park (2006) stated that lower-grade students such as freshman and sophomore showed low understanding of EMI lecture due to the lack of academic knowledge related to the discipline whereas junior and senior students reflected comparatively high understanding of EMI lecture even though they don’t possess higher level of English proficiency than lower-grade students. The familiarity for academic vocabularies and the prior knowledge for academic content, or schema, enable junior and senior students to understand EMI lecture with less trouble (Kim, 2007). On the other hand, other studies
(Byun et al., 2011; Kim et al., 2012) revealed somewhat different results from the above assumption. Based on students’ needs analysis, Kim et al. (2012) examined the associations between EMI effects and student year. The result revealed that there is a difference between student years. However, the difference doesn’t indicate that upper-grade students respond more positive reaction to the effect of EMI approach than lower-grade students. The result means that EMI effect and the order of student year are not positively correlated.

The current practice of EMI approach is conducted in two ways: voluntary and compulsory. In case of voluntary EMI course taking, the enrollment of EMI course totally depends on student’s will. In the age of globalization and internationalization, English ability is considered as the essential skill that most students have to acquire in order to get a job or to attend upper-level of school. As a result, students realize that they need to develop their English ability and the necessity leads many students to EMI course. While, compulsory EMI course taking happens due to university authority’s policy. Many universities are implementing the policy that every student should take EMI course(s) in accordance with each university’s regulation for graduation. The assigned number of EMI courses that students should take varies from 3 courses (9 credits) to 7 courses (21 credits) or even all courses (Yun, 2009). The number is getting higher and higher (Kim, 2011).

Byun et al. (2011) probed into the effectiveness of EMI approach in the manner of student opinion survey, group interview, and supplementary interview with both students and professors in EMI courses. According to the findings of the study, the researchers revealed that compulsory implementation without reference to the level of English
proficiency of both professors and students is bringing about the instructional problems to hinder the presumed advantages of EMI approach. Jin and Shin (2011) conducted the study on the influence of English competence, motivation, achievement, and self-confidence on students’ satisfaction and EMI effects. The remarkable finding of the study was that English motivation and self-confidence are more important variable to determine EMI effects and the satisfaction with EMI course than English proficiency. The result of the study revealed the importance of the emotional attitude of students and criticized the unilateral implementation of EMI policy. Shim (2010) found that voluntary enrollment and high academic achievement are the important elements to determine the success of EMI implementation. The students who took EMI course voluntarily recorded more positive response to EMI effects than the students who enrolled the course for the reasons like the requirement for graduation.

Due to English as a foreign language (EFL), most Korean students have had few opportunities to practice English that they have learned in the class. After entering university, many students have a tendency to go abroad with the aim of developing their English ability, especially English speaking and writing skill. The experience of staying abroad is usually gained during summer or winter vacation and the period of staying is from 2-3 months to even 1 year. The students who go abroad generally attend a language institute. Many students think the experience to interact with native English speakers can help them overcome the fear of English use in spoken form.

Kim et al. (2012) investigated the association between the perception of EMI effects and the experience of staying in an English-speaking country and found that the students with the experience showed more positive reaction to EMI effects than the
students without the experience. Kim (2003) reported that in the study on the effects of EMI approach, the subjects who have the experience of staying oversea showed the positive results of both academic content learning and English proficiency development.

The topic on the association between EMI effect and student’s major has been actively investigated from the beginning of EMI implementation. Kim (2008) mentions that EMI-based lecture is not always welcome across all majors, or disciplines. Kim ascertained that in Math major and Engineering major, the reaction to EMI lecture is pretty positive whereas negative in liberal arts and philosophy major. Kim added that in case of business and economy major, EMI implementation is relatively vigorous. In EMI study on Math major, Lee and Kim (2007) reported that academic achievement of students is much higher in EMI course than in KMI course. This result makes sharp contrast with general expectation for EMI course that EMI course impedes academic achievement of students. Lee and Kim also added that the students in EMI course made big progress with respect to acquiring academic English vocabularies due to more concentration on English expressions of academic content. On the other hand, they reported that there was no reasonable improvement in practical English vocabularies.

In Song’s study (2008) students majoring in engineering showed higher level of satisfaction with EMI course than the students of humanities major and social science/natural science major. Kim (2002) reported that students in English major showed positive attitude to EMI approach and Shim (2010) stated that the students in social science major expressed negative reaction to EMI lecture for content learning. Kim and Sohn (2009) described that the students in liberal arts feel higher level of satisfaction with EMI effects than the students in science and engineering major. As shown in the
above, the association between EMI effect and student’s major doesn’t show regular and fixed pattern according to the major. Therefore, it is difficult to recognize that student major variable is the critical element to determine the effect of EMI approach.

Based on the results of the above previous studies, several variables in student factor were identified as the variable to influence EMI effects.

Table 2-3 summarizes the identified variables pertaining to student factor to influence EMI effects. The identified variables will be the research variables of the study.

Table 2-3

Summary of the research variables pertaining to Student Factor
<table>
<thead>
<tr>
<th>Variables</th>
<th>Researcher</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student Year</strong></td>
<td>Park (2006); Kim (2007)</td>
<td>Freshman and Sophomore students with less background knowledge on academic content expressed more difficulties understanding course content. The effects of EMI approach vary according to student year.</td>
</tr>
<tr>
<td></td>
<td>Byun et al. (2011); Kim et al. (2012)</td>
<td></td>
</tr>
<tr>
<td><strong>English Ability</strong></td>
<td>Kim (2003); Kim et al. (2012); Hwang &amp; Ahn (2011); Kang &amp; Park (2004a); Kim (2011);</td>
<td>Higher English ability, higher degree of academic content learning</td>
</tr>
<tr>
<td><strong>Reason to take EMI course</strong></td>
<td>Shim (2010); Kim (2003); Jin &amp; Shin (2010)</td>
<td>Voluntary EMI course taking leads to more positive stance to EMI approach effects.</td>
</tr>
<tr>
<td><strong>Experience of staying in an English-speaking country</strong></td>
<td>Kim (2003); Kim et al. (2012)</td>
<td>The students with the experience of staying in an English-speaking country show more positive response to the effects of EMI approach.</td>
</tr>
<tr>
<td><strong>Major of student</strong></td>
<td>Song (2008)</td>
<td>Students majoring in engineering show more positive reaction than the students in social science and natural science major.</td>
</tr>
<tr>
<td></td>
<td>Lee &amp; Kim (2007)</td>
<td>In math major, the effect of EMI approach is higher than KMI on academic content learning.</td>
</tr>
<tr>
<td></td>
<td>Kim (2008)</td>
<td>In math and engineering major, the effects of EMI are higher than in liberal arts and philosophy major.</td>
</tr>
<tr>
<td></td>
<td>Kim (2002)</td>
<td>Students in English major show positive attitude on the effect of EMI approach.</td>
</tr>
<tr>
<td></td>
<td>Shim (2010)</td>
<td>In social science major, students reveal negative attitude to EMI effect on content learning.</td>
</tr>
<tr>
<td></td>
<td>Kim &amp; Sohn (2009)</td>
<td>Students in liberal arts reveal higher satisfaction with EMI effects than the students in science and engineering major.</td>
</tr>
</tbody>
</table>

### 2.3.3 Variables pertaining to Professor Factor

The most frequently mentioned variables pertaining to professor factor are professor’s gender, age, degree of teaching experience, English ability and etc. (Han, 2001). Most studies on the relation between the variables in professor factor and the effect of EMI approach indicate the problems of EMI courses conducted by Korean
professors. Therefore, it is necessary to investigate the relation between the ethnicity of EMI professor and EMI effects.

As a principal agent to administrate EMI course, professor factor is recognized as the most important factor to determine the effects of EMI approach (Maeng et al., 2011). However, more studies regard the interaction between professor and students (Dornyei & Murphey, 2003), professor’s belief and attitude to student’s development (Braine, 1995; Ferris & Tagg, 1996), and teaching style (Trice, 2001) as more important element to determine the success of EMI approach.

As the main research method of the study is survey method targeting students’ responses, it is hard to collect the information on professor variable such as professor’s age and degree of teaching experience. Hence, professor’s ethnicity only as professor variable will be employed. As described in the previous chapter, most EMI practices at the tertiary level in Korea are conducted by Korean professors. The comparison of EMI effects between the course by Korean professor and the course by English-native professor will inform us whether the current EMI practice by Korean professor is appropriate and valid.

The existing studies (Klaassen & Graaff, 2001; Oh & Lee, 2010) reported that in case that non-native professor conducts EMI course to non-native students, some instructional problems are brought about: 1) due to the deficient professor’s English proficiency, the amount of academic content that should be covered in one unit of class time decrease, 2) some linguistic problems in pronunciation, tone, and proficiency negatively influence students’ understanding of content, and 3) decreased interaction between professor and students triggers the obstacle to form a close rapport. Eventually,
these problems can be the reason to negatively influence academic content learning and English proficiency development. Therefore, the ethnicity of EMI professor can be a critical element to determine the success of EMI implementation.

Currently, there is few or no EMI-related study to investigate the difference of EMI effect between native-English professor and Korean professor. Shim (2012) conducted the studies on the difference of English listening development of students according to professor’s ethnicity and reported that there is no significant difference between Korean EMI professor and foreign EMI professor. However, in the respect of employing the data that were obtained for one semester, it is not reliable to generalize the result.

2.3.4 Variables pertaining to Course Factor

The variables pertaining to course factor that influence the effect of EMI approach are mainly represented by the degree of interaction, the degree of feedbacks, class size, the proportion of students’ native language use, grade and assessment, and teaching style. The interaction in EMI course occurs between a professor and students or among students. The interaction has the purpose to clarify professor’s explanation and to enhance students’ understanding of course content. However, in EMI-based course, it is generally reported that the frequency of interaction between students and EMI professor decrease and the atmosphere of the course has a tendency to be tense and inactive due to the lack of English proficiency of both EMI professor and students unlike in the lectures delivered in students’ native language (Klaassen & Graaff, 2001).
Kim and Sohn (2009) mentioned that student’s satisfaction index is highly marked when the professor in EMI course makes the effort to 1) improve student’s English ability and 2) increase the chance to interact between EMI professor and students. Kim (2002) also criticizes the less rapport between professor and students and recommends that the professor in EMI course should encourage students to participate more and interact for better effect of EMI approach. To do so, the professor should pay more attention to creating comfortable atmosphere for students to more freely interact.

Feedback in the study signifies corrective feedback that is offered to students in order to help students understand course content and to correct linguistic errors and mistakes for students’ English ability development in the middle of the course or before/after the course. Feedbacks can be provided to students’ utterances in the spoken form during the class and to students’ assignment, tasks, and even test papers.

Hong, Min, and Ham (2008) demonstrated that as the required conditions of effective EMI course operation, abundant feedbacks on the tasks and papers are required. The researchers pointed out that it is extremely demanding works for EMI professor to manage piles of students’ writing outcomes by oneself and urged systematic supports of university authority. Kang and Park (2004a) also mentioned the problem of feedback in EMI-based course. In the course, the students seldom receive corrective feedbacks for grammatical errors and inappropriate word choice for the target language development. The interesting point is that in Kang and Park’s study (2004a), EMI professors recognized that they provided enough feedbacks to students whereas students felt that they didn’t sufficient feedbacks from EMI professor. There is a definite discrepancy in satisfactory level of feedback between EMI professors and students.
Class size indicates the number of students attended in one EMI class. The relation between class size and EMI course effects were often mentioned in the previous studies (Cranton & Smith, 1986; Gage, 1961; McDaniel & Feldhusen, 1971). The reason for class size to influence EMI effects is because the frequency and the quality of interaction and feedback in EMI class are affected by class size. The previous studies recognize small class size as more effective (Jeon, 2002; Maeng et al., 2011; Hong et al., 2008). In case of the EMI course with the large number of the students, a professor in the EMI course gets to experience a difficulty offering sufficient feedbacks on students’ learning outcomes and in making enough interactions with all students. On the contrary, in case of the course with the small number of the students, the students in the course are apt to get stress and anxiety due to too much attention from a professor. Especially, in case of the student who is not accustomed to speaking and writing in English, too small class size is likely to impose heavy pressure.

Jeon (2002) investigated the reaction of university students to English-medium lecture across all disciplines. In the study, class size was proved as a powerful factor to determine the effectiveness of EMI approach. As an optimal class size for the most effective EMI implementation, Jeon approximately addressed 10-15 students in a class. The result exhibits that the large number of students in EMI course prohibits effective course operation. Maeng et al. (2011) mentions that the number should be less than 20 students in order to administer the effective EMI course management. Hong et al. (2008) consider less than 30 students as the ideal number.

The use of students’ native language (Korean) in EMI can be important element to determine the effect of EMI approach, especially in the aspect of content learning. The
students whose native language is not English frequently experience the difficulty understanding the course content delivered in English. When the students don’t grasp the content in EMI course, the professor makes several efforts to make the students understood. The professor might repeat explanation, change examples for the explanation, or slow the lecture speed. In spite of every effort of the professor, if the students still don’t understand the content, the professor gets to use students’ native language for students’ understanding of the content (Kim, 2011). Accordingly, the use of students’ native language is needed for more effective EMI implementation. If so, how much use of students’ native language is desirable for accomplishing the two purposes of EMI approach, content learning and English proficiency development simultaneously?

Lee (2010) conducted a longitudinal study on the relationship between the proportion of students’ native language use and the degree of understanding for 3 semesters. The researcher employed the results of course evaluation and survey items inquiring how differently the students in EMI class feel in understanding academic major content depending on the proportion of Korean use as additional medium of instruction. Based on the results, the researcher indicated that especially in the case that students’ English proficiency level is low, the entire use of English as an instructional medium seriously deteriorates the effect on content learning and even worse, triggers negative reaction to EMI approach. Lee (2010) asserts that the professors in EMI classes should clearly recognize the level of students’ English proficiency and they should use students’ native language as an additional medium of instruction in order to enhance students’ understanding of the content and reduce students’ emotional burden for EMI approach. Lee (2010) appends that as the proper proportion of Korean use varies according to
English level of students, the professor should make an effort to determine the suitable proportion of Korean use. The result of the study corresponds to the mention of Johnson and Swain (1994) that using native language is indispensable because native language helps both professors and students cope with problems in the middle of an EMI course. As another example for the relation between understanding of course content and the use of Korean in EMI course, Kim (2011) reported that as 60% of the students with beginner level of English proficiency and 24.6% of the students with intermediate level of English proficiency only understood the course content less than 70%, EMI professors and students prefer to employ the language of Korean as an additional medium for better comprehending of academic content. However, every researcher doesn’t agree to use of Korean for more effective EMI implementation. Kim and Sohn (2009) claimed that English-Only instruction (EOI) is a more desirable way in EMI course because the use of students’ native language prohibits students in EMI course from developing English proficiency.

The grades that students gain in EMI course are assessed by the various assessment ways. Normally, it is cliché to note that the students who gained high grade are likely to feel more satisfied with the course and to consider the approach as more effective than the students who got low grade (Cho, 2012; Cohen, 1981; Feldman, 1976; Greenwald, 1997; Kim & Sohn, 2009; Shim, 2010). In the viewpoint of student, grade can be the element to determine the effect of the approach. In order to determine students’ grade, a professor in class employs several types of assessments way in accordance with the objectives and purposes of the course.
Kim et al. (2012) reported that the students in EMI course complained the assessment way used in EMI course. Students criticized that the assessment way excessively depends on English ability. As a result, students considered that they were assessed by English ability, even though they were supposed to be assessed by the degree of academic achievement. Maeng et al. (2011) also mentioned that valid and authentic assessment should be devised and employed for students’ actual academic accomplishment for the course content.

EMI approach doesn’t simply signify the change of instructional medium from Korean to English. Song (2008) insisted that the various course activities such as group discussion and personal presentation should be included in EMI course in order to increase the opportunities for students to practice English that students learned in the course. Song mentions that traditional teaching way mainly centered on lecture method unilaterally delivered by professor limits the effect and advantage of EMI approach. Kim (2002) also reports students’ negative reactions to the use of lecture method in EMI course. In order to make EMI course more effective, Kim (2002) urged to employ the various teaching methods with supporting course materials. The employment of appropriate teaching methods is more important than English ability of professor for more effective EMI implementation (Hong et al. 2008).

As described above, the various variables in course factor were detected through the reviews of the previous studies. Especially, the use of students’ native language was identified as the inevitable method in the situation where non-English-native professor teaches academic major content to non-English-native-students. The important thing to consider is that the appropriate proportion of students’ native language use varies
depending on students’ English ability and professor in EMI course should measure students’ English ability. Especially, in case of Korean students who possess relatively high English reading and listening ability compared to English speaking and writing ability, the effort to gauge students’ English ability should be carefully made.

Table 2-4 summarizes the identified variables in course factor.

**Table 2-4**

*Summary of Variables pertaining to Course Factor*
<table>
<thead>
<tr>
<th>Variables</th>
<th>Researcher</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interaction</td>
<td>Kim &amp; Sohn (2009)</td>
<td>The efforts of a professor to increase the opportunity to interact with students lead to more satisfaction of students with the class. Professor in EMI class should make more effort to make students more ask and speak in order to enhance the effect of EMI approach.</td>
</tr>
<tr>
<td></td>
<td>Kim (2002)</td>
<td></td>
</tr>
<tr>
<td>Feedback</td>
<td>Hong et al. (2008)</td>
<td>Students consider enough feedback as the important element for effective EMI implementation.</td>
</tr>
<tr>
<td></td>
<td>Kang &amp; Park (2004a)</td>
<td>Students in EMI courses mentioned that the amount of feedbacks is lack whereas professors in EMI courses uttered that they gave enough feedbacks to students.</td>
</tr>
<tr>
<td>Class Size</td>
<td>Jeon (2002)</td>
<td>Small number of the students in a class shows more effective results. Optimal size is 10-15 in a class.</td>
</tr>
<tr>
<td></td>
<td>Maeng et al. (2011)</td>
<td>In order to increase EMI effect, the number of the students in a class should be less than 20.</td>
</tr>
<tr>
<td></td>
<td>Hong et al. (2008)</td>
<td>Less than 30 students in a class will be more effective in EMI class.</td>
</tr>
<tr>
<td>Use of students’ native language as additional medium</td>
<td>Kang &amp; Park (2004a); Kim (2011)</td>
<td>To increase the effects of EMI approach, the use of Korean should be permitted in presentation and discussion.</td>
</tr>
<tr>
<td></td>
<td>Lee (2010)</td>
<td>According to student’s English ability, the proportion of Korean use should vary.</td>
</tr>
<tr>
<td></td>
<td>Kim &amp; Sohn (2009)</td>
<td>To enhance student’s English proficiency, the use of Korean should be avoided as much as possible.</td>
</tr>
<tr>
<td>Assessment</td>
<td>Maeng et al. (2011)</td>
<td>Valid assessment should be employed. Assessment should measure the level of academic achievement, not English ability.</td>
</tr>
<tr>
<td></td>
<td>Kim et al. (2012)</td>
<td>Students in EMI course express the complaint of assessment way that largely depends on English ability.</td>
</tr>
<tr>
<td>Grade</td>
<td>Shim (2010); Kim &amp; Sohn (2009);</td>
<td>Higher grade, more positive reaction to EMI</td>
</tr>
<tr>
<td>Teaching Style</td>
<td>Song (2008)</td>
<td>Various course activities such as group discussion and presentation should be included in order to increase the understanding of students for content.</td>
</tr>
<tr>
<td></td>
<td>Kim (2002)</td>
<td>Students’ negative reactions to typical teaching styles and to lack of supporting materials</td>
</tr>
<tr>
<td></td>
<td>Hong et al. (2008)</td>
<td>Use of Appropriate teaching method for effective EMI implementation</td>
</tr>
</tbody>
</table>
2.3.5 Selection of research variables

Through the reviews of the previous studies on the variables that influence the effects of EMI approach, several variables were identified as the variable to influence EMI effects.

