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Does English-Medium Instruction Benefit Students in EFL Contexts? A Case Study of Medical Students in Korea

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Abstract With an increase in English-medium courses in universities in non-English speaking countries, various concerns have been raised such as difficulty of students' lecture comprehension and ineffective interaction between lecturers and students. This study scrutinized relationships among Korean medical students' comprehension of and satisfaction with English-medium lectures and their general English proficiency. Sixty-one medical students taking a required medical course participated in the study. The students' data concerning their lecture comprehension and perceptions were collected by means of pre- and post-tests and survey questionnaires during English-medium and Korean-medium lectures. It was found that the medium of instruction had no effect on the understanding of the lecture and that students' general English proficiency was not related to their lecture comprehension. In the survey, students expressed diverse needs for English such as LI summaries of main points and remedial English courses in general or medical English. Based on the results, suggestions and recommendations for the implementation of EMI courses in Korea are suggested.

Keywords Medium of instruction · EMI · Medical education · English for academic purposes

Introduction

In an era of globalization in which English proficiency determines the competitiveness of individuals and nations, increasing the number of English-medium courses has become one of the most significant issues in universities in non-English speaking countries, particularly in Asia (Chia et al. 1999; Evans 2002; Evans and Green 2007; Flowerdew et al. 1998; Kirkgöz 2009). In fact, plentiful studies have confirmed that English-medium instruction (EMI) in universities is one of the most effective ways to improve students' English proficiency by capitalizing on their experiences of using English to acquire their subject knowledge (Wesche and Skehan 2002). Inspired by this belief, many universities in Korea have striven to promote English-medium lectures for the last decade. For instance, the university in which the current study was carried out aimed to execute up to 35 % of all lectures in EMI by 2010.

However, as the number of English-medium lectures increases, so have concerns related to the effectiveness of English-medium courses. Those courses taught by non-native speakers (NNS) of English lecturers, which is the case at many Korean universities, may result in inefficiency in content delivery, difficulty in interactions between teachers and students, lack of lecturers' English proficiency, and students' problem with theory conceptualization (Klaassen and Graaff 2001; Kim 2002; Olsen and Huckin 1990; Yip et al. 2007). In fact, Korean students in English-medium classes tend to use Korean rather than English in class activities and the lecturers showed less efficiency in conveying content in English because of their limited English proficiency and scarcity of teaching methods compared to Korean-medium lectures (Kang and Park 2005; Kim 2002; Park 2006). In a survey of Korean engineering students (Kang and Park 2005), students showed avoidance of English-medium courses because of their considerable language barrier. This tendency was more prominent among less proficient learners of English, whereas those who perceived that they had high levels of

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English proficiency exhibited more interest in additional English-medium courses over a wider array of subjects.

In theory, the significance of student English proficiency in content-based English-medium subjects has been often emphasized in previous studies. According to Stryker and Leaver (1997) and Swain and Johnson (1997), the level of student English proficiency should exceed a certain threshold level in order for content-based language courses to be effective, and English proficiency may become even more important in late immersion, the English-medium lecture of non-language subjects in universities. Indeed, some Korean students believed that they would be at a disadvantage in their performance because of their low English proficiency (Kang and Park 2005; Kim 2002). Despite students' concerns and anxiety about their lack of English proficiency as a barrier to successful academic performance in English-medium courses, little empirical research has been conducted on the relationship between students' English proficiency and academic performance in these kinds of courses.

While most studies investigated the survey-based perceptions about English-medium lectures (Kang and Park 2005; Kim 2002; Park 2006), there has been a single study about the effect of EMI in a Korean university. Park (2007) compared pre- and post-test scores of 51 Korean university students who took a linguistics class taught in English. In her study, the students showed improvements in knowledge in the content area as a result of taking an EMI course. But, the improvement was not strongly associated with the students' levels of English proficiency, which was measured by their grade in an English conversation course. Further, the students expressed positive opinions about the English-medium lecture with regard to their improvements in reading and listening proficiency and vocabulary. Still, the study showed limitations in the accurate measurement of students' general English proficiency and in the investigation of a comparison of the effects of the two mediums of instruction, Korean and English.

None of these studies on the use of English as an instructional purpose in the Korean academic context came from the medical field. Medical students usually have higher levels of English proficiency compared to those of students from other majors, which makes sense since medical school is the most competitive of the schools which Korean high school graduates enter, and medical students reportedly score within the top out of nine levels on their KSCAT (Korean Scholastic College Aptitude Test) scores (Chosun Daily Newspaper 2009). Their high levels of English language proficiency might provide a more solid and accurate picture of the effect of EMI, given that previous scholars (Johnson and Swain 1994; Marsh et al. 2000) have emphasized the importance of language proficiency in EMI contexts. To investigate this assumption, the present study was guided by the following research questions:

(1) What are the relationships among students' general English proficiency, lecture comprehension, and their satisfaction with the lecture?
(2) Does the medium of instruction influence the degree of lecture comprehension?
(3) What do medical students want changed to increase the efficiency of English-medium lectures?

Methods

Participants

Sixty-one Korean students participated in the study from a required medical course in the Department of Medicine at a Korean university in Seoul. The group consisted