In student factor, student year, English ability, the reason to take EMI course, the experience of staying in an English-speaking country, and major of student were identified. Among these variables, student’s major variable will be eliminated in this study due to the reason mentioned in the previous section. In addition to the above variables, the variable named ‘the number of EMI course taken’ will be added in the student factor. EMI approach is based on the concepts of several teaching/learning approaches such as CBI, ESP, and BICS/CALP and the language frequently used in EMI classes features high level of academic vocabularies, professional patterns of writing, and academically formulated way of speaking. These features can’t be easily acquired and needs more time to attain. Hence, the number of EMI course taken variable needs to be examined as the research variable.

In professor factor, ‘the ethnicity of professor’ variable was identified and will be employed as the research variable.

In course factor, interaction, feedback, class size, the proportion of student’s native language use as an additional medium, assessment, grade, and teaching type were extracted as the research variables. Among the variables, ‘the proportion of student’s native language use’ variable will be excluded in the study as explained in the previous section. In addition to the identified variables of course factor, the variable named
‘professor’s attempt to enhance students’ English ability’ will be included. The variable indicates professor’s attempt to improve students’ English ability in order to accomplish the two purposes of EMI implementation; learning academic content and improving English ability at the same time. As mentioned, EMI approach doesn’t simply signify the change of the instructional medium from Korean to English. Professor in EMI course should balance content learning and language development. In that sense, EMI professor’s attempt to improve students’ English ability should be checked as a research variable.

The variables identified as research variables will be categorized into two types according to characteristics and features of the variable: constant variable and conditional variable. Constant variable is defined in the study as the variable that is already fixed and doesn’t change. For example, the variables such as student year, major, English ability, the experience of staying in an English-speaking country, the reason to take EMI course, professor’s ethnicity, and class size are constant variable. Constant variable doesn’t change during EMI class and the professor in the class can’t change the variable.

On the other hand, conditional variable is defined as the variable that is changeable and selective. The variables such as interaction, feedback, the proportion of student’s native language use, assessment way, teaching type are categorized into conditional variable. The professor in EMI course can change the conditional variables.

Constant variable can present the guidelines for EMI implementation. Let’s suppose that a researcher conducted EMI-related study on the association between student year and EMI effect on content learning and found the conclusion that lower-grade students showed more negative reactions to EMI course than upper-grade students.
In the above case, the variable ‘student year’ is the influential variable to determine EMI effect. With the result, the researcher suggests a guideline for effective EMI implementation that it is desirable that EMI approach should be implemented to upper-grades students for more effective results. The results from the studies on constant variable will provide practical guidelines for more effective EMI implementation.

On the other hand, conditional variable can suggest the recommendation for effective EMI-based teaching. For example, let’s suppose that a professor conducted EMI lecture with the students whose English ability is low level. The professor delivered all the lectures only in English. The students in the course responded that they felt lots of emotional anxiety for understanding academic content and 90% of the students didn’t understand the course content at all. In the above supposition, the professor can obtain the information on how EMI course should be managed in case of teaching students with low English proficiency level in the aspect of students’ native language use. The results from the studies on conditional variable will offer the principles of EMI-based learning and teaching.

In conclusion, Table 2-5 displays the variables that will be employed in the study as research variables.

**Table 2-5**

*Summary of the research variables in the study*
As shown in Table 2-5, the study will employ the total 13 variables as researcher variable. Each variable was mentioned or was inferred from the reviews of the previous studies. However, it is not reasonable to mention that all variables in Table 2-5 will influence on EMI effects. The variables were extracted from separate studies that were mostly small-scale research and each study was conducted under different experimental conditions such as different English ability of students, different teaching style, the different proportion of student’s native language use, and so on. Therefore, the above variables need to be checked under large-scale research with the various experimental conditions in order to draw general, reliable, and valid conclusion.

### 2.4 Research Questions of the Study

The research questions of the study were as follows:
1. Do the research variables in student factor influence EMI effects on CL and EPD?

2. Is there any difference on the identified influential variables when all the variables in student factor are simultaneously considered?

3. Does the research variable in professor factor influence EMI effects on CL and EPD?

4. Do the research variables in course factor influence EMI effects on CL and EPD?

5. Is there any difference on the identified influential variables when all the variables in course factor are simultaneously considered?

6. Is there any difference on the identified influential variables when all the variables in 3 factors are simultaneously considered?

7. Which variable is the most influential for EMI effects on CL and EPD?
Chapter 3

METHODOLOGY

This chapter describes the methodological design of the study. The following sections describe human subjects’ approval, research participants, research instrument, data collection, data analysis, and the limitation of the study.

3.1 Human Subjects

The researcher petitioned the Office for Research Protections at The Pennsylvania State University for permission to conduct the study and collect relevant data. Permission was granted in June 14, 2012 prior to data collection. Data for the pilot study were collected from June 16 to June 30, and after revising and editing the survey items of the pilot study, the data collection for main study was conducted from September 20 to October 10, 2012. All procedures of the survey were carried out under the consent of the participants.

3.2 Participants

The purpose of the study was to identify the variables that significantly influence the effect of EMI approach both on academic content learning and on English proficiency improvement. For the sake of fulfilling the purpose, survey research was conducted in K University located in Seoul, Korea and 902 university students responded to the survey questionnaire. Among the respondents to the questionnaire, the students who have taken
or are taking EMI course(s) were 433. The survey questionnaire was written in Korean for the convenience of the participants and was translated in English by the researcher. The survey questionnaire was website-based since the researcher was in the United States.

**Table 3-1**

*Experience of EMI courses taken among the respondents*

<table>
<thead>
<tr>
<th>Sub-Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMI course taken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>433</td>
<td>48.01</td>
</tr>
<tr>
<td>No</td>
<td>469</td>
<td>51.99</td>
</tr>
<tr>
<td>Total</td>
<td>902</td>
<td>100.00</td>
</tr>
</tbody>
</table>

As shown in Table 3-1, 433 (48.01% of the respondents) university students have the experience to take EMI-based academic major course(s). Given the rapid and continuing increase of EMI implementation\(^{11}\) at K University, in the near future, almost all students will have the experience to take EMI course(s).

Table 3-2 displays the demographic information of the participants who had experience with EMI course(s).

**Table 3-2**

*Demographic information on the participants (n=433)*

---

\(^{11}\)The rate of EMI implementation at K University has sharply increased from 1.11% in 2007 to 1.72% in 2008, 2.85% in 2009, 5.83% in 2010, 10.1% in 2011, 11.26% in 2012, and 14.19% in 2013.
<table>
<thead>
<tr>
<th>Sub-Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>197</td>
<td>45.5</td>
</tr>
<tr>
<td>Female</td>
<td>233</td>
<td>53.8</td>
</tr>
<tr>
<td>Missing</td>
<td>3</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>Student Year</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshman</td>
<td>111</td>
<td>25.6</td>
</tr>
<tr>
<td>Sophomore</td>
<td>129</td>
<td>29.8</td>
</tr>
<tr>
<td>Junior</td>
<td>97</td>
<td>22.4</td>
</tr>
<tr>
<td>Senior</td>
<td>93</td>
<td>21.5</td>
</tr>
<tr>
<td>Missing</td>
<td>3</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>Major</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liberal Arts</td>
<td>77</td>
<td>17.8</td>
</tr>
<tr>
<td>Social Science</td>
<td>57</td>
<td>13.2</td>
</tr>
<tr>
<td>Economics and Business</td>
<td>82</td>
<td>18.9</td>
</tr>
<tr>
<td>Engineering</td>
<td>79</td>
<td>18.2</td>
</tr>
<tr>
<td>Law</td>
<td>16</td>
<td>3.7</td>
</tr>
<tr>
<td>Natural Science</td>
<td>39</td>
<td>9.0</td>
</tr>
<tr>
<td>Education</td>
<td>13</td>
<td>3.0</td>
</tr>
<tr>
<td>Arts, Music, and Athletics</td>
<td>41</td>
<td>9.5</td>
</tr>
<tr>
<td>ETC. (including missing data)</td>
<td>29</td>
<td>6.7</td>
</tr>
<tr>
<td><strong>Self-assessed English ability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower than average</td>
<td>76</td>
<td>17.6</td>
</tr>
<tr>
<td>Average</td>
<td>205</td>
<td>47.4</td>
</tr>
<tr>
<td>Higher than average</td>
<td>147</td>
<td>34.0</td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Number of EMI courses taken</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One course</td>
<td>99</td>
<td>22.9</td>
</tr>
<tr>
<td>Two courses</td>
<td>117</td>
<td>27.0</td>
</tr>
<tr>
<td>Three courses</td>
<td>88</td>
<td>20.3</td>
</tr>
<tr>
<td>Four courses</td>
<td>38</td>
<td>8.8</td>
</tr>
<tr>
<td>More than Five courses</td>
<td>90</td>
<td>20.8</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td><strong>Experience of staying in an English-speaking country</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>112</td>
<td>25.8</td>
</tr>
<tr>
<td>No</td>
<td>320</td>
<td>74.0</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>433</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Of the total 433 participants, the male participants were 197 (45.5%) and the female participants were 233 (53.8%). In terms of student year, the sophomore students were the most frequent (29.8%) and followed by freshman (25.6%), junior (22.4%), and
senior (21.5%). The major with the most participants was Economics & Business (18.9%) and Engineering (18.2%) and Liberal Arts (17.8%) followed. Given the dispersion of participants across the above 3 variables, the composition of the participants in the study was judged as impartial.

English ability of the participants was assessed by students themselves\textsuperscript{12}. Approximately half of the participants (47.4%) indicated that their English ability is of average level and 17.6% of the students designated their English ability as below average level, whereas, 34% of the students responded above average level of English ability.

In terms of the number of EMI courses taken, the students who have taken 2 EMI courses were the most (27.0%). The students who have taken more than 5 courses were 20.8% of all respondents. In case of the experience of staying in an English-speaking country, only 25.8% of the participants have the experience of staying in an English-speaking country.

Among the demographic information on the participants, as described in chapter 2, ‘student year’, ‘self-assessed English ability’, ‘the number of EMI courses taken’, and ‘the experience of staying in an English-speaking country’ were employed as the research variables of the study.

\textsuperscript{12} Many previous studies indicate that language learners exactly identify and assess their language ability (Bachman & Palmer, 1985; Blanche & Merino, 1989; Ross, 1998). The result of self-assessed English ability has a high correlation with the result of actual reliable English test and the self-assessed way is considered as effective and economical for the various purposes like students’ placement for language class (Leblanc & Painchaud, 1985; Ready-Morfitt, 1991; Shameem, 1998). Therefore, the employment of students’ self-assessed English ability as a research variable in the study can be considered as appropriate.
3.3 Research Instruments

Research instrument of the study was survey questionnaire. Survey questionnaire is normally recognized as one of the most commonly employed research techniques for collecting data on survey participants’ attitudes and opinions (Mackey & Gass, 2005). Since the purpose of the present study was to identify the variables that influence the effects of EMI approach, the investigation into the relation between the components of EMI course and students’ perceptions and reactions to the effects of EMI approach was needed and as a result, a survey questionnaire was selected as a main technique for data collection.

Based on the previous studies (Kim et al., 2012; Park, 2006; Shim, 2010; Oh & Lee, 2010; Yu & Cheong, 2009) on the effects of EMI practices in Korea, the initial survey questionnaire items for the pilot study were constructed. After conducting the pilot study, the survey items were edited, revised, or deleted, based on the analysis of the pilot study’s results. The items that gave students vague and ambiguous meaning were edited and revised in order to clarify the meaning, and the items that were recognized as irrelevant to the purpose of the present study were deleted. The frequently mentioned answers in open-ended questions were categorized as one option in a multiple-choice type format for the purpose and convenience of the study. After the researcher constructed the items for the final questionnaire, the questionnaire was sent to 3 experts who are teaching EMI courses or have the experience of conducting EMI-related research with survey questionnaire for the purpose of assessing the appropriateness of the
questionnaire items. After a review by the experts, the items of the questionnaire were again refined.

The final questionnaire included 6 topics: 1) background information on the participants, 2) the experience of EMI course, 3) the perception of feedback and interaction, 4) the satisfaction with grade and assessment way in EMI course, 5) English difficulties derived from EMI course taking, and 6) perception of EMI effects.

The items included in the background information were as follows: the gender, student year, major, self-assessed English ability, and the experience of staying in an English-speaking country. In the items related to the experience of EMI course, the participants were asked to respond to the following: the experience of taking EMI course, the purpose to select EMI course, the ethnicity of EMI professor, the teaching style(s) used in the course, the course activities that a respondent participated in, course tasks, course hour, class size, and the proportion of students’ native language use as an additional medium. For the above 6 topics, the research variables that were mentioned in chapter 2 were extracted. The participants were asked to select one option on a 5-point, Likert scale (from 5: strongly agree to 1: strongly disagree or from 5: very effective to 1: very ineffective). The actual survey items are attached in the appendix.

The survey instrument of the present study was Qualtrics offered by the Pennsylvania State University for the purpose of research.

Table 3-3 exhibits the research variables and item numbers in the questionnaire. The items of the questionnaire were presented in 2 types: direct and indirect. The items of the direct type indicate the items that ask the direct and definite information. For example, the items that ask ‘student year’ and ‘major’ are direct type. Whereas, the items that asks
‘self-assessed English ability’ and ‘degree of interaction’ are included in indirect type. In case of the indirect type item, in order to produce more exact and reliable results, multiple items were used and internal reliability analysis of the items was performed.

**Table 3-3**

*Research variables in survey questionnaire*

<table>
<thead>
<tr>
<th>Variable Classification</th>
<th>Factor Classification</th>
<th>Item Content</th>
<th>Item Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Variables</td>
<td>Student Factor</td>
<td>Student Year</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Major</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Self-assessed English ability</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of EMI course taken</td>
<td>6, 6-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Experience of staying in an English speaking country / period</td>
<td>5, 5-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reason to take EMI course</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Professor Factor</td>
<td>Ethnicity of EMI professor</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Course Factor</td>
<td>Degree of Interaction (α = .91)</td>
<td>19, 20, 23, 24, 27, 28</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Degree of Feedback (α = .89)</td>
<td>17, 18, 21, 22, 25, 26</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Class Size</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Satisfaction with assessment and grade (α = .90)</td>
<td>29, 30, 31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Teaching Style</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Attempt to enhance students’ English ability</td>
<td>15</td>
</tr>
<tr>
<td>Dependent Variables</td>
<td>Effect of EMI approach</td>
<td>Effect on Content Learning (α = .93)</td>
<td>37, 38, 39, 40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Effect on English Proficiency Development (α = .92)</td>
<td>41, 42, 43, 44</td>
</tr>
</tbody>
</table>

The items for ‘degree of interaction’, ‘degree of feedback’, ‘satisfaction with grade and assessment way’, ‘effect on CL’, and ‘effect on EPD’ were included in direct type. The internal reliability coefficients for the above items were displayed in Table 3-3. As all the coefficients were more than .89, the items were recognized as reliable.
Table 3-4 displays data type of the research variables.

Table 3-4  
Data type of the research variables

<table>
<thead>
<tr>
<th>Variable Classification</th>
<th>Factor Classification</th>
<th>Item Content</th>
<th>Data Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Variables</td>
<td>Student Factor</td>
<td>Student Year</td>
<td>Nominal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Major</td>
<td>Nominal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Self-assessed English ability</td>
<td>Interval/Ratio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of EMI course taken</td>
<td>Interval/Ratio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Experience of staying in an English speaking country</td>
<td>Nominal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reason to take EMI course</td>
<td>Nominal</td>
</tr>
<tr>
<td></td>
<td>Professor Factor</td>
<td>Ethnicity of EMI professor</td>
<td>Nominal</td>
</tr>
<tr>
<td></td>
<td>Course Factor</td>
<td>Degree of Interaction</td>
<td>Interval/Ratio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Degree of Feedback</td>
<td>Interval/Ratio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Class Size</td>
<td>Nominal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Satisfaction with Assessment way and Grade</td>
<td>Interval/Ratio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Teaching Style</td>
<td>Nominal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Attempt of EMI professor to enhance students’ English ability</td>
<td>Nominal</td>
</tr>
<tr>
<td>Dependent Variable</td>
<td>Effect of EMI approach</td>
<td>Effect on Content Learning</td>
<td>Interval/Ratio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Effect on English Proficiency Development</td>
<td>Interval/Ratio</td>
</tr>
</tbody>
</table>

3.4 Data Collection

Data collection was conducted from September 20, 2012 to October 10, 2012. Data were collected by means of an electronic survey questionnaire from a total of 902 university students at K University participated. The selection of the participants was assisted by 8 Korean English instructors who are teaching students English-related electives such as General English course, English conversation, Movie English, and etc.
The instructors are the colleagues of the researcher and the instructors asked the students in their classes to participate in the survey. The instructors informed the website-address of the survey to students through smart-phone, and the students participated in the survey during the class. Instead of calling the roll, student’s attendance was replaced with survey participation. In the case that students don’t have smart phone, the students could have the choice whether to participate in the survey or to write their names for submitting it as a proof of attendance. As the researcher explicitly enunciated in the beginning of the questionnaire, the students who participated in the survey could quit the participation at any time they want. Therefore, all procedures of the survey were carried out under the consent of the participants.

3.5 Data Analysis

The resulting data obtained from the research instrument were entered into IBM SPSS 20.0 by the researcher. All analyses of the data were by the researcher. The collected survey data were first depicted through descriptive statistics in order to reflect the current situations of EMI implementation.

Prior to the analysis of the results, the reliability and validity of the survey items were first checked and 3 phases of data analyses were applied to respond to the research questions of the study. In the first phase, the researcher analyzed the relation between each research variable and students’ perceptions of EMI effects on content learning and English proficiency development. The researcher employed simple regression analysis in order to identify the influential variable from the research variables.
In the second phase, the identified influential variables were entered into simultaneous multiple regression analysis according to each factor. Through the simultaneous multiple regression analysis, the influential variables were compared for the purpose of revealing the relative influence of each variable. Simultaneous multiple regression is generally recognized as useful for explanatory research to determine the extent of the influence of one or more variables on some outcome and suitable for determining the relative influence of each variables. Simultaneous regression estimates the direct effects of each independent variable on the dependent variable. (Cohen, J, Cohen, P, West, & Aiken, 2003) In the process of simultaneous multiple regression analysis, several influential variables were identified as NOT influential, or statistically non-significant for EMI effects and the variables were excluded from the list of the influential variables. The simultaneous multiple regression analysis was conducted only in student factor and course factor since only one research variable, or ‘the ethnicity of EMI professor’ variable was selected in professor factor.

In the third phase, all the influential variables that were re-identified after the first phase and the second phase were entered into simultaneous multiple regression analysis.

The significance level was set at $p \leq .05$. Through the 3 analyses, the influential variables as statistically significant variables were identified.
Chapter 4

RESULTS AND FINDINGS

This chapter presents the results of the relation between the research variables and EMI effects. EMI effects were measured in two aspects: content learning (CL) and English proficiency development (EPD). The results were obtained through 3 phases of regression analyses. The first phase was to identify which variable is statistically significant to explain EMI effects. Through the first phase, the influential variables were identified among the research variables. In the second phase, the identified influential variables were analyzed through simultaneous multiple regression analysis in order to gauge the relative influence of each influential variable on EMI effects. The simultaneous multiple regression analyses were conducted to 3 factors respectively. In the third phase, all the influential variables that were proved as statistically significant through the first phase and the second phase were again entered into simultaneous multiple regression analysis.

The results in this chapter displayed both the descriptive statistics for explaining the actual features of current EMI practices and the inferential statistics for revealing the relation between the research variables and EMI effects.
4.1 Overall Descriptive Statistics for EMI Effects on CL and EPD

4.1.1 Descriptive Statistics of EMI effects on CL and EPD

Table 4-1 displays the overall descriptive statistics for EMI effects on CL and EPD, based on the participants’ perception.

<table>
<thead>
<tr>
<th>Participants’ perception of EMI effects</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Variance</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL</td>
<td>432</td>
<td>2.8773</td>
<td>.85964</td>
<td>.739</td>
<td>-.202</td>
<td>-.104</td>
</tr>
<tr>
<td>EPD</td>
<td>432</td>
<td>2.9954</td>
<td>.85895</td>
<td>.738</td>
<td>-.322</td>
<td>.162</td>
</tr>
</tbody>
</table>

Note: 1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree

The mean scores of the effect on CL and the effect on EPD were below the theoretical midpoint (3.0) and the mean score (2.8773) of CL was slightly lower than the mean score (2.9954) of EPD. The participants reflected more negative reaction to CL than EPD. This result corresponds to the previous research results that EMI approach negatively influences on CL at the tertiary level (Kim, 2008; Klaassen & Graaff, 2001; Lee & Kim, 2007; Sert, 2008).

4.1.2 Correlation between the effect on CL and the effect on EPD

The result of the correlation analysis between the effect on CL and the effect on EPD can elicit the efficiency of EMI approach for accomplishing the fundamental goal of EMI approach: spontaneously accomplishing CL and EPD. Intrinsically, there should be
a positive correlation between the effect on CL and the effect on EPD. High positive
correlation coefficient between the two effects can guarantee the appropriate and
effective EMI implementation.

Table 4-2 reveals the correlation between the effect on CL and the effect on EPD.

Table 4-2

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Effect on CL</th>
<th>Effect on EPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect on CL</td>
<td>Pearson Correlation 1</td>
<td>.562**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed) &lt; .001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N 432</td>
<td>432</td>
</tr>
</tbody>
</table>

**p < .01

The correlation coefficient in Table 4-2 indicates that the relation between the
effect on CL and the effect on EPD is in moderate positive correlation (.562**). The
moderate positive correlation indicates that the effect on CL and the effect on EPD have
positive relation. Even though it can’t be stated that there is a casual relationship between
the two effects, it can be inferred that the two effects have a positive relation. Therefore,
the effect on CL and the effect on EPD should be simultaneously contemplated by EMI
professors conducting EMI courses.

In this study, the factors that constitute EMI course were divided as the following:
student factor, professor factor, and course factor.
4.2 Research Variables in Student Factor and EMI Effects

This section deals with the relation between the research variables in student factor and EMI effects. Through the reviews of the previous studies on EMI implementation, the variables in student factor that were reported as the influential variables were as follows: English ability, student year, the reason to take EMI course, the experience of staying in an English-speaking country, and the number of EMI courses taken. Each variable in student factor was first investigated through simple regression analysis for the purpose of identifying which variable is statistically significant to explain EMI effects. The variables that were identified as statistically significant in simple regression analysis were designated as the influential variables. Then, simultaneous multiple regression analysis was applied with only the influential variables, in order to investigate the relative influence of each influential variable.

4.2.1 Descriptive statistics for the research variables in student factor

1) Student’s English ability

As depicted in chapter 2, student’s English ability was frequently remarked as the most critical variable to influence the effects of EMI approach. Many researchers criticize that EMI implementation deteriorates the academic quality of major course at the tertiary level under the current circumstance in Korea and they find the reason from the low level of students’ English ability.
Student’s English ability was measured by participants responding to a Likert scale with 5 options\(^{13}\). (See the item #4 in EMI questionnaire in appendix chapter)

### Table 4-3

**Self-assessed English ability of the participants**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std.</th>
<th>Variance</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall English Ability</td>
<td>428</td>
<td>2.8164</td>
<td>.73320</td>
<td>.538</td>
<td>.084</td>
<td>-.142</td>
</tr>
<tr>
<td>Reading Ability</td>
<td>431</td>
<td>3.1740</td>
<td>.82961</td>
<td>.688</td>
<td>-.556</td>
<td>.331</td>
</tr>
<tr>
<td>Listening Ability</td>
<td>432</td>
<td>3.0417</td>
<td>.97206</td>
<td>.945</td>
<td>-.144</td>
<td>-.414</td>
</tr>
<tr>
<td>Speaking Ability</td>
<td>432</td>
<td>2.4190</td>
<td>1.0094</td>
<td>1.019</td>
<td>.338</td>
<td>-.617</td>
</tr>
<tr>
<td>Writing Ability</td>
<td>431</td>
<td>2.5568</td>
<td>.91290</td>
<td>.833</td>
<td>.126</td>
<td>-.520</td>
</tr>
<tr>
<td>Vocabulary Ability</td>
<td>431</td>
<td>2.8747</td>
<td>.90635</td>
<td>.821</td>
<td>-.014</td>
<td>-.461</td>
</tr>
</tbody>
</table>

Note: 1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree

In Table 4-3, the overall English ability was obtained by the mean score of the 5 English abilities: reading, listening, speaking, writing, and vocabulary ability. The score of overall English ability (2.8164) was slightly as lower than the theoretical midpoint (3.0). The highest score (the most confident English ability) was the score of reading ability (3.1740) and followed by listening ability (3.0417). Only these two scores were above the theoretical midpoint (3.0). It is the general phenomena that most Korean students possess higher English ability in reading and listening than in speaking and writing. The lowest score was the score of speaking ability (2.4190) and the score of writing ability was also low. The above result clearly reveals the imbalance of Korean students’ English ability between productive ability and receptive ability. The perception of English vocabulary ability (2.8747) was a little higher than speaking and writing ability, but below the theoretical midpoint (3.0). Given the manifested difference among

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\(^{13}\) The actual items of the questionnaire will be attached in appendix chapter.
the abilities, it can be easily expected that students in EMI course are likely to experience more difficulties in participating in course activities that are necessary to possess high level of English speaking ability such as presentation and discussion and in fulfilling course tasks and examinations that are required to have sophisticated English writing ability.

2) Student Year

The variable ‘student year’ indicates what year of the participant in school. The influence of ‘student year’ variable on CL and EPD was differently reported in the previous studies. Some researchers (Park, 2006; Kim, 2007) assert that upper-grade students (junior and senior) show more positive attitude to EMI effects than lower-grade students (freshman and sophomore), whereas others (Byun et al., 2011; Kim et al., 2012) report that there is no relation between student year and EMI effects.

Table 4-4

<table>
<thead>
<tr>
<th>Student Year</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Freshman</td>
<td>111</td>
<td>2.9730</td>
<td>.82528</td>
<td>.07833</td>
<td>2.8177</td>
</tr>
<tr>
<td>Sophomore</td>
<td>128</td>
<td>2.9844</td>
<td>.93054</td>
<td>.08225</td>
<td>2.8216</td>
</tr>
<tr>
<td>Junior</td>
<td>97</td>
<td>2.6804</td>
<td>.86055</td>
<td>.08738</td>
<td>2.5070</td>
</tr>
<tr>
<td>Senior</td>
<td>93</td>
<td>2.8280</td>
<td>.76077</td>
<td>.07889</td>
<td>2.6713</td>
</tr>
<tr>
<td>Total</td>
<td>429</td>
<td>2.8788</td>
<td>.85884</td>
<td>.04147</td>
<td>2.7973</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Upper Bound</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.1282</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.1471</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.8539</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.9846</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.9603</td>
</tr>
</tbody>
</table>
Table 4-4 displays EMI effect on CL according to ‘student year’ variable. The overall mean score was 2.8788 and all the groups indicated slightly lower mean scores below theoretical midpoint (3.0). Even though the scores are very close to the theoretical midpoint (3.0), the fact that the mean scores of all the groups are below 3.0 implies that every year of students in EMI courses has difficulties understanding and learning academic content of their major courses. The mean scores indicate that EMI effect on CL is perceived as negative by the students in EMI courses. The ‘student year’ with the highest mean score (2.9844) was sophomore followed by freshman (2.9730). The lowest mean score was the score (2.6804) of juniors.

Under the general expectation for the relation between EMI effects and student year\textsuperscript{14}, the above result casts the question necessary to be solved. Generally, upper-grade students have a possibility to possess more academic background knowledge concerning their major subjects than lower-grade students. Also, in terms of the degree of the experience of taking EMI course(s), upper-grade students have the more chances to take EMI courses. The result of EMI effect on CL according to ‘student year’ variable shows a serious instructional problem of EMI implementation.

Table 4-5

<table>
<thead>
<tr>
<th>Student Year</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
</tr>
<tr>
<td>remarks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Upper</td>
</tr>
</tbody>
</table>

\textsuperscript{14} General remarks on the relation between EMI effects and ‘student year’ address that upper-grade students show more positive reaction to EMI effect on CL than lower-grade students (Jeon, 2002). As upper-grade students have more background knowledge on academic content related to their major, they experience the lower level of difficulty understanding of major content (Park, 2006; Kim, 2007)
<table>
<thead>
<tr>
<th>Grade</th>
<th>Class Size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Bound</th>
<th>Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>111</td>
<td>2.9910</td>
<td>.76865</td>
<td>2.8464</td>
<td>3.1356</td>
</tr>
<tr>
<td>Sophomore</td>
<td>128</td>
<td>3.1953</td>
<td>.84237</td>
<td>3.0480</td>
<td>3.3426</td>
</tr>
<tr>
<td>Junior</td>
<td>97</td>
<td>2.7526</td>
<td>.94683</td>
<td>2.5617</td>
<td>2.9434</td>
</tr>
<tr>
<td>Senior</td>
<td>93</td>
<td>2.9785</td>
<td>.83378</td>
<td>2.8068</td>
<td>3.1502</td>
</tr>
<tr>
<td>Total</td>
<td>429</td>
<td>2.9953</td>
<td>.85924</td>
<td>2.9138</td>
<td>3.0769</td>
</tr>
</tbody>
</table>

In the results of EMI effect on EPD, achieved was the similar result as the above result of EMI effect on CL. The only difference is the sophomore group showed the ‘positive’ score (3.1953), whereas other 3 groups marked negative scores. The junior group indicated the lowest score (2.7526).

3) Reason to take EMI course

The result of the pilot study revealed that students are selecting EMI course(s) for the following reasons: 1) to meet the regulation for graduation, 2) to learn academic content and improve their English ability at the same time, 3) to study academic content related to major from the more international viewpoint based on the course materials in English, and 4) minor reasons. As a representative minor reason, the participants responded that they didn’t have any other choice but to select EMI course because the correspondent KMI course to the EMI course was not set up in the curriculum. Based on the result of the pilot study, the reasons to take EMI course were divided into two types: compulsory and voluntary. In the study, the options of the item asking the reason to take EMI course were re-coded into the above 2 types.
The participants revealed more positive perception of EMI effect on CL in the group of voluntary EMI course taking. The mean score of the voluntary group (3.0625) was above the theoretical midpoint (3.0) whereas the mean score (2.6796) of the compulsory group was below the theoretical midpoint.

In the result of EMI effect on EPD, the mean scores of the both groups were little higher than the scores of EMI effect on CL. Also, the voluntary group marked higher mean score (3.2411) than the compulsory group (2.7330). The mean score of the compulsory group was below the theoretical midpoint (3.0) and the number showed negative reaction to EMI effect on EPD.
The above result corresponds to general prediction for the relation between EMI effects and the reason to take EMI course. Previous studies (Kim, 2003; Jin & Shin, 2010; Shim, 2010) mention that voluntary EMI course taking leads to more positive stance to EMI approach.

4) Experience of staying in English-speaking country

Many Korean university students have a tendency to go abroad, especially in English-speaking countries such as the United States, Canada, Australia, and etc. for the purpose of improving their English proficiency during summer or winter vacation. Some students stay in the countries longer than 6 months to even 1 year. After experiencing the staying, the students show more confidence to communicate with foreigners in English. The previous study (Kim et al., 2012) mentions that the students with the experience of staying in English-speaking country show more positive reaction to EMI course(s). Actually, the students with the experience responded higher English ability than the students without the experience (See Table 4-8).

Table 4-8

<table>
<thead>
<tr>
<th>English ability difference</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound          Upper Bound</td>
</tr>
<tr>
<td>Yes</td>
<td>110</td>
<td>3.2873</td>
<td>.75542</td>
<td>.07203</td>
<td>3.1445              3.4300</td>
</tr>
<tr>
<td>No</td>
<td>318</td>
<td>2.6528</td>
<td>.65247</td>
<td>.03659</td>
<td>2.5808              2.7248</td>
</tr>
<tr>
<td>Total</td>
<td>428</td>
<td>2.8159</td>
<td>.73401</td>
<td>.03548</td>
<td>2.7462              2.8856</td>
</tr>
</tbody>
</table>
As shown in Table 4-8, 25.7% of the total participants (110/428) have the experience of staying in English-speaking country. The group with the experience marked their English ability as above the theoretical midpoint (3.2873), whereas the group without the experience marked their English ability as below the theoretical midpoint (2.6528). Also, the difference of English ability between the two groups was fairly big (0.6345). Given the big difference between the two groups in English ability, it can be inferred that the difference of EMI effects between the two groups will be definitely manifested.

Table 4-9

<table>
<thead>
<tr>
<th>Experience of staying in E-S C</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Yes</td>
<td>112</td>
<td>3.0268</td>
<td>.78797</td>
<td>.07446</td>
<td>2.8792</td>
</tr>
<tr>
<td>No</td>
<td>319</td>
<td>2.8245</td>
<td>.87984</td>
<td>.04926</td>
<td>2.7275</td>
</tr>
<tr>
<td>Total</td>
<td>431</td>
<td>2.8770</td>
<td>.86061</td>
<td>.04145</td>
<td>2.7956</td>
</tr>
</tbody>
</table>

Table 4-9 exhibits the difference of EMI effect on CL according to ‘the experience of staying in an English-speaking country’ variable. The group with the experience revealed a little positive perception (3.0268) of EMI effect on CL whereas the group without the experience showed negative perception (2.8245).
Table 4-10
Difference of EMI effect on EPD according to the experience of staying in an English-speaking country variable

<table>
<thead>
<tr>
<th>Experience of staying in E-S C</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Yes</td>
<td>112</td>
<td>3.1875</td>
<td>.86505</td>
<td>.08174</td>
<td>3.0255</td>
</tr>
<tr>
<td>No</td>
<td>319</td>
<td>2.9279</td>
<td>.84924</td>
<td>.04755</td>
<td>2.8344</td>
</tr>
<tr>
<td>Total</td>
<td>431</td>
<td>2.9954</td>
<td>.85995</td>
<td>.04142</td>
<td>2.9139</td>
</tr>
</tbody>
</table>

In the case of EMI effect on EPD, the mean score of the group with the experience was 3.1875 and the mean score of the group without the experience was slightly below the theoretical midpoint (2.9279). The results of Table 4-9 and 4-10 show the relatively small difference of EMI effects on CL and EPD between the two groups, given the big difference of English ability between the two groups.

5) Number of EMI courses taken

The ‘number of EMI courses taken’ variable indicates that how many EMI courses the participants have taken (including this semester). According to each major or each department, the numbers of EMI courses that students must take for fulfilling graduation regulation are various. How many EMI courses must students take in order to achieve the efficacy of EMI approach? The result of the relation between the number of EMI courses taken and EMI effects will inform us the guideline for EMI implementation.
Table 4-11
Difference of EMI effect on CL according to the number of EMI courses taken variable

<table>
<thead>
<tr>
<th>Number of EMI courses taken</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2 Courses</td>
<td>215</td>
<td>2.7488</td>
<td>.88190</td>
<td>.06014</td>
<td>2.6303 - 2.8674</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-4 Courses</td>
<td>126</td>
<td>2.8889</td>
<td>.82192</td>
<td>.07322</td>
<td>2.7440 - 3.0338</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than 5</td>
<td>90</td>
<td>3.1667</td>
<td>.79676</td>
<td>.08399</td>
<td>2.9998 - 3.3335</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>431</td>
<td>2.8770</td>
<td>.86061</td>
<td>.04145</td>
<td>2.7956 - 2.9585</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Among the total 431 respondents, 215 students (49.89%) marked that they have taken 1-2 EMI courses and the percentage of the students that have taken more than 5 EMI courses was only 20.88% (90/431). In accordance with the general expectation that the students who have taken more EMI courses will show more positive reaction to EMI effects than the students who have taken relatively fewer course, the highest mean score was the score (3.1667) of the group that has taken more than 5 courses and the mean score of the group was the only positive score that is above the theoretical midpoint (3.0).

Table 4-12
Difference of EMI effect on EPD according to the number of EMI courses taken variable

<table>
<thead>
<tr>
<th>Number of EMI courses taken</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2 Courses</td>
<td>215</td>
<td>2.8930</td>
<td>.89270</td>
<td>.06088</td>
<td>2.7730 - 3.0130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-4 Courses</td>
<td>126</td>
<td>3.0238</td>
<td>.83392</td>
<td>.07429</td>
<td>2.8768 - 3.1708</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>431</td>
<td>2.9954</td>
<td>.85995</td>
<td>.04142</td>
<td>2.9139 - 3.0768</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4-12 displays the result of the effect on EPD. Similar to the result of EMI effect on CL, the highest mean score was shown in the group that has taken more than 5 EMI courses and the mean score of the group that has taken 3-4 courses was followed. The different point with the result of Table 4-11 was that the group that has taken 3-4 courses marked the positive score (3.0238) in the effect on EPD along with the result of the group that has taken more than 5 courses (3.2000).

4.2.2 Regression analysis for the relation between the research variables in student factor and EMI effects

In this section, the relation between the research variables in student factor and EMI effects will be investigated. Total 5 research variables were analyzed through 5 simple regression analyses respectively. The results of the simple regression analysis will be analyzed in 2 types: EMI effect on CL and EMI effect on EPD.

1) Relation between the research variables in student factor and EMI effect on CL

Table 4-13 displays the results of simple regression analyses between 5 research variables in student factor and EMI effect on CL.
### Table 4-13

*Summary of content learning (CL) regressed on the research variables in student factor using simple regression analysis*

<table>
<thead>
<tr>
<th>Variables</th>
<th>b</th>
<th>SE b</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
<th>R Square</th>
<th>Adjusted R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>English ability overall self-reported</td>
<td>.310</td>
<td>.055</td>
<td>.264</td>
<td>5.660</td>
<td>&lt; .001</td>
<td>.070</td>
<td>.068</td>
</tr>
<tr>
<td>Year in school</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.032</td>
<td>.020</td>
<td>.014</td>
</tr>
<tr>
<td>0 = Freshman</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 = Sophomore (D1)</td>
<td>.011</td>
<td>.111</td>
<td>.006</td>
<td>.103</td>
<td>.918</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 = Junior (D2)</td>
<td>-.293</td>
<td>.119</td>
<td>-.143</td>
<td>-2.468</td>
<td>.014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 = Senior (D3)</td>
<td>-.145</td>
<td>.120</td>
<td>-.070</td>
<td>-1.209</td>
<td>.227</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason for taking EMI course</td>
<td>.383</td>
<td>.081</td>
<td>.223</td>
<td>4.722</td>
<td>&lt; .001</td>
<td>.050</td>
<td>.047</td>
</tr>
<tr>
<td>0 = compulsory &amp; 1 = voluntary (D1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience staying in English-speaking country</td>
<td>.202</td>
<td>.094</td>
<td>.103</td>
<td>2.147</td>
<td>.032</td>
<td>.011</td>
<td>.008</td>
</tr>
<tr>
<td>0 = No &amp; 1 = Yes (D1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number EMI courses taken</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.001</td>
<td>.035</td>
<td>.030</td>
</tr>
<tr>
<td>0 = 1-2 EMI courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 = 3-4 EMI courses (D1)</td>
<td>.139</td>
<td>.095</td>
<td>.074</td>
<td>1.464</td>
<td>.144</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 = 5 or more EMI courses (D2)</td>
<td>.417</td>
<td>.106</td>
<td>.197</td>
<td>3.923</td>
<td>&lt; .001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number EMI courses taken</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt; .001</td>
<td>.030</td>
<td>.028</td>
</tr>
<tr>
<td>0 = 1-4 EMI courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 = 5 or more EMI courses (D1)</td>
<td>.366</td>
<td>.101</td>
<td>.173</td>
<td>3.640</td>
<td>&lt; .001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
First, the general prediction for the relation between student’s English ability and EMI effect on CL is that the students with high English ability perceive more positive EMI effect on CL than the students with low English ability (Kim, 2003; Hwang & Ahn, 2011; Kim, 2011). As shown in the above Table 4-13, ‘students’ English ability’ variable was revealed as statistically significant to explain EMI effect on CL ($p < .001$). Given the $R^2 = .070$, ‘student’s English ability’ variable explained 7% of EMI effect on CL. Based on the above result, the ‘student’s English ability’ variable is identified as an influential variable to determine EMI effect on CL.

Second, as the ‘student year’ variable is nominal data, for the use of regression analysis, the data were re-coded as a dummy variable. Freshman year was selected as the reference group. The difference between the reference group and each dummy variable in b score shows the difference of EMI effect on CL between freshman year students and other student years. The regression model for the ‘student year’ variable was revealed as statistically significant to explain EMI effect on CL ($p = .032$). The regression model explained 2% of EMI effect on CL ($R^2 = .020$). However, given the Sig. value of each group, only the junior group showed a statistically significant regression coefficient for EMI effect on CL ($p = .014$). As a result of this, the ‘student year’ variable is identified as NOT influential variable to determine EMI effect on CL. Also, it is hard to interpret that EMI effect on CL is determined by the difference of student year.

Third, as the scale of measurement of ‘the reason to take EMI course’ variable was nominal data, the data were re-coded as a dummy variable. The reference group was compulsory group. The b score of ‘voluntary group’ indicates the difference of EMI effect on CL between compulsory group and voluntary group. The regression model for
‘the reason to take EMI course’ variable was revealed as statistically significant to explain EMI effect on CL \( (p < .001) \). The regression model explained 5\% of EMI effect on CL. As the Sig. value of the voluntary group was < .001, ‘the reason to take EMI course’ variable can be interpreted as the influential variable.

Fourth, as the scale of measurement of ‘the experience of staying in English-speaking country’ variable was nominal data, the data were re-coded as a dummy variable. The reference group was the student group without the experience of staying in an English-speaking country and the b score of the group with the experience indicates the difference of EMI on CL between the two groups. The regression model was revealed as statistically significant \( (p = .032) \) and explained 1.1 \% of EMI effect on CL. Given the Sig. value of the regression coefficient \( (p = .032) \), the existence of the experience impacted the statistically significant effect on CL. The variable is identified as the influential variable to determine EMI effect on CL.

Last, as the scale of measurement of ‘the number of EMI courses taken’ variable was nominal data, the data were re-coded as a dummy variable. The reference group was the group that has taken 1-2 EMI courses. The regression model for ‘the number of EMI courses taken’ variable was revealed as statistically significant to explain EMI effect on CL \( (p = .001) \). The regression model explained 3.5\% of EMI effect on CL and given the Sig. value of each group, the group that has taken more than 5 EMI courses only had a statistically significant regression coefficient for EMI effect on CL \( (p < .001) \). In the result of the group that has taken 3-4 courses, the regression coefficient was not statistically significant \((.144)\). As a result of this, the number of EMI courses taken variable can’t be identified as the influential variable to determine EMI effect on CL.
Nevertheless, the result informs us some valuable idea for EMI implementation that in order to achieve EMI effect on CL, taking more than 5 EMI courses might be needed. As one of the purposes of the study is to obtain the guidelines for more effective EMI implementation, based on the above idea, ‘the number of EMI courses taken’ variable was again re-coded into two groups: ‘1-4 courses taken’ group and ‘more than 5 taken’ group. In the result, the regression model for the variable was revealed as statistically significant to explain EMI effect on CL ($p < .001$). The model explained 3.0% of EMI effect on CL and given the Sig. value, the group that has taken more than 5 EMI courses had a statistically significant regression coefficient for EMI effect on CL ($p = < .001$).

Based on the result above, ‘the number of EMI courses taken’ variable can be identified as the influential variable to determine EMI effect on CL.

Through the results of 5 simple regression analyses for the research variables in student factor, the identified influential variables that determine EMI effect on CL are as follows: 1) student’s English ability, 2) the reason to take EMI course, 3) the experience of staying in English-speaking country, and 4) the number of EMI courses taken.

2) Relation between the research variables in student factor and EMI effect on EPD

Table 4-14 displays the results of simple regression analyses between 5 research variables in student factor and EMI effect on EPD.
Table 4-14

Summary of English proficiency development (EPD) regressed on student factor variables using simple regression analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>b</th>
<th>SE b</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
<th>R Square</th>
<th>Adjusted R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>English ability overall self-reported</td>
<td>.286</td>
<td>.055</td>
<td>.246</td>
<td>5.238</td>
<td>&lt; .001</td>
<td>.061</td>
<td>.058</td>
</tr>
<tr>
<td>Year in school</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 = Freshman</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 = Sophomore</td>
<td>.204</td>
<td>.110</td>
<td>.109</td>
<td>1.859</td>
<td>.064</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 = Junior</td>
<td>-.238</td>
<td>.118</td>
<td>-.116</td>
<td>-2.024</td>
<td>.044</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 = Senior</td>
<td>-.012</td>
<td>.119</td>
<td>-.006</td>
<td>-.105</td>
<td>.916</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason for taking EMI course</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 = compulsory &amp; 1 = voluntary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience staying in English-speaking country</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 = No &amp; 1 = Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number EMI courses taken</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 = 1-2 EMI courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 = 3-4 EMI courses (D1)</td>
<td>.130</td>
<td>.096</td>
<td>.069</td>
<td>1.363</td>
<td>.174</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 = 5 or more EMI courses (D2)</td>
<td>.306</td>
<td>.107</td>
<td>.145</td>
<td>2.865</td>
<td>.004</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number EMI courses taken</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 = 1-4 EMI courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 = 5 or more EMI courses (D1)</td>
<td>.259</td>
<td>.101</td>
<td>.122</td>
<td>2.554</td>
<td>.011</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
First, the regression model for the ‘student’s English ability’ variable was identified as statistically significant to explain EMI effect on EPD ($p < .001$). The model explains 6.1% of EMI effect on EPD. Compared to the result of the effect on CL in Table 4-13, ‘students’ English ability’ variable more influences the effect on CL than the effect on EPD. Also, as the $\beta$ value (.264) in the effect on CL is bigger than the value (.246) in the effect on EPD, English ability plays more powerful role in explaining EMI effect on CL than on EPD. Based on the result, ‘student’s English ability’ variable is identified as the influential variable to determine EMI effect on EPD.

Second, the regression model for the ‘student year’ variable was revealed as statistically significant to explain EMI effect on EPD ($p = .002$). The explained 3.4% of EMI effect on EPD. Similarly to the result of Table 4-13, given the Sig. value of each group, only ‘junior group’ showed a statistically significant regression coefficient for EMI effect on EPD ($p = .044$). Therefore, Student Year variable is identified as NOT influential variable to determine EMI effect on EPD.

Third, the regression model for the ‘reason to take EMI course’ variable was revealed as statistically significant to explain EMI effect on EPD ($p < .001$). The regression model explained 8.7% of EMI effect on EPD. Given the Sig. value of the group ($< .001$), the variable is identified as the influential variable to determine EMI effect on EPD. The regression coefficient (.508) on EPD was bigger than the coefficient (.383) on CL and this indicates that the variable more significantly influenced on EMI effect on EPD than on CL. Based on the result, the ‘reason to take EMI course’ variable can be identified as the influential variable to determine the effects of EMI course.
Fourth, the ‘experience of staying in English-speaking country’ variable was revealed as statistically significant to explain EMI effect on EPD ($p = .006$). The regression model explained 1.8% of EMI effect on EPD and the Sig. value of the variable was .044. Therefore, the variable is identified as the influential variable to determine EMI effect on EPD. Compared to the $\beta$ value (.103) of the effect on CL, the $\beta$ value (.132) of the effect on EPD indicates that the variable more influences on EPD than on CL. Based on the result, the ‘experience of staying in English-speaking country’ variable can be identified as the influential variable to determine the effects of EMI course.

Last, the regression model was revealed as statistically significant to explain EMI effect on EPD ($p = .016$). The regression model explained 1.9% of EMI effect on EPD. Similarly to the result of Table 4-13, given the Sig. value of each group, the group that has taken more than 5 courses only had a statistically significant regression coefficient on CL ($p = .004$). Therefore, the variable can’t be identified as the influential variable to determine EMI effect on EPD. In the result of re-coded regression analysis, the model was identified as statistically significant to explain EMI effect on EPD ($p < .011$). The model explained 1.5% of EMI effect on EPD and given the Sig. value, the group that has taken more than 5 EMI courses had a statistically significant regression coefficient for EMI effect on EPD ($p = .011$). Based on the result above, ‘the number of EMI courses taken’ variable is identified as the influential variable to determine EMI effect on EPD.

Through the results of 5 simple regression analyses for the research variables in student factor, the identified influential variables that determine EMI effect on EPD are as follows: 1) student’s English ability, 2) the reason to take EMI course, 3) the
experience of staying in English-speaking country, and 4) the number of EMI courses taken.

4.2.3 Relation between the identified influential variables in student factor and EMI effects

Based on the results of the previous sections on the research variables in Student Factor, the identified influential variables were as follows: student’s English ability, the reason to take EMI course, the experience of staying in an English-speaking country, and the number of EMI courses taken.

In this section, the identified influential variables were simultaneously entered into multiple regression analysis in order to detect which variable is more powerful to explain EMI effects and to check the difference of the identified influential variables between separate simple regression analysis for each variable and simultaneous multiple regression analysis for all the variables.

1) Effect on CL

Table 4-15
*Total influence of the influential variables in Student Factor on CL*

<table>
<thead>
<tr>
<th>Variables</th>
<th>b</th>
<th>SE b</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>1.550</td>
<td>.311</td>
<td></td>
<td>4.980</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>English ability</td>
<td>.250</td>
<td>.060</td>
<td>.214</td>
<td>4.154</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Reason</td>
<td>.321</td>
<td>.081</td>
<td>.186</td>
<td>3.946</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Experience</td>
<td>.048</td>
<td>.099</td>
<td>.024</td>
<td>.480</td>
<td>.631</td>
</tr>
<tr>
<td>Number taken</td>
<td>.225</td>
<td>.100</td>
<td>.106</td>
<td>2.234</td>
<td>.026</td>
</tr>
</tbody>
</table>
Table 4-15 displays the influence of all the identified influential variables in Student Factor on CL through multiple regression analysis. The multiple regression model was identified as statistically significant ($F = 13.440, p = < .001$). The model explained 11.3% of EMI effect on CL. Given the Sig. value of each variable, the variable ‘the experience of staying in an English-speaking country’ was identified as NOT statistically significant ($p = .631$). Even though the variable was statistically significant in separate simple regression analysis, the variable was not statistically significant in the simultaneous multiple regression analysis. It is assumed that the influence of ‘the experience of staying in an English-speaking country’ variable was relatively weaker than the influences of other variables and the weak influence produced the different result when other variables were simultaneously affected. Also, it is inferred that the difference derived from the existence of the experience was not actually made due to the existence of the experience. In this case, the influence of ‘the experience of staying in an English-speaking country’ might be included in the influence of student’s English ability.

The standardized regression coefficients ($\beta$) show that which variable is more powerful in explaining EMI effect on CL. The standardized regression coefficient (.214) for ‘student’s English ability’ variable was the most powerful and ‘the reason to take EMI course’ variable and ‘the number of EMI courses taken’ variable were followed. The order of the influence power was as follows: ‘student’s English ability’ > ‘the reason to take EMI course’ > ‘the number of EMI courses taken’.
2) Effect on EPD

Table 4-16

<table>
<thead>
<tr>
<th>Variables</th>
<th>b</th>
<th>SE b</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>1.646</td>
<td>.306</td>
<td>5.379</td>
<td>&lt; .001</td>
<td></td>
</tr>
<tr>
<td>English ability</td>
<td>.216</td>
<td>.059</td>
<td>.186</td>
<td>3.648</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Reason</td>
<td>.455</td>
<td>.080</td>
<td>.266</td>
<td>5.701</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Experience</td>
<td>.009</td>
<td>.097</td>
<td>.004</td>
<td>.090</td>
<td>.929</td>
</tr>
<tr>
<td>Number taken</td>
<td>.123</td>
<td>.099</td>
<td>.059</td>
<td>1.249</td>
<td>.212</td>
</tr>
</tbody>
</table>

Notes:  \( R = .363, R^2 = .132, \) Adjusted \( R^2 = .124; F (4, 420) = 15.944, p = < .001; \)
Dependent variable = Effect on EPD

Table 4-16 displays the influence of all the identified influential variables in Student Factor on EPD. The multiple regression model was identified as statistically significant \( (F = 15.944, p = < .001) \). The model explained 13.2% of EMI effect on EPD. Given the Sig. value of each variable, two variables were excluded. Similar to the result of the effect on CL in Table 4-15, the variable ‘the experience of staying in an English-speaking country’ was identified as NOT statistically significant \( (p = .929) \). Also, the variable ‘the number of EMI courses taken’ was not statistically significant \( (p = .212) \). Even though ‘the number of EMI courses taken’ variable was re-coded in order to find the guideline for EMI implementation, the variable was revealed as NOT statistically significant for EMI effect on EPD in multiple regression analysis.

The standardized regression coefficient (.266) for ‘the reason to take EMI course’ variable was more powerful than the regression coefficient (.186) for ‘student’s English ability’ variable. The result definitely indicates that EMI-based courses should be
voluntarily taken for achieving English proficiency development. The result criticizes the current unilateral EMI diffusion driven by university authority. The order of the influence power was as follows: ‘the reason to take EMI course’ > ‘student’s English ability’.

Table 4-17 summarizes the identified influential variables in Student Factor to determine EMI effects through simultaneous multiple regression analysis.

Table 4-17

*Identified influential variables in Student Factor on EMI effects*

<table>
<thead>
<tr>
<th>Factor</th>
<th>Variables</th>
<th>CL</th>
<th>EPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>English Ability</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Student Year</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Reason to take EMI course</td>
<td></td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Experience of staying in English-speaking country</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Number of EMI course taken</td>
<td></td>
<td>O</td>
<td>X</td>
</tr>
</tbody>
</table>

Notes:  O = statistically significant variable;  X = not statistically significant

4.3 Research Variable in Professor Factor and EMI Effects

4.3.1 Descriptive statistics for the research variable in professor factor

In the study, the research variable in professor factor was the ethnicity of EMI professor. As explained in the previous chapter 2, most of EMI courses in Korea are being administered by Korean professors and many researchers are posing the instructional problems related to the ethnicity of EMI professor. The researchers suspect the effects of EMI approach conducted by Korean professors, mentioning Korean professors’ deficient level of English proficiency. The deficient English ability of Korean
EMI professor prohibits active interaction and close intimacy between EMI professor and students (Airey & Linder, 2006) and results in the decreased amount of academic content teaching (Sert, 2008). Therefore, the variable ‘the ethnicity of EMI professor’ is necessary to be included as the research variable in order to ascertain the instructional conditions for more effective EMI practice.

Table 4-18

*Proportion of EMI professor variable according to the ethnicity*

<table>
<thead>
<tr>
<th>Ethnicity of EMI professor</th>
<th>Response</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korean professor</td>
<td>276</td>
<td>64.27 %</td>
</tr>
<tr>
<td>Foreign professor</td>
<td>71</td>
<td>16.47 %</td>
</tr>
<tr>
<td>Co-teaching</td>
<td>83</td>
<td>19.26 %</td>
</tr>
<tr>
<td>Total</td>
<td>430</td>
<td>100 %</td>
</tr>
</tbody>
</table>

Table 4-18 displays the current situation of EMI practices at K University according to the ethnicity of EMI professor. Most EMI courses (64.27%) were conducted by Korean professors and foreign professors occupied 16.47%. Co-teaching indicates that Korean professor and foreign professor teach together. The percentage of Co-teaching was 19.26%.

Table 4-19

*Difference of EMI effect on CL according to ‘professor ethnicity’ variable*

<table>
<thead>
<tr>
<th>Ethnicity of EMI Professor</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korean</td>
<td>276</td>
<td>2.7754</td>
<td>.88641</td>
<td>.05336</td>
<td>2.6703</td>
<td>2.8804</td>
</tr>
<tr>
<td>Foreign</td>
<td>71</td>
<td>2.9155</td>
<td>.73186</td>
<td>.08686</td>
<td>2.7423</td>
<td>3.0887</td>
</tr>
<tr>
<td>Co-Teaching</td>
<td>83</td>
<td>3.2048</td>
<td>.77710</td>
<td>.08530</td>
<td>3.0351</td>
<td>3.3745</td>
</tr>
</tbody>
</table>
Table 4-19 shows EMI effect on CL according to the ethnicity of EMI professor.

The group with the highest mean score (3.2048) was ‘co-teaching’ group and ‘foreign professor’ group was followed. The effect of ‘Korean professor’ group was the lowest. Based on the result of the above table, the concerns of the previous studies were proved as true. One remarkable thing is that the mean score of ‘foreign professor’ group is higher than the score of ‘Korean professor’ group. Given the fact that Korean EMI professors possess the same native language with the students and Korean professors employ the native language as an additional medium in order to help students’ understanding of course content, the result casts serious doubt on the effect of EMI courses conducted by Korean professors.

Table 4-20 exhibits the difference of EMI effect on EPD according to professor ethnicity variable.

<table>
<thead>
<tr>
<th>Ethnicity of EMI Professor</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korean</td>
<td>276</td>
<td>2.8949</td>
<td>.87792</td>
<td>.05284</td>
<td>2.7909</td>
<td>2.9990</td>
</tr>
<tr>
<td>Foreign</td>
<td>71</td>
<td>3.2113</td>
<td>.82662</td>
<td>.09810</td>
<td>3.0156</td>
<td>3.4069</td>
</tr>
<tr>
<td>Co-Teaching</td>
<td>83</td>
<td>3.1687</td>
<td>.74603</td>
<td>.08189</td>
<td>3.0058</td>
<td>3.3316</td>
</tr>
<tr>
<td>Total</td>
<td>430</td>
<td>3.0000</td>
<td>.85553</td>
<td>.04126</td>
<td>2.9189</td>
<td>3.0811</td>
</tr>
</tbody>
</table>

Table 4-20 shows the difference of EMI effect on EPD according to ‘EMI professor’s ethnicity’ variable. The group with the highest mean score was ‘foreign professor’ group and the lowest mean score was obtained in ‘Korean professor’ group. The mean scores of ‘foreign professor’ group and ‘co-teaching’ group showed students’ positive reaction to EMI effect on EPD.
4.3.2 Regression analysis for the relation between the research variable in professor factor and EMI effects

As the scale of measurement of independent variable was nominal data, the data were re-coded as a dummy variable. The reference group was ‘Korean professor’ group.

**Table 4-21**

*Influence of EMI effect on CL according to professor ethnicity variable*

<table>
<thead>
<tr>
<th>Variables</th>
<th>b</th>
<th>SE b</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>2.775</td>
<td>.051</td>
<td>54.728</td>
<td>&lt; .001</td>
<td></td>
</tr>
<tr>
<td>Foreign (D1)</td>
<td>.140</td>
<td>.112</td>
<td>.061</td>
<td>1.250</td>
<td>.212</td>
</tr>
<tr>
<td>Co-Teaching (D2)</td>
<td>.429</td>
<td>.105</td>
<td>.198</td>
<td>4.072</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>

Notes: \( R = .194, R^2 = .038, \) Adjusted \( R^2 = .033; \) F (2, 427) = 8.360, \( p = < .001; \)

Dependent variable = Effect on CL

Table 4-21 exhibits the influence of ‘EMI professor ethnicity’ variable on CL.

The regression model for the variable was identified as statistically significant (\( F = 8.360, p = < .001 \)). The regression model explained 3.8% of EMI effect on CL. Given the Sig. value of each group, only ‘co-teaching’ group had a statistically significant regression coefficient (\( p = < .001 \)). The difference between Korean professor group and foreign professor group on CL was proved as NOT statistically significant. As a result of this, in order to attain positive effect on CL, ‘co-teaching’ is considered as the best way. This result informs us that to hire foreign professor doesn’t guarantee successful EMI implementation for CL.
Table 4-22

Influence of EMI effect on EPD according to professor ethnicity variable

<table>
<thead>
<tr>
<th>Variables</th>
<th>b</th>
<th>SE b</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>2.895</td>
<td>.051</td>
<td></td>
<td>56.866</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Foreign</td>
<td>.316</td>
<td>.113</td>
<td>.137</td>
<td>2.811</td>
<td>.005</td>
</tr>
<tr>
<td>Co-teaching</td>
<td>.274</td>
<td>.106</td>
<td>.126</td>
<td>2.586</td>
<td>.010</td>
</tr>
</tbody>
</table>

Notes: \( R = .165, R^2 = .027, \) Adjusted \( R^2 = .023; F (2, 427) = 5.996, p = .003; \)
Dependent variable = Effect on EPD

Table 4-22 displays the relation between ‘EMI professor ethnicity’ variable and EMI effect on EPD. The regression model for the variable was proved as statistically significant (\( F = 5.996, p = .003 \)). The regression model explained 2.7% of EMI effect on EPD. Given the Sig. value of each group, ‘foreign professor’ group and ‘co-teaching’ group had all statistically significant regression coefficients (\( p = .005; p = .010 \)). The most influential regression coefficient was in ‘foreign professor’ group (.316). The students in EMI courses perceived the EMI courses conducted by foreign professors as the most effective for EPD. Also, the students expressed positive reaction to the courses conducted by co-teaching way. In the courses by Korean professors only, the students negatively responded to the effect on EPD.

4.4 Research Variables in Course Factor and EMI Effects

This section deals with the relation between the research variables in course factor and EMI effects. Under consideration of the findings from the previous studies, the variables in course factor reported as the influential variable were as follows: ‘interaction
degree’, ‘feedback degree’, ‘class size’, ‘satisfaction with assessment way and grade’, ‘teaching style’, and ‘EMI professor’s attempt to improve student’s English ability’.

Each variable in course factor was first investigated through simple regression analysis in order to figure out that which variable is statistically significant to explain EMI effects. Then, simultaneous multiple regression analysis was applied with the variables that were identified as the influential variable in simple regression analysis in order to investigate the influence power of each influential variable.

4.4.1 Descriptive Statistics of EMI effects on CL and EPD

1) Interaction Degree

‘Interaction’ indicates all kinds of communications that are established in EMI course between EMI professor and students or among students. Interaction can be made in spoken or written form. The types of interaction made in EMI course vary from casual conversation to academic question and answer. In the study, the meaning of interaction was confined more narrowly than general meaning. Meaning of interaction in the study indicates the spoken or written communicative and interactive utterances between a professor and students for the purpose of clarifying the meaning of academic content.

As revealed in the previous studies (Kim & Sohn, 2009; Kim, 2002), the frequency of interaction made in EMI course decreases due to the lack of English ability, compared to the frequency in the course delivered in students’ native language. The lack of interaction results in passive and heavy class atmosphere and negatively influences on building close rapport between EMI professor and students.
Table 4-23

Descriptive statistics for students’ perception of interaction degree variable

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>N</th>
<th>Mean</th>
<th>Std.</th>
<th>Variance</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Interaction</td>
<td>429</td>
<td>2.8531</td>
<td>.94936</td>
<td>.901</td>
<td>-.032</td>
<td>-.635</td>
</tr>
</tbody>
</table>

Table 4-23 displays students’ perception of interaction degree in EMI course. The mean score (2.8531) was below the theoretical midpoint (3.0). The students in EMI course expressed that the interaction made in EMI course wasn’t enough.

2) Feedback Degree

‘Feedback’ in the study indicates the corrective action performed by EMI professor for the purpose of 1) enhancing students’ understanding of course content, 2) clarifying academic content meaning and 3) editing and revising the mistakes or errors in students’ course outputs. Feedback can be given to students in the form of spoken explanation or written comments.

The previous studies (Hong et al., 2008; Kang & Park, 2004a) mentioned that the students in EMI course consider enough feedback as the important element for effective EMI implementation. Also, some study (Kang & Park, 2004a) reported that there was a wide discrepancy in recognition for “enough degree” of feedbacks between professors and students in EMI course. The researchers reported that even though EMI professors thought they gave enough feedbacks to students, their students recognized the degree of feedbacks that they received in EMI course as insufficient.
Table 4-24

Descriptive statistics for students’ perception of Feedback degree variable

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>N</th>
<th>Mean</th>
<th>Std.</th>
<th>Variance</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Feedback</td>
<td>433</td>
<td>2.8614</td>
<td>.9263</td>
<td>.858</td>
<td>-.292</td>
<td>.043</td>
</tr>
</tbody>
</table>

Table 4-24 displays students’ perception of feedback degree in EMI course. The mean score (2.8614) was slightly below the theoretical midpoint (3.0). The students in EMI course expressed slightly unsatisfied reaction to the feedbacks that they received from EMI professor. This result corresponds to the results of previous studies.

3) Class Size

‘Class size’ indicates the number of the students attended in one EMI class. Class size influences on EMI effects because the frequency and the quality of interactions and feedbacks made in EMI course are affected by class size. The previous studies recognize small class size as more effective (Jeon, 2002; Maeng et al., 2011; Hong et al., 2008). In the study, the variable ‘class size’ was divided into 3 groups based on the results of the previous studies: small (less than 20), medium (21 to 40), and large (more than 41).

Table 4-25

Difference of EMI effect on CL according to class size variable

<table>
<thead>
<tr>
<th>Class Size</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Small (1-20)</td>
<td>102</td>
<td>3.0784</td>
<td>.75369</td>
<td>.07463</td>
<td>2.9304</td>
</tr>
<tr>
<td>Medium (21-40)</td>
<td>189</td>
<td>2.8042</td>
<td>.85601</td>
<td>.06227</td>
<td>2.6814</td>
</tr>
<tr>
<td>Large (+41)</td>
<td>140</td>
<td>2.8357</td>
<td>.91832</td>
<td>.07761</td>
<td>2.6823</td>
</tr>
<tr>
<td>Total</td>
<td>431</td>
<td>2.8794</td>
<td>.85959</td>
<td>.04141</td>
<td>2.7980</td>
</tr>
</tbody>
</table>
Table 4-25 displays the result of EMI effect on CL according to class size. The EMI class with small size (under 20) revealed the most positive result for EMI effect on CL. The mean score of small group was the highest (3.0784) and the only positive result (above 3.0). However, in the results of medium size group and large size group, the participants showed reverse results. The mean score (2.8042) of medium size group was lower than the score (2.8357) of large size group and the result didn’t correspond to the general results of the previous studies that EMI effect is more positive and effective in the course with smaller number of students.

Table 4-26

<table>
<thead>
<tr>
<th>Difference of EMI effect on EPD according to class size variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Size</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Small (1-20)</td>
</tr>
<tr>
<td>Medium (21-40)</td>
</tr>
<tr>
<td>Large (+41)</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

In the result of the relation between ‘class size’ variable and EMI effect on EPD, small size group recorded the highest mean score (3.1373) and medium size group and large size group were followed in regular sequence. The result corresponded to the findings of the previous studies.

4) Satisfaction with grade and assessment way

From the general view point, it is not difficult to anticipate that the students who gained high grade are likely to feel more satisfied with the course and to consider EMI
approach as more effective than the students who got low grade. The previous studies (Maeng et al., 2011; Kim et al., 2012) reported that the students in EMI course complain the assessment ways employed in EMI courses and the students criticize that the assessment way of EMI course excessively depends on English ability. Therefore, in order to construct more effective and satisfactory EMI course, the relation between students’ perception of grade and assessment way and EMI effects needs to be investigated.

Table 4-27

Descriptive statistics for students’ perception of grade and assessment way

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>N</th>
<th>Mean</th>
<th>Std.</th>
<th>Variance</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perception of Grade and Assessment way</td>
<td>423</td>
<td>3.0757</td>
<td>.73758</td>
<td>.544</td>
<td>.022</td>
<td>.154</td>
</tr>
</tbody>
</table>

Table 4-27 exhibits students’ perception of grade and assessment way in EMI course. The mean score was 3.0757 and the score indicates that the students consider the grades and the assessment way in EMI courses as somewhat positive. Given the overall mean scores for EMI effect on CL (2.8773) and EPD (2.9954), the positive mean score for the grade and assessment way is an unexpected result. The reason for this result can be found in the questionnaire asking the reason to take EMI course. Some students mentioned that they selected EMI course because they could receive high grade in EMI course. As EMI courses are conducted on the basis of absolute evaluation way, EMI professors have a tendency to give much higher grade than KMI courses that are conducted on the basis of relative evaluation way. As the university authority permits absolute evaluation way in EMI course, EMI professors give the grades extremely
generously in order to attract the students who are hesitant to enroll EMI course for the concern that they might gain low grade in EMI course due to deficient English ability. As a result of this, the perception of EMI effects and the satisfaction with grade and assessment way in EMI course revealed different results.

5) Teaching Style

The previous studies on EMI practices indicate that as EMI approach doesn’t simply signify the change of the instructional medium from students’ native language to English, the various course activities such as group discussion and personal presentation should be included in the process of teaching/learning (Song, 2008). Traditional teaching methods mainly centered on lecture method limit the advantages of EMI approach (Hong et al., 2008). Given the characteristics of several theories that provide theoretical foundations of EMI approach such as CBI and ESP, it is necessary for EMI professor to develop and invent specific course activities that increase the merits of EMI approach. Therefore, the teaching styles used in EMI courses are needed to be investigated.

**Table 4-28**

*Difference of EMI effect on CL according to teaching style variable*

<table>
<thead>
<tr>
<th>Teaching Style</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Lecture (L) only</td>
<td>232</td>
<td>2.7500</td>
<td>.88641</td>
<td>.05820</td>
<td>2.6353</td>
</tr>
<tr>
<td>L + Presentation (P)</td>
<td>62</td>
<td>3.1129</td>
<td>.62998</td>
<td>.08001</td>
<td>2.9529</td>
</tr>
<tr>
<td>L + P + Discussion (D)</td>
<td>138</td>
<td>2.9855</td>
<td>.87116</td>
<td>.07416</td>
<td>2.8389</td>
</tr>
<tr>
<td>Total</td>
<td>432</td>
<td>2.8773</td>
<td>.85964</td>
<td>.04136</td>
<td>2.7960</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Upper Bound</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lecture (L) only</td>
<td>232</td>
<td>2.7500</td>
<td>.88641</td>
<td>.05820</td>
<td>2.8647</td>
</tr>
<tr>
<td>L + Presentation (P)</td>
<td>62</td>
<td>3.1129</td>
<td>.62998</td>
<td>.08001</td>
<td>3.2729</td>
</tr>
<tr>
<td>L + P + Discussion (D)</td>
<td>138</td>
<td>2.9855</td>
<td>.87116</td>
<td>.07416</td>
<td>3.1321</td>
</tr>
<tr>
<td>Total</td>
<td>432</td>
<td>2.8773</td>
<td>.85964</td>
<td>.04136</td>
<td>2.9586</td>
</tr>
</tbody>
</table>

As presented in the above result, the students in EMI course where EMI professor employed ‘lecture method’ and ‘presentation activity’ together showed the highest mean
score (3.1129). Besides professor’s lecture, the use of ‘presentation activity’ was considered as helpful for students to learn and understand course content. However, in the course where ‘discussion activity’ was included, the effect was recognized as lower than the case where ‘presentation activity’ was only included. Through the above result, it is inferred that ‘discussion activity’ didn’t positively influence on CL. The students who took the lecture-only courses responded the lowest score (2.7500) and this result corresponds to the assertion of the previous studies (Song, 2008; Kim, 2002) that students negatively react to the lecture-based instruction that is entirely led by EMI professor.

Table 4-29

<table>
<thead>
<tr>
<th>Teaching Style</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Lecture (L) only</td>
<td>232</td>
<td>2.8103</td>
<td>.9061</td>
<td>.05949</td>
<td>2.6931</td>
</tr>
<tr>
<td>L + Presentation (P)</td>
<td>62</td>
<td>3.2903</td>
<td>.5835</td>
<td>.07411</td>
<td>3.1421</td>
</tr>
<tr>
<td>L + P + Discussion (D)</td>
<td>138</td>
<td>3.1739</td>
<td>.8079</td>
<td>.06893</td>
<td>3.0376</td>
</tr>
<tr>
<td>Total</td>
<td>432</td>
<td>2.9954</td>
<td>.8589</td>
<td>.04133</td>
<td>2.9141</td>
</tr>
</tbody>
</table>

Table 4-29 displays the difference of EMI effect on EPD according to ‘teaching style’ variable. Similarly to the above result of the effect on CL, the students in the course where ‘lecture method’ and ‘presentation activity’ were together employed recorded the highest score and the lowest score was in the course where ‘lecture method’ was only used. The remarkable thing in the result is that the effect of EMI course with ‘discussion activity’ was lower than the course with presentation activity only. Under general prediction that ‘discussion activity’ can increase the opportunity for students in EMI course to use the target language, the result shows the reverse result to the general
expectation. Based on the above results, it can be inferred that ‘presentation activity’ should be included as a course activity in order to increase EMI effects.

6) EMI professor’s attempt to improve students’ English ability

Professor in EMI course should balance content learning and the target language development. Even though EMI professors possess enough English proficiency to deliver academic course content in English, the use of English as an instructional medium doesn’t guarantee students’ English proficiency development. Therefore, EMI professor should make an attempt to enhance students’ English proficiency.

Table 4-30
Difference of EMI effect on CL according to professor’s attempt variable

<table>
<thead>
<tr>
<th>Attempt</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>362</td>
<td>2.8564</td>
<td>.85925</td>
<td>.04516</td>
<td>2.7675</td>
<td>2.9452</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>66</td>
<td>2.9697</td>
<td>.85880</td>
<td>.10571</td>
<td>2.7586</td>
<td>3.1808</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>428</td>
<td>2.8738</td>
<td>.85915</td>
<td>.04153</td>
<td>2.7922</td>
<td>2.9555</td>
<td></td>
</tr>
</tbody>
</table>

Through the result of Table 4-30, the attempt of EMI professor to enhance students’ English proficiency were revealed as positive. However, the difference between the two groups wasn’t big. Of 428 participants, only 66 students (15.42%) responded that EMI professor made attempts to enhance students’ English proficiency.\(^{15}\)

\(^{15}\) The researcher asked the participants to describe what kinds of attempts to enhance students’ English proficiency was made in EMI course in the survey questionnaire. Of 66 students, 30 students described the activity that they experienced in EMI course. The list of the attempts will be attached in Appendix chapter.
In the comparison of the mean scores between the two groups, the group where the professor made the attempt to enhance students’ English ability showed higher mean score in the effect on CL than the group where there was no specific attempt of EMI professor. However, the difference between the mean scores was small (.1133) and the two mean scores were negative scores.

Table 4-31

<table>
<thead>
<tr>
<th>Attempt</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Upper Bound</td>
</tr>
<tr>
<td>No</td>
<td>362</td>
<td>2.9282</td>
<td>.85213</td>
<td>.04479</td>
<td>2.8401</td>
</tr>
<tr>
<td>Yes</td>
<td>66</td>
<td>3.3182</td>
<td>.82572</td>
<td>.10164</td>
<td>3.1152</td>
</tr>
<tr>
<td>Total</td>
<td>428</td>
<td>2.9883</td>
<td>.85882</td>
<td>.04151</td>
<td>2.9067</td>
</tr>
</tbody>
</table>

Table 4-31 exhibits the difference of the two groups in EMI effect on EPD. The group with professor’s attempt expressed more positive reaction to EMI effect on EPD than the group without the attempt. Especially, the mean score of the group with EMI professor’s attempt was above theoretical midpoint (3.3182). The students identified the attempt as effective to enhance their English ability. Compared to the result of EMI effect on CL, the attempt of EMI professor played a big role only in the effect on EPD. Given the balance between CL and EPD in EMI course, the attempt of EMI professor is necessary to improve student’s English ability.
4.4.2 Regression analysis for the relation between the research variables in course factor and EMI effects

In this section, the relation between the research variables in course factor and EMI effects will be investigated. Total 6 research variables were analyzed through 6 simple regression analyses respectively. The results of the simple regression analysis will be analyzed in 2 types: EMI effect on CL and EMI effect on EPD.

1) Relation between the research variables in student factor and EMI effect on CL

Table 4-32 displays the results of simple regression analyses between 6 research variables in course factor and EMI effect on CL.
Table 4-32

Summary of content learning (CL) regressed on course factor variables using simple regression analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>b</th>
<th>SE b</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
<th>R Square</th>
<th>Adjusted R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interaction</td>
<td>.285</td>
<td>.041</td>
<td>.316</td>
<td>6.878</td>
<td>&lt; .001</td>
<td>.100</td>
<td>.098</td>
</tr>
<tr>
<td>Feedback</td>
<td>.251</td>
<td>.044</td>
<td>.268</td>
<td>5.765</td>
<td>&lt; .001</td>
<td>.072</td>
<td>.070</td>
</tr>
<tr>
<td>Class size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 = 1-20 students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 = 21-40 students (D1)</td>
<td>.243</td>
<td>.111</td>
<td>.120</td>
<td>2.183</td>
<td>.030</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 = more than 41 students (D2)</td>
<td>-.031</td>
<td>.095</td>
<td>-.018</td>
<td>-.330</td>
<td>.741</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade and Assessment way</td>
<td>.305</td>
<td>.055</td>
<td>.261</td>
<td>5.538</td>
<td>&lt; .001</td>
<td>.068</td>
<td>.066</td>
</tr>
<tr>
<td>Teaching Style</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 = Lecture only</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 = L + Presentation (D1)</td>
<td>.363</td>
<td>.121</td>
<td>.148</td>
<td>2.988</td>
<td>.003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 = L + P + Discussion (D2)</td>
<td>.236</td>
<td>.091</td>
<td>.128</td>
<td>2.579</td>
<td>.010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMI professor’s Attempt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.002</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>0 = No &amp; 1 = Yes (D1)</td>
<td>.113</td>
<td>.115</td>
<td>.048</td>
<td>.986</td>
<td>.325</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
First, the regression model for ‘interaction degree’ variable was identified as statistically significant \((p = < .001)\) and the model explained 10.0% of EMI effect on CL. The regression coefficient of the variable was .285 \((p = < .001)\) and the standardized regression coefficient was .316. The result signifies that when the frequency of interaction in EMI course increases, EMI effect on CL will be identified as more positive by the students and the level of students’ satisfaction with EMI course will be higher. Based on the result, the ‘interaction degree’ variable is identified as the influential variable to determine EMI effect on CL.

Second, the regression model for ‘feedback degree’ variable was identified as statistically significant \((p = < .001)\) and the model explained 7.2% of EMI effect on CL. The regression coefficient of the variable was .251 \((p = < .001)\) and the standardized regression coefficient was .268. The result signifies that when the frequency of feedback in EMI course increases, the effect of EMI approach on CL will be identified as more positive and the level of students’ satisfaction with CL through EMI approach will be higher. Based on the result, the ‘feedback degree’ variable is identified as the influential variable to determine EMI effect on CL.

Third, as the scale of measurement of ‘class size’ variable was nominal data, the data were re-coded as a dummy variable. The reference group was ‘large size’ group (More than 41). The regression model for the variable was revealed as statistically significant \((p = .026)\) and explained 1.7% of EMI effect on CL. Given the Sig. value of each group, only ‘small size’ group showed statistically significant result \((p = .030)\). In ‘medium size’ group, the regression coefficient wasn’t statistically significant. Accordingly, in the case of class size with more than 20 students, EMI effect on CL isn’t
determined in accordance with class size. As a result of the above, it can be inferred that the optimal class size for effective EMI implementation for CL is less than 20 students in one EMI class. Based on the result, the ‘class size’ variable is NOT identified as the influential variable to determine EMI effect on CL.

Fourth, the regression model for the ‘satisfaction with grade and assessment way’ variable was identified as statistically significant ($p = < .001$). The model explained 6.8% of EMI effect on CL. Given the Sig. value, the variable had a statistically significant regression coefficient ($p = < .001$). The regression coefficient was .305 and the standardized regression coefficient was .261. In accordance with the general expectation, the students with high satisfaction with ‘grade and assessment way’ expressed more positive reaction to EMI effect on CL. Based on the result, the ‘satisfaction with grade and assessment way’ variable is identified as the influential variable to determine EMI effect on CL.

Fifth, as the scale of measurement of ‘teaching style’ variable was nominal data, the data were re-coded as a dummy variable. The reference group was ‘lecture style’ group. The regression model for ‘teaching style’ variable was identified as statistically significant ($p = .002$). The model explained 2.8% of EMI effect on CL. Given the Sig. value of each group, every group had a statistically significant regression coefficient ($p = .003; p = .010$). As a result of this, providing ‘presentation activity’ to students as a course activity is recognized as effective for increasing EMI effect on CL. ‘Discussion activity’ is also proved as effective for EMI effect on CL. However, compared to the effect of ‘presentation activity’, the degree of effect was lower. The reason is assumed
due to the lack of English speaking ability of the participants\textsuperscript{16}. Due to deficient English speaking ability, discussion activity was not appropriate for increasing EMI effect on CL. Based on the result, the ‘teaching style’ variable is identified as the influential variable to determine EMI effect on CL.

Last, as the scale of measurement of ‘professor’s attempt to enhance students’ English ability’ variable was nominal data, the data were re-coded as a dummy variable. The reference group was ‘no’ group. The regression model for the variable was identified as NOT statistically significant (F = .971, $p = .325$). In other words, the attempt of EMI professor was NOT recognized as an influential for CL.

Through the results of 6 simple regression analyses for the research variables in course factor, the identified influential variables that determine EMI effect on CL are as follows: 1) interaction degree, 2) feedback degree, 3) satisfaction with grade and assessment way, and 4) teaching style.

2) Relation between the research variables in course factor and EMI effect on EPD

Table 4-33 shows the results of simple regression analyses between 6 research variables in course factor and EMI effect on EPD.

\textsuperscript{16} According to the result of participants’ English ability in Table 4-2, the participants recognized their English speaking ability as the lowest. In order to participate in discussion activity, students have to possess proficient English speaking ability. Given the current English speaking ability of the participants, they must have experienced the difficulty participating in discussion activity. Also, the result of the previous study indicates that the discussion activity is often monopolized by few numbers of the students with high level of English speaking ability.
Table 4-33
Summary of English proficiency development (EPD) regressed on course factor variables using simple regression analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>b</th>
<th>SE b</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
<th>R Square</th>
<th>Adjusted R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interaction</td>
<td>.267</td>
<td>.042</td>
<td>.297</td>
<td>6.424</td>
<td>&lt; .001</td>
<td>.088</td>
<td>.086</td>
</tr>
<tr>
<td>Feedback</td>
<td>.292</td>
<td>.043</td>
<td>.311</td>
<td>6.796</td>
<td>&lt; .001</td>
<td>.097</td>
<td>.095</td>
</tr>
<tr>
<td>Class size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.054</td>
</tr>
<tr>
<td>0 = 1-20 students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.014</td>
</tr>
<tr>
<td>1 = 21-40 students (D1)</td>
<td>.266</td>
<td>.111</td>
<td>.132</td>
<td>2.389</td>
<td>.017</td>
<td></td>
<td>.009</td>
</tr>
<tr>
<td>2 = more than 41 students (D2)</td>
<td>.144</td>
<td>.095</td>
<td>.084</td>
<td>1.515</td>
<td>.130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade and Assessment way</td>
<td>.316</td>
<td>.054</td>
<td>.273</td>
<td>5.811</td>
<td>&lt; .001</td>
<td>.074</td>
<td>.072</td>
</tr>
<tr>
<td>Teaching Style</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.056</td>
<td>.051</td>
</tr>
<tr>
<td>0 = Lecture only</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 = L + Presentation (D1)</td>
<td>.480</td>
<td>.120</td>
<td>.196</td>
<td>4.013</td>
<td>&lt; .001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 = L + P + Discussion (D2)</td>
<td>.364</td>
<td>.090</td>
<td>.198</td>
<td>4.043</td>
<td>&lt; .001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMI professor’s Attempt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.027</td>
<td>.025</td>
</tr>
<tr>
<td>0 = No &amp; 1 = Yes (D1)</td>
<td>.390</td>
<td>.114</td>
<td>.164</td>
<td>3.436</td>
<td>.001</td>
<td>.027</td>
<td>.025</td>
</tr>
</tbody>
</table>
First, the regression model for ‘interaction degree’ variable was proved as statistically significant \( (p = < .001) \) and the model explained 8.8% of EMI effect on EPD. The regression coefficient of the variable was .267 \( (p = < .001) \) and the standardized regression coefficient was .297. The variable ‘interaction degree’ influenced more CL than EPD. Based on the result, the ‘interaction degree’ variable is identified as the influential variable to determine EMI effects.

Second, the regression model for the ‘feedback degree’ variable was revealed as statistically significant \( (p = < .001) \). The model explained 9.7% of EMI effect on EPD. Regression coefficient for the variable was .292 and the standardized regression coefficient was .311. Compared to the standardized regression coefficient (.268) for the effect on CL, the influence of ‘feedback’ was reflected more on EPD. Based on the results, the variable ‘feedback degree’ can be identified as the influential variable to determine EMI effect on EPD.

Third, in the regression model for the ‘class size’ variable, Sig. value of the model was .054. As the significance level was set at \( p < .05 \) in the study, the regression model wasn’t statistically significant. Therefore, the variable ‘class size’ can’t be identified as the influential variable to determine EMI effect on EPD.

Fourth, the regression model for ‘satisfaction with grade and assessment way’ variable was revealed as the statistically significant \( (p = < .001) \). The model explained 7.4% of EMI effect on EPD. The regression coefficient was .316 and the standardized regression coefficient was .273. Based on the result, the variable can be identified as the influential variable to determine EMI effect on EPD.
Fifth, the regression model for the ‘teaching style’ variable was statistically significant ($p = < .001$). The model explained 5.6% of EMI effect on EPD. Similarly to the result of Table 4-32, given the Sig. value of each group, every group had a statistically significant effect on EPD ($p = < .001; p = < .001$) and the regression coefficient (.480) for the group with ‘presentation activity’ was higher than the group with ‘presentation activity’ and ‘discussion activity’ together (.364). However, the standardized coefficient (.198) of the group with ‘presentation activity’ and ‘discussion activity’ was a little higher than the group with ‘presentation activity’ only (.196). This inverse result was different from the result of EMI effect on CL. In the case of EMI effect on CL, the ‘discussion activity’ didn’t show any positive effect. The students didn’t receive the improved effect on CL through ‘discussion activity’. However, in the case of EPD, ‘discussion activity’ showed a little positive effect on EPD, but the degree of effect was negligible. The previous studies mention that EMI professors feel the lack of teaching time since they have to repeat the same content very often in order to make their students understood. Given the mention, the minor effect of ‘discussion activity’ is determined as NOT essential for more effective EMI practice. Based on the result, ‘teaching style’ variable is identified as the influential variable to determine EMI effect on EPD, but the appropriate type of course activity should be selected and ‘presentation activity’ is considered as suitable.

Last, the regression model for ‘EMI professor’s attempt to enhance students’ English ability’ variable was revealed as statistically significant ($p = .001$) and explained 2.7% of EMI effect on EPD. The regression coefficient was .390 and the standardized regression coefficient was .164 ($p = .001$). Unlike the result of Table 4-32, the variable
was influential for the effect on EPD and this result reveals that the attempt of EMI professor positively influenced the effect on EPD only. As a result of this, it can be inferred that the effect of the attempt was limited to the effect on EPD. The balance of CL and EPD wasn’t attained through the attempt. The imbalance marred the effects of EMI approach and manifested the division of CL and EPD. Given the fundamental principle of EMI approach, the attempt wasn’t desirable. Based on the result, the variable ‘EMI professor’s attempt’ can be identified as the influential variable to determine EMI effect on EPD.

Through the results of 6 simple regression analyses for the research variables in course factor, the identified influential variables that determine EMI effect on EPD are as follows: 1) interaction degree, 2) feedback degree, 3) satisfaction with grade/assessment way, 4) teaching style, and 5) EMI professor’s attempt to enhance to students’ English ability.

4.4.3 **Relation between the identified influential variables in course factor and EMI effects**

Based on the results of the previous simple regression analyses of the research variables in course factor, the influential variables were identified. In this section, the identified influential variables were simultaneously entered in multiple regression analysis in order to detect which variable is more powerful to explain EMI effects on CL and EPD.
1) Effect on CL

Table 4-34

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>SE b</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>1.307</td>
<td>.200</td>
<td>6.524</td>
<td>&lt; .001</td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>.176</td>
<td>.046</td>
<td>.195</td>
<td>3.837</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Feedback</td>
<td>.158</td>
<td>.046</td>
<td>.166</td>
<td>3.416</td>
<td>.001</td>
</tr>
<tr>
<td>Grade and Assessment</td>
<td>.186</td>
<td>.057</td>
<td>.159</td>
<td>3.280</td>
<td>.001</td>
</tr>
<tr>
<td>Teaching style: L+P</td>
<td>.158</td>
<td>.117</td>
<td>.065</td>
<td>1.353</td>
<td>.177</td>
</tr>
<tr>
<td>Teaching style: L+P+D</td>
<td>.066</td>
<td>.091</td>
<td>.036</td>
<td>.733</td>
<td>.464</td>
</tr>
</tbody>
</table>

Notes:  \( R = .397, R^2 = .158, \text{ Adjusted } R^2 = .147; \) \( F(5, 414) = 15.487, p < .001; \)
Dependent variable = Effect on CL

Table 4-34 displays the total influence of the identified influential variables in course factor on CL. The multiple regression model was identified as statistically significant \( (F = 15.487, p < .001) \) and explained 15.8% of EMI effect on CL. Given the Sig. value of each variable, the ‘teaching style’ variable were identified as NOT statistically significant \( (p = .177; p = .464) \). Even though the groups of ‘teaching style’ variable were proved as statistically significant in simple regression analysis, the Sig. values in simultaneous multiple regression analysis exceeded the significance level set at .05. As a result, it is assumed that the influence of ‘teaching style’ variable was relatively weaker than the influences of other variables and the weak influence of ‘teaching style’ variable revealed the different result when other variables simultaneously entered.

The standardized regression coefficients \((\beta)\) show the relative influence power of each variable. The standardized regression coefficient (.195) of ‘interaction degree’
variable was the most powerful variable to determine EMI effect on CL and the standardized regression coefficient of the ‘feedback degree’ variable (.166) and the standardized regression coefficient of the ‘satisfaction with grade and assessment way’ variable (.159) were followed.

2) Effect on EPD

Table 4-35

<table>
<thead>
<tr>
<th>Variables</th>
<th>b</th>
<th>SE b</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>1.401</td>
<td>.197</td>
<td>7.118</td>
<td>&lt; .001</td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>.104</td>
<td>.045</td>
<td>.117</td>
<td>2.313</td>
<td>.021</td>
</tr>
<tr>
<td>Feedback</td>
<td>.199</td>
<td>.045</td>
<td>.213</td>
<td>4.399</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Grade and Assessment</td>
<td>.189</td>
<td>.056</td>
<td>.163</td>
<td>3.393</td>
<td>.001</td>
</tr>
<tr>
<td>Teaching style: L+P</td>
<td>.279</td>
<td>.115</td>
<td>.116</td>
<td>2.432</td>
<td>.015</td>
</tr>
<tr>
<td>Teaching style: L+P+D</td>
<td>.219</td>
<td>.088</td>
<td>.120</td>
<td>2.476</td>
<td>.015</td>
</tr>
<tr>
<td>Attempt</td>
<td>.151</td>
<td>.108</td>
<td>.064</td>
<td>1.403</td>
<td>.161</td>
</tr>
</tbody>
</table>

Notes: \( R = .436, R^2 = .190, \) Adjusted \( R^2 = .178; F(6, 409) = 16.021, p < .001; \) Dependent variable = Effect on EPD

Table 4-35 displays the total influence of the identified influential variables in course factor on EPD. The multiple regression model was identified as statistically significant (\( F = 16.021, p < .001 \)) and explained 19.0% of EMI effect on EPD. Given the Sig. value of each variable, ‘professor’s attempt’ variable was excluded from the influential variable (\( p = .161 \)). The result was different from the result of simple regression analysis. In the case that other variables are applied together, the effect of ‘professor’s attempt’ on EPD was not influential. Therefore, the result means that the
students in EMI course didn’t perceive the activity that EMI professor employed in order to improve their English ability as effective.

The standardized regression coefficients ($\beta$) show the relative influence power. The standardized regression coefficient (.213) of feedback variable was the most powerful and the satisfaction with grade and assessment way variable (.165) was followed. The coefficients of interaction variable (.117) and teaching style variable (.116; .120) were similar.

Based on the results of the above regression analyses of Table 4-34 and Table 4-35, Table 4-36 summarizes the identified influential variables in course factor to determine EMI effects on CL and EPD.

**Table 4-36**

*Identified influential variables in Course Factor on EMI effects on CL and EPD*

<table>
<thead>
<tr>
<th>Factor</th>
<th>Variables</th>
<th>CL</th>
<th>EPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
<td>Interaction between students and professor</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Feedback degree</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Class Size</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Satisfaction with grade and assessment way</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Teaching Style</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Attempt</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Notes: O = statistically significant variable; X = not statistically significant
4.5 Relation between overall influence of all the identified influential variables in three factors and EMI effects

Through the simultaneous multiple regressions analyses for each factor, the respective influential variables for each factor were identified. Among the research variables in the student factor, ‘student’s English ability’ variable, ‘reason to take EMI course’ variable, and ‘number of EMI courses taken’ variable were identified as statistically significant. In case of the variable ‘number of EMI courses taken’, the effect of the variable was significant only for CL. The ethnicity of the EMI professor was the only research variable in the professor factor that was included in this final analysis. The influential variables in the course factor were ‘interaction degree’ variable, ‘feedback degree’ variable, ‘satisfaction with grade and assessment way’ variable, and ‘teaching style’ variable. Among the influential variables in the course factor, the ‘teaching style’ variable only influenced the effect on EPD. Table 4-37 summarizes all the influential variables employed in simultaneous multiple regression analysis.

Table 4-37

<table>
<thead>
<tr>
<th>Total identified influential variables</th>
<th>Variables</th>
<th>CL</th>
<th>EPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Factor</td>
<td>English Ability</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Reason to take EMI course</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Number of EMI course taken</td>
<td>O</td>
<td>X</td>
</tr>
<tr>
<td>Professor Factor</td>
<td>Ethnicity of EMI professor</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Course Factor</td>
<td>Interaction between students and professor</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Feedback degree</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Satisfaction with Grade and Assessment way</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Teaching Style</td>
<td>X</td>
<td>O</td>
</tr>
</tbody>
</table>
Notes: CL = Content Learning; EPD = English Proficiency Development
O = statistically significant variable; X = not statistically significant

1) Effect on CL

Table 4-38
Total influence of all the influential variables on CL

<table>
<thead>
<tr>
<th>Variables</th>
<th>b</th>
<th>SE b</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>.780</td>
<td>.222</td>
<td></td>
<td>3.511</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>English Ability</td>
<td>.191</td>
<td>.054</td>
<td>.164</td>
<td>3.526</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Reason to take EMI</td>
<td>.238</td>
<td>.077</td>
<td>.138</td>
<td>3.100</td>
<td>.002</td>
</tr>
<tr>
<td>Number of EMI taken</td>
<td>.111</td>
<td>.097</td>
<td>.053</td>
<td>1.144</td>
<td>.253</td>
</tr>
<tr>
<td>Interaction</td>
<td>.159</td>
<td>.044</td>
<td>.176</td>
<td>3.579</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Feedback</td>
<td>.155</td>
<td>.045</td>
<td>.163</td>
<td>3.446</td>
<td>.001</td>
</tr>
<tr>
<td>Grade &amp; Assessment</td>
<td>.157</td>
<td>.055</td>
<td>.134</td>
<td>2.842</td>
<td>.005</td>
</tr>
<tr>
<td>Foreign Professor (D1)</td>
<td>-.091</td>
<td>.106</td>
<td>-.039</td>
<td>-.866</td>
<td>.387</td>
</tr>
<tr>
<td>Co-teaching (D2)</td>
<td>.234</td>
<td>.100</td>
<td>.109</td>
<td>2.342</td>
<td>.020</td>
</tr>
</tbody>
</table>

Notes: R= .491, R² = .241, Adjusted R² = .226; F (8, 404) = 16.002, p < .001;
Dependent variable = Effect on CL

Table 4-38 displays the total influence of all the influential variables on CL. The multiple regression model was statistically significant (F = 16.002; p = < .001) and explained 24.1% of EMI effect on CL. Given the Sig. value of each variable, ‘the number of EMI courses taken’ variable and ‘foreign professor’ variable were identified as NOT statistically significant (p = .253; p = .387). In the simultaneous multiple regression analysis of student factor, ‘the number of EMI courses taken’ variable was recognized as statistically significant, but in the simultaneous multiple regression analysis of all the factors, the variable was not statistically significant. In the regression analysis of

---

17 The variable was re-coded as a dummy variable. (0 = compulsory; 1 = voluntary)
18 The variable was re-coded as a dummy variable. (0 = 1-4 courses; 1 = more than 5 courses taken)
professor factor, ‘foreign professor’ variable wasn’t statistically significant and the same result was revealed in the regression analysis of all the factors. This result indicates that the influence of the above two variables on CL was relatively weak and when other variables were together considered, the influence powers of the variables were reduced.

The results of the standardized regression coefficients (β) show the relative influence power. The standardized regression coefficient (.176) of the ‘interaction degree’ variable was the most powerful and ‘student’s English ability’ variable (.164) and ‘feedback degree’ variable (.163) were followed. The order of influence power on CL is as follows:

**Interaction > English ability > Feedback > Reason to take EMI course > satisfaction with Grade and Assessment way > Co-teaching**

The order emphasizes the importance of interaction and feedback for CL in EMI course. Especially, the influence of the interaction between EMI professor and students is beyond the influence of student’s English ability.

Under general expectation for EMI implementation that students’ English ability is the most dominant variable to determine students’ learning for academic content, the above result implies that EMI professor’s role is more critical.

2) Effect on EPD

**Table 4-39**

*Total influence of all the influential variables on EPD*
Table 4-39 displays the total influence of all the influential variables on EPD. The multiple regression model was identified as statistically significant (F = 15.597; p = < .001) and explained 25.8% of EMI effect on EPD. Given the Sig. value of the regression coefficient of each variable, all the groups of ‘teaching style’ variable (‘teaching style L+P’ and ‘teaching style L+P+D’) were identified as NOT statistically significant (p = .187; p = .089) and all the groups of ‘the ethnicity of EMI professor’ variable (‘foreign professor’ and ‘co-teaching’) were proved as NOT statistically significant (p = .941; p = .590).

In the relation between EMI effect on EDP and Teaching Style variable, Table 4-33 displayed that ‘teaching style L+P’ and ‘teaching style L+P+D’ were all statistically significant with high standardized regression coefficients (β = .196; β = .198) for EPD. However, in the result of simultaneous multiple regression analysis, the result was overturned. Through the overturned result, it can be inferred that the effect on EPD

<table>
<thead>
<tr>
<th>Variables</th>
<th>b</th>
<th>SE b</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>.971</td>
<td>.218</td>
<td>.125</td>
<td>4.444</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>English Ability</td>
<td>.144</td>
<td>.052</td>
<td>.125</td>
<td>2.763</td>
<td>.006</td>
</tr>
<tr>
<td>Reason to take EMI</td>
<td>.358</td>
<td>.075</td>
<td>.211</td>
<td>4.755</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Interaction</td>
<td>.116</td>
<td>.043</td>
<td>.131</td>
<td>2.697</td>
<td>.007</td>
</tr>
<tr>
<td>Feedback</td>
<td>.183</td>
<td>.044</td>
<td>.195</td>
<td>4.172</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Grade &amp; Assessment</td>
<td>.157</td>
<td>.054</td>
<td>.136</td>
<td>2.883</td>
<td>.004</td>
</tr>
<tr>
<td>Teaching Style L+P</td>
<td>.156</td>
<td>.118</td>
<td>.066</td>
<td>1.322</td>
<td>.187</td>
</tr>
<tr>
<td>Teaching Style L+P+D</td>
<td>.150</td>
<td>.088</td>
<td>.083</td>
<td>1.706</td>
<td>.089</td>
</tr>
<tr>
<td>Foreign Professor</td>
<td>.008</td>
<td>.107</td>
<td>.003</td>
<td>.074</td>
<td>.941</td>
</tr>
<tr>
<td>Co-teaching</td>
<td>.054</td>
<td>.100</td>
<td>.025</td>
<td>.539</td>
<td>.590</td>
</tr>
</tbody>
</table>

Notes: \( R = .508, R^2 = .258, \text{Adjusted } R^2 = .241; F(7, 408) = 15.597, p = < .001; \) Dependent variable = Effect on EPD
manifested in Table 4-33 didn’t result from teaching style. In other words, ‘the current presentation’ activity and ‘discussion activity’ are NOT helpful for improving students’ English proficiency.

In the simple regression analysis of the ‘ethnicity of EMI professor’ variable, the effect on EPD was statistically significant but in the simultaneous multiple regression analysis, the result was NOT significant. Through the above result, it can be inferred that the existence of foreign professor in EMI course doesn’t guarantee students’ English proficiency improvement.

The standardized regression coefficients (β) show the relative influence power. The standardized regression coefficient (.211) of the ‘reason to take EMI course’ variable was the most powerful and ‘feedback degree’ variable (.195) was followed. Only in the case of the students who voluntarily took EMI courses with the definite goal to improve English ability and in the case of the students who received sufficient corrective feedbacks from EMI professor, the effect of EMI approach on EPD was recognized as effective. The ‘satisfaction with grade and assessment way’ variable (.136), ‘interaction degree’ variable (.131), and ‘student’s English ability’ variable (.125) were also identified as statistically significant. The order of influence power on EPD is as follows:

**Reason to take EMI course > Feedback > Grade and Assessment way > Interaction > English ability**

Through the results of Table 4-38 and Table 4-39, the identified influential variables in Table 4-37 are revised as in the following.
Table 4-40

*Finalized influential variables*

<table>
<thead>
<tr>
<th>Factor</th>
<th>Variables</th>
<th>CL</th>
<th>EPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Factor</td>
<td>English Ability</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Reason to take EMI course</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Number of EMI course taken</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Professor Factor</td>
<td>Ethnicity of EMI professor</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Course Factor</td>
<td>Interaction</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Feedback</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Satisfaction with Grade and Assessment way</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Teaching Style</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Notes: O = statistically significant variable; X = not statistically significant
Chapter 5

CONCLUSION, SUGGESTION AND IMPLICATION

5.1 Conclusion

The purpose of the study was to ascertain the conditions and the considerations for more effective EMI implementation, centered on the study of the variables influencing EMI effects on academic content learning and English proficiency development. For doing so, the study inspected the fundamental principles of EMI approach’s theoretical foundations such as ESP (English for specific purposes), CBI (content-based instruction), and BICS (basic interpersonal communicative skills)/CALP (cognitive academic language proficiency) for the purpose of framing the conditions of EMI implementation. Also, the study reviewed the results of the previous studies on EMI implementation in Korea in order to extract the variables that were reported as the influential variable to determine EMI effects. The extracted variables were determined as the research variables of this study and through the analysis of students’ survey results, identified were the influential variables to determine EMI effects.

The research variables were categorized into 3 factors: student factor, professor factor, and course factor. In student factor, ‘student’s English ability’, ‘student year’, ‘the number of EMI courses taken’, ‘the experience of staying in English-speaking country’, and ‘the reason to take EMI course’ were selected as the research variables. In professor factor, ‘the ethnicity of EMI professor’ was chosen as the research variable and in course factor, ‘the degree of interaction between EMI professor and students’, ‘the degree of
feedback that the students in EMI course have received’, ‘class size’, ‘the satisfaction with grade and assessment way’, ‘teaching style’, and ‘professor’s attempt to enhance students’ English proficiency’ were picked up.

The selected research variables were divided into 2 types: constant variable and conditional variable. Constant variable was defined as the variable that is already fixed and doesn’t change. For example, the variables such as ‘student year’, ‘English ability’, ‘the experience of staying in English-speaking country’, ‘the reason to take EMI course’, ‘professor’s ethnicity’, and ‘class size’ were categorized as the constant variables. The results of the constant variables can be employed as the instructional conditions for EMI implementation. Specifically, the information on the constant variables can provide the guidelines on the followings: 1) who should conduct EMI course, 2) when EMI course should be started, 3) should students possess the high level of English ability to take EMI course, 4) how many EMI courses should students take, 5) how many students should be in one EMI class, and etc.

On the other hand, the conditional variable was designated as the variable that is changeable and selective. The variables such as ‘interaction’, ‘feedback’, ‘satisfaction with grade and assessment way’, ‘teaching style’ were categorized into the conditional variables. The results of the conditional variables can provide the empirical recommendations for more effective EMI-based teaching. The results of the conditional variables can play an important role as the guidelines for EMI course design and the development of EMI course activities. Concretely, the results can provide the information on the followings: 1) how should EMI professor interact with students for academic content learning and students’ English proficiency development, 2) how often should
EMI professor give corrective feedbacks on students’ outcomes, 3) what types of teaching style should be employed in EMI course, 4) what kinds of assessment way should be used in EMI course, 5) should EMI professor make additional attempts to enhance students’ English proficiency, and etc. In other words, the information on the conditional variables can provide the practical and empirical guidelines for more effective EMI course operation.

Among 902 university students who responded to the survey, 433 students responded that they have taken or are taking EMI course(s). The EMI effects were measured in 2 aspects: content learning (CL) and English proficiency development (EPD). The results of EMI effects are as follows: in the effect of EMI approach on CL, the participants took slightly negative stance (2.8773) in Likert scale with 5 points (1: very ineffective to 5: very effective) and in the effect of EMI approach on EPD, the participants marked almost the theoretical midpoint (2.9954). Even though the mean score of EMI effect on EPD was a little higher than the mean score of EMI effect on CL, the two scores were below the theoretical midpoint (3.0) and this result signifies that the current EMI implementation is not effective for CL and EPD and implies that it is necessary to supplement the current EMI practices.

In detail, through the simple regression analysis of the research variables, each research variable was investigated in order to check which variable is influential for EMI effects.

First, in student factor, the following variables were detected as the influential variables for EMI effect on CL: ‘student’s English ability’, ‘the reason to take EMI course’, ‘the experience of staying in English-speaking country’, and ‘the number of EMI
courses taken’. The above variables were revealed as statistically significant to influence the effect on CL. In the case of the students with high English ability, in the case of the students that voluntarily took EMI course, in the case of the students that have the experience of staying in English-speaking country, and in the case of the students that have taken more than 5 EMI courses, the effect on CL was identified as effective.

However, in the simultaneous multiple regression analysis of the identified influential variables in student factor, the variable ‘the experience of staying in English-speaking country’ was recognized as NOT statistically significant. As the effect of EMI course was simultaneously influenced by the various variables, when the various variables were considered simultaneously, the effect considered as the influence of ‘the experience of staying in an English-speaking country’ was actually not statistically significant.

In the effect on EPD, the result was the same as the result of the effect on CL. The following variables were identified as the influential variables in simple regression analysis: ‘student’s English ability’, ‘the reason to take EMI course’, ‘the experience of staying in English-speaking country’, and ‘the number of EMI courses taken’. However, in the simultaneous multiple regression analysis, ‘the experience of staying in English-speaking country’ and ‘the number of EMI courses taken’ were revealed as NOT statistically significant. Consequently, in order to develop English proficiency through taking EMI course, the above average level of English ability was required and the definite determination to improve English ability was necessary.

Second, in professor factor, the ethnicity of EMI professor was identified as the influential variable. In the effect on CL, ‘co-teaching’ group was revealed as more
effective than ‘Korean professor’ group and ‘foreign professor’ group. Especially, ‘co-teaching’ group only marked the positive mean score (3.1687) above the theoretical midpoint. EMI course by Korean professor only and EMI course by foreign professor only were below the theoretical midpoint.

In the effect on EPD, ‘foreign professor’ group marked the highest mean score (3.2113) and ‘co-teaching’ group was followed (3.1687). ‘Korean professor’ group indicated the only negative mean score (2.8949). Given the fact that the current EMI implementation was mainly conducted by Korean professors (64.27%), the above result casts the serious argumentative issues for the rapid expansion of EMI implementation.

Last, in course factor, the following variables were revealed as the influential variables for EMI effect on CL: ‘interaction degree’, ‘feedback degree’, ‘satisfaction with grade and assessment way’, and ‘teaching style’. In the case of the students that had more interactions with EMI professor, in the case of the students that received enough feedbacks from EMI professor, in the case of the students that felt more satisfaction with grade and assessment way, and in the case of the students that have performed the course activities such as presentation and discussion, the effect on CL was more effective. On the other hand, ‘class size’ and ‘professor’s attempt to enhance students’ English ability’ were identified as NOT statistically significant in simple regression result. However, in the simultaneous regression analysis, ‘teaching style’ was revealed as NOT statistically significant. Based on the above result, in order to conduct more effective EMI implementation for CL, the sufficient level of the interaction between EMI professor and students, the satisfactory level of the feedbacks that the students in EMI courses have
received, and the appropriate assessment way and grading system should be given to students.

In the effect on EPD, the following variables were recognized as the influential variables in simple regression analysis: ‘interaction degree’, ‘feedback degree’, ‘satisfaction with grade and assessment way’, ‘teaching style’, and ‘professor’s attempt to enhance students’ English ability’. However, in the simultaneous multiple regression analysis, ‘professor’s attempt to enhance students’ English ability’ was excluded from the list of the influential variables. In other words, given the effects of other course variables, the effect on EPD of ‘professor’s attempt’ was identified as NOT statistically significant. One remarkable thing to carefully consider was that the attempts that EMI professors made in order to enhance students’ English ability was NOT effective for improving students’ English ability. Even though EMI professors made the various types of attempts to enhance student’s English ability, their attempts were not effective.

Based on the results of the simultaneous multiple regression analyses for the identified influential variables of 3 factors, the final influential variables were designated. In the simultaneous multiple regression analysis for the final variables, the finalized influential variables for the effect on CL were ‘student’s English ability’, ‘reason to take EMI course’, ‘interaction degree’, ‘feedback degree’, ‘satisfaction with grade and assessment way’, and ‘co-teaching’ group. The order of influence power on CL was as follows:

Interaction degree > English ability > Feedback degree > Reason to take EMI course > satisfaction with Grade and Assessment way > Co-teaching.
The finalized influential variables for the effect on EPD were ‘student’s English ability’, ‘reason to take EMI course’, ‘interaction degree’, ‘feedback degree’, and ‘satisfaction with grade and assessment way’. The order of influence power on EPD was as follows:

Reason to take EMI course > Feedback > Grade and Assessment way > Interaction > English ability.

Based on the results of the study, the relation between EMI effects and the research variables is summarized as follows:

1. English ability and EMI effects are positively correlated each other. Therefore, EMI implementation should be conducted to the students with the certain level of English ability.

2. There is no statistically significant correlation between ‘student year’ and EMI effects.

3. There is a strong correlation between ‘the reason to take EMI course’ and EMI effects. Therefore, the current unilateral EMI implementation should be avoided. Without the definite willing to develop English ability, students’ English proficiency can’t be developed. Therefore, EMI implementation should be applied to the students who voluntarily want to take EMI course.

4. There is no statistically significant correlation between ‘the experience of staying in English-speaking country’ and EMI effects. Even though the students with the experience possess relatively higher English ability than the students without the experience, the students with the experience didn’t show
more effective development. Therefore, the specific English teaching method tailored to EMI approach should be provided to students.

5. There is no statistically significant correlation between ‘the number of EMI courses taken’ and EMI effects. The result reveals that the current EMI practice isn’t effectively conducted. Even though students have taken several EMI courses, they still have the problems to learn academic content and develop English ability. Therefore, the appropriate and effective teaching methods and EMI course activities should be developed.

6. ‘The ethnicity of EMI professor’ doesn’t determine EMI effects. Even though many previous studies criticize the problem of EMI course conducted by Korean professors, the difference of EMI effects between the course by Korean professor and the course by foreign professor didn’t exist. Only in the course by ‘co-teaching’ the positive result appeared.

7. ‘Interaction degree’ is the very important variable to determine the success of EMI implementation. Especially, in the effect on CL, ‘interaction degree’ is the most powerful variable to determine EMI effect. Therefore, the ways to increase the degree of interaction should be invented.

8. ‘Feedback degree’ is also the critical variable to determine the success of EMI implementation. ‘Feedback degree’ significantly influenced the effect on EPD. Therefore, EMI professor should provide the sufficient and appropriate feedbacks on students’ learning outcomes.

9. There is no statistically significant correlation between ‘class size’ and EMI effects. Small class size didn’t guarantee the success of EMI implementation.
10. The relation between ‘the satisfaction with grade and assessment way’ and EMI effects influenced on EMI effects. Therefore, the appropriate and reliable assessment way should be devised. The assessment in EMI course should be focused on students’ academic achievement, not on students’ English proficiency.

11. The course activities such as ‘presentation activity’ and ‘discussion activity’ didn’t influence on EMI effect positively. This result indicates ineffectiveness of EMI activities. Therefore, the new types of teaching style should be devised.

12. ‘EMI professor’s attempt to enhance students’ English proficiency’ didn’t play a positive role in developing students’ English proficiency. Given the actual attempts of EMI professors (see Appendix chapter), the attempt didn’t follow the fundamental principle of EMI approach: to achieve CL and EPD simultaneously. As most EMI professors don’t have enough knowledge on English education, they can’t conduct the appropriate and effective teaching. Therefore, the systematic supports from the university authority should be given.

The next section will suggest the more feasible and practical measures to improve the effects of EMI implementation on the basis of the above results.

5.2 Suggestions

Through the results of the study, the influential variables that significantly influence EMI effects were identified. Under the current circumstances of EMI
implementation, the proportion of EMI-based courses at the tertiary level will increase and the importance of EMI effects will also increase.

The problems that were identified in the study are largely divided into 3 aspects. First, EMI implementation is unilaterally conducted regardless of the current situation: students’ deficient English ability to take EMI course and compulsory EMI course taking. Second, EMI professors don’t fully understand what EMI approach is and how they should teach students. Third, there is no feasible and practical support for EMI professors.

Based on the results of the study, the constant variables identified as the influential variable are ‘student’s English ability’ variable, ‘the reason to take EMI course’ variable, and ‘co-teaching’. The conditional variables as the influential variable are ‘interaction’, ‘feedback’, and ‘satisfaction with grade and assessment way’.

The identified influential variables emphasize the importance of 1) interactions between EMI professor and students and 2) feedbacks provided from EMI professor on students’ learning outcomes. Also, through the analysis of the relation between ‘the ethnicity of EMI professor’ variable and ‘teaching style’ variable and EMI effects, it can be inferred that EMI professors that are currently conducting EMI courses don’t fully understand the fundamental principles of EMI approach and their teaching styles, or course activities, don’t play a positive and effective role in assisting students’ content learning and English development. Given the actual examples of EMI professor’s attempts to enhance students’ English proficiency, the systematic supports of university authority level should be required.

Therefore, as the conditions and the considerations for more effective EMI implementation, the study suggests the followings:
1) Employment of Language Coordinator

2) Development of EMI workbook

3) Operation of EMI Web-site

5.2.1 Employment of Language Coordinator

As revealed in the results of the study, EMI professors that are conducting EMI courses are recognized as problematic for 1) teaching academic content in English, 2) developing students’ English proficiency, 3) devising teaching methods and course activities tailored to EMI approach, 4) interacting with students for the purpose of assisting students’ content learning, and 5) providing sufficient and appropriate corrective feedbacks on students’ learning outcomes. The result of the relation between the ethnicity of EMI professor and EMI effects informs us that these operational problems are not limited to Korean EMI professors. In the EMI courses conducted by foreign professor, the similar problems are detected.

The operational problems result from the lack of 1) understanding of EMI approach and 2) the experience of teaching students academic knowledge on the basis of EMI approach. As the problems can’t be easily and shortly solved, the administrative support of university authority is necessary.

As the solution for the problems, the study suggests the employment of Language Coordinator.
5.2.1.1 What is Language Coordinator?

The idea for Language Coordinator (LC) is motivated from the concepts of Adjunct model in CBI (See p.40 in chapter 2). In adjunct model, students attend two courses: one is for content learning and the other is for language development and students are required to learn subject content and simultaneously to achieve academic language proficiency (Met, 1999). The responsibility for students’ learning is devoted to both language teacher and content teacher. LC is the modified language teacher from adjunct model. As the results of the study revealed the problems of EMI professors for conducting EMI course in English and developing students’ CL and EPD in English, EMI professors are needed for administrative support.

Unlike the language teacher in adjunct model, LC doesn’t directly attend EMI course and teach students. LC lends the assistance for EMI professor on conducting EMI course only in the aspect of English teaching and learning.

LC signifies the native-English speaker who possesses the sufficient and competent knowledge and experience for English teaching especially in ESL/EFL context. LC should fully understand the fundamental principles of EMI approach and have abundant experience of teaching ESL/EFL students. Also, LC should possess basic knowledge of certain major that the LC is hired in.

The following section will describe the responsibilities of LC.
5.2.1.2 Responsibilities of Language Coordinator

LC has three primary responsibilities for: 1) developing the workbook for EMI course, 2) providing linguistic corrective feedbacks on students’ learning outcomes in English, and 3) managing students’ English development by means of portfolio assessment way.

1) EMI Workbook

In the results of the study, the current EMI implementation seems to be the academic course that is just conducted in English. There is no specific and specialized teaching method and course activity based on the fundamental principles of EMI approach. This inadequate operation of EMI course results from EMI professors who don’t fully understand the principles of EMI approach. Even though most EMI professors employed presentation activity and discussion activity as the course activity for improving EMI effects, the course activities was proved as ineffective.

Therefore, it is needed to develop EMI workbook. EMI workbook is different from the main textbooks that are used in the course. The textbook in EMI course has academic information and knowledge and the purpose of the textbook is to display the information and knowledge. Whereas, EMI workbook has the same information and knowledge as main textbook but the purpose of EMI workbook is to provide students with the opportunity to practice what they learned in English. EMI workbook should include the various course activities and tasks that the students can participate in. As the content in EMI workbook is related to the content of EMI course, students can have the chance to learn academic content and to develop English proficiency simultaneously.
The advantages of EMI workbook use are as follows:

1) Students can have more opportunities to practice what they learned in English.
2) More students (all students) can participate in the course activities.
3) Through fulfilling the activities and tasks in EMI workbook, students can check their learning development.
4) Through completing activities and tasks, students can develop productive English skills.
5) EMI Professors can give more feedbacks on students’ learning outcomes through EMI workbook.
6) EMI Professors can make sure that they are paying attentions both on content learning and English proficiency development.

1-1) Procedures of EMI Workbook development

EMI workbook is developed by EMI professor and Language Coordinator together. EMI workbook has two parts: content part and language part. The procedures of EMI workbook development are as follows:

1) First, the content that should be placed on the workbook is selected by EMI professor. The content can be chosen from main textbook(s), additional textbook(s), and supplementary reading materials that are presented in course syllabus. The content that EMI professor selected might be the core knowledge and information in accordance with the goals and objectives of the course. EMI professor sends the selected content to LC.
2) Second, LC devises course activities and tasks with the selected content. The activities and tasks might be multiple choice style, cloze test style, speaking style, writing style, and etc. The most important thing is that the activities and tasks should be based on checking students’ understanding of the content. LC sends the devised activities and tasks to EMI professor.

3) Third, EMI professor check whether the activities and tasks include the core knowledge and information that EMI professor should teach and deliver. Also, EMI professor check whether s/he can handle the activities and tasks in English. If there are the points to be revised and edited, EMI professor sends the activities and tasks with the feedbacks on the points.

4) Fourth, LC revises and edits the activities and tasks in order to meet the demands of EMI professor. Third and fourth procedures can be repeated.

5) Fifth, EMI professor and LC try out the activities and tasks to a few students and receive feedbacks on the activities and tasks from the students.

6) Sixth, EMI professor employ the activities and tasks in the class.

7) Seventh, EMI professor receive students’ opinions for the course at the end of semester by means of course evaluation.

Figure 5-1 displays the entire procedures of EMI workbook development.
P: Select the content EMI Workbook from main textbook and additional course materials.

LC: Devise course activities and tasks of Workbook with the selected content by EMI professor.

P: Check the content of Workbook and the check practicality of the activities and tasks.

LC: Modify the activities and tasks in accordance with the request of EMI professor.

P & LC: Demonstrate the activities and tasks in Workbook in pilot lecture and receive feedbacks

P & LC: Revise and Edit the activities and tasks based on the feedbacks from pilot lecture

P & LC: Apply to the actual course and receive the feedback at the end of semester.
2) Providing Linguistic Corrective Feedback and managing students’ English ability development

Another responsibility of Language Coordinator (LC) is to provide sufficient and appropriate corrective feedbacks on student’s English outcomes. As revealed in the results of the study, the corrective feedback is the most critical element to influence EMI effect on English proficiency development. In spite of the enormous importance of corrective feedback, students’ reaction to the degree of corrective feedback was somewhat negative (2.8614). The studies (Hong et al., 2008; Kang & Park, 2004a) on EMI implementation targeting EMI professors mention that EMI professors have difficulty providing enough feedbacks to students due to several reasons: big class size and deficient English ability of EMI professor. Therefore, in order to provide appropriate degree of feedbacks, the systematic support of university authority is necessary.

As described in the previous section, LC doesn’t directly participate in actual EMI courses. The way for LC to provide corrective feedback is to utilize EMI website. EMI website is the website that is constructed for EMI implementation. EMI website should be constructed in main homepage of each university for continuing and stable management. EMI professor will ask the students in the class to upload all assignments such as their papers, reports, and reaction/response papers. Also, students will be asked to perform course activities that are provided in EMI homepage. Students’ English outcomes should not be limited to written forms. Students can upload audio file for performing tasks and activities.
LC has the right to access and manage the homepage and supplies corrective feedbacks on students’ English outcomes in the aspect of English development. Also, LC should record English development of each student. LC should apprehend weakness of each student’s English ability and provide practical advice to make up the weakness.

There are two merits in the employment of EMI website: possible to offer continuing and consistent guidance of English learning and to perform longitudinal assessment. As the EMI website can display the gradual development of students’ English ability, not only the current EMI professor but the next EMI professor can utilize the information on students’ English development. Based on the data in EMI website, portfolio assessment for students’ English development is practicable.

5.3 Implication

The results of the study provide the conditions and considerations for more effective EMI implementation. In the aspect of suggesting practical and feasible EMI course design and teaching methods tailored to the current EMI situation in Korea, the results have considerable significance.

Even though many previous studies criticize ineffectiveness of EMI approach on CL and EPD due to insufficient English ability of Korean EMI professors and students, the findings of the study offer the possibility of successful EMI implementation by presenting concrete and viable solutions.
REFERENCES


Grabe, W., & Stoller, F. (1997). Content-based instruction: Research foundations. In M. Snow and D. Brinton (Eds.), *Content-based classroom: Perspectives on integrating language and content* (pp. 5-22).


Kim, H. O., Han, H., Maeng, U. K., & Kim, S. W. (2012). Conditions and considerations for more effective English-medium lectures based on the students’ needs analysis. *Foreign Languages Education, 19*(1), 211-238 [In Korean].


Appendix A. IRB APPROVAL LETTER
Date: June 14, 2012

From: The Office for Research Protections - FWA#: FWA00001534
Stephanie L. Krout, Compliance Coordinator

To: Sungwoo Yang

Re: Determination of Exemption

IRB Protocol ID: 39722
Follow-up Date: June 13, 2017
Title of Protocol: A Study of students' perception and reaction to English medium instruction (EMI) course at university-level in Korea as English as Foreign Language (EFL) context

The Office for Research Protections (ORP) has received and reviewed the above referenced eSubmission application. It has been determined that your research is exempt from IRB initial and ongoing review, as currently described in the application. You may begin your research.

**COMMENTS:** (i) Be sure to inform participants of the following during the recruitment process: the investigator is a Penn State researcher, and the study is being conducted for research purposes. (ii) Be sure to inform participants of the following basic ethical principles of human participant research during the consent process: the investigator is a Penn State researcher, the study is being conducted for research purposes, a description of the procedures will be provided as to what the participant will do as part of the study, participation is voluntary, participants may end their participation at any time, participants may choose to not answer specific questions. (iii) Letters of agreement/permission from an individual in a decision-making position at the universities in South Korea indicating their willingness to participate in this research study must be obtained and kept in your research records. The letters do NOT need to be submitted to our office; however, copies could be requested at any time.

The category within the federal regulations under which your research is exempt is:
**45 CFR 46.101(b)(1):** Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

**Given that the IRB is not involved in the initial and ongoing review of this research, it is the investigator’s responsibility to review** [IRB Policy III “Exempt Review Process and Determination” which outlines]:

- What it means to be exempt and how determinations are made
- What changes to the research protocol are and are not required to be reported to the ORP
- Ongoing actions post-exemption determination including addressing problems and complaints, reporting closed research to the ORP and research audits
What occurs at the time of follow-up

Please do not hesitate to contact the Office for Research Protections (ORP) if you have any questions or concerns. Thank you for your continued efforts in protecting human participants in research. This correspondence should be maintained with your research records.
Appendix B. EMI QUESTIONNAIRE
Survey Cover Letter

The purpose of this survey is to explore and collect your opinion, perception, and reaction to English Medium Instruction (EMI) across all disciplines at university –level. Under the current growing situation in EMI implementation, many university students have actually experienced serious problems and difficulties associated with the EMI courses. To supplement the current EMI implementation, I assure, your frank and direct responses to this survey items will be the most valuable factor to gather more reliable and valid information on EMI implementation. Aimed with the results of the survey research, in order to make students take EMI courses more easily and comfortably, educational methods and methodologies employed in EMI course will be reconsidered and revised. Also, the development of a pre-requisite English program for taking EMI course will be promoted.

All your information on this survey will be kept and dealt under condition of confidentiality and every name will be treated as pseudonym. Only the researcher can access your opinion and response. For the purpose to develop more effective EMI courses, say again, I really ask your frank, honest, and detailed responses.

If you agree with the participation in this survey, click the icon of start below.

It will take approximately 10-15 minutes to complete the survey. Just answer all questions honestly. There is no right or wrong answer. Thank you again for your kind cooperation.

Principal investigator
The Pennsylvania State University
College of Education
Curriculum and Instruction
Sung-Woo Yang
EMI Questionnaire

Background Information on participants

1. What is your gender? 1) Male 2) Female

2. What is your student year? 1) Freshman 2) Sophomore 3) Junior 4) Senior

3. What is your major?
   1) Liberal Arts 2) Social Science 3) Economic & Business 4) Engineering
   5) Law 6) Natural Science 7) Education 8) Arts & Music & Athletics
   9) Medical 10) ETC

4. How is your English ability? (Specify your opinion on your English ability.)

   1 --------------- 2 ------------ 3 --------- 4 --------------5
   Strongly disagree Disagree Neutral Agree Strongly agree

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<thead>
<tr>
<th>Item</th>
<th>1</th>
<th>2</th>
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</tr>
</thead>
<tbody>
<tr>
<td>I have good English reading ability.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>I have good English listening ability.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>I have good English speaking ability.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>I have good English writing ability.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>I have good English vocabulary use.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

5. Have you ever been in English-speaking country? (1: Yes, 2: No)

   5-1. How long have you been there?
   1) Less than 3 months, 2) 6 months, 3) 1 year,
   4) 2 years, 5) 3 years, 6) More than 4 years
**English Medium Instruction related**

6. Have you ever taken EMI courses?  
   1) Yes  
   2) No

   6-1. How many EMI courses have you taken until now (including this semester)?  
   1) 1 course  
   2) 2 courses  
   3) 3 courses  
   4) 4 courses  
   5) more than 5 courses

7. What was your purpose to select EMI course?  
   1) Compulsory  
   2) Dual goals for content and English  
   3) More sophisticated academic content  
   4) ETC

8. Who taught the course? (If you took more than 2 EMI courses, select the latest one.)  
   1) Korean professor  
   2) Foreign professor  
   3) Co-teaching with Korean and foreign professor  
   4) ETC

9. What kind(s) of teaching method was (were) used? (Teaching types or methods)  
   1) Lecture only  
   2) Lecture + English Discussion,  
   3) Lecture + Discussion + Presentation  
   4) More than 3 types above

10. What kinds of course activities have you performed in EMI courses?  
    1) Individual presentation  
    2) Group presentation  
    3) Group discussion  
    4) discussion leading  
    5) ETC

11. What kinds of course tasks were assigned in the course?  
    1) English Quiz  
    2) Report submission in English  
    3) Midterm and Final exam in English  
    4) ETC

12. How long was the course?  
    1) 1 hour  
    2) 2 hours  
    3) 3 hours
13. How many students were in the course?
   1) Less than 20     2) 21-40     3) More than 41

14. How was EMI course delivered in terms of use of Korean?
   1) Only English
   2) Very limited use of Korean if necessary
   3) 20-30% of Korean use
   4) 50%-50%
   5) 70-80% of Korean use

15. Was there any effort or attempt of EMI professor to improve student’s English ability? (If yes, please describe it in detail.)

16. In your opinion, what is the optimal class size for more effective EMI implementation?
   1) Less than 10     2) 11-20     3) 21-30     4) 31-40
   5) 41-50     6) 51-75     7) 76-100     8) More than 100
The following items are to assess your perceptions to the degree of feedbacks and interaction in EMI course. Please read the statements carefully and specify your opinion as a follower using the 5-point rating scale.

1 --------------- 2 -------------- 3 ------------- 4 ------------------ 5
Strongly disagree  Disagree  Neutral  Agree  Strongly agree

**Degree of Feedback and Interaction in EMI course**

<table>
<thead>
<tr>
<th>Item</th>
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<tbody>
<tr>
<td>17. Professor in EMI class gave students enough feedback for content learning.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>18. Professor in EMI class gave students enough feedback for students’ English proficiency development.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>19. Professor in EMI class made enough interaction with students for content learning.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>20. Professor in EMI class had enough interactions with students for English proficiency development.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>21. I think I had enough feedbacks from EMI professor for content learning.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>22. I think I had enough feedbacks from EMI professor for English proficiency development.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>23. I think I made enough interaction with EMI professor for content learning.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>24. I think I had enough interaction with EMI professor for English proficiency development.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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</table>
### Degree of Feedback and Interaction in EMI course

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<tbody>
<tr>
<td>25. How often has the professor given feedback on content learning to students?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>26. How often has the professor given feedback on English proficiency development to student?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>27. How often did EMI professor make attempts to interact with students for content learning to students?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>28. How often did EMI professor have attempts to interact with students for English proficiency development to students?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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</table>

### Satisfaction with Grade and the way of Assessment in EMI course

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<tbody>
<tr>
<td>29. I am satisfied with my grade obtained from the course.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>30. I am satisfied with the way of assessment used in the course.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>31. If I were assessed in Korean, I could get better grade.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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</table>
**English Difficulties in EMI course**

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<tr>
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<tbody>
<tr>
<td>32. I had a difficulty English reading during EMI course.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>33. I had a difficulty English listening during EMI course.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>34. I had a difficulty English speaking during EMI course.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>35. I had a difficulty English writing during EMI course.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>36. I had a difficulty English vocabulary during the course.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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</table>

**Perception of Effects of EMI course**

<table>
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<tr>
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<tbody>
<tr>
<td>37. I think EMI course is effective to learn academic major content.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>38. I learned my major content through taking EMI course effectively.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>39. I am satisfied with the effectiveness of EMI approach on academic content learning.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>40. I think EMI course is effective to develop (improve) English proficiency (ability).</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>41. I developed my English ability (proficiency) through taking EMI course effectively.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>42. I am satisfied with the effectiveness of EMI approach on English proficiency (ability) development.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>43. How do you think the effect of EMI course is on academic content learning?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>44. How do you think the effect of EMI approach is on English proficiency development?</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>
Appendix C. EXAMPLES OF EMI PROFESSOR’S ATTEMPTS TO ENHANCE STUDENTS ENGLISH ABILITY

1. Making Pronunciation correction
2. Providing the opportunity to speaking in English to all the students
3. English writing assignment
4. TED dictation
5. Group activity for fulfilling tasks
6. Conducting Quiz for memorizing academic words
7. Summarizing Journal articles in English and make presentation for it
8. English presentation and using scoring rubrics, give feedbacks for the presentation
9. With Skype, making English conversation
10. Watching English movies
11. Making dialogues as writing activity
12. Diary in English
13. Providing English words list for lecture
14. Paraphrase practice
15. English play
16. Recitation of English poems
17. CNN listening and dictation
18. Game activity
19. English grammar learning program use
20. Web-based English discussion
21. Research English words related to major content
22. EOI (even in break time)
23. Self-critic time and peer-reviewed correction
24. Various materials use
25. Test for memorizing summary in English
26. Making interview with native-English speakers and submitting audio file and script
27. Test of memory for Sentence pattern practice
28. Training for writing academic papers and writing examination
29. Assigning reaction papers for the lecture
30. Speaking tasks and assignment
VITA

Sung-Woo Yang

Education
Ph. D. in Curriculum and Instruction at The Pennsylvania State University, University Park, 2014
Dissertation title: Conditions and Considerations for effective English medium
instruction: Centered on the study of variables to influence EMI effects on content
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Teaching Experiences
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Publications
Daniela Ulicna, Rebecca Allinson, Zsuzsa Javorka (EU team) Jamie Myers and Sung Woo Yang
(US team) (2011). Order 144 - Study on the use of credit systems in higher education cooperation
between the EU and the US.

Presentations
Presentation in STEM (The Society for Teaching English through Media), Seoul, Korea,
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Presentation in STEM, Busan, Korea, January 2001
Title: A Study on Logic Recognition through Movies.

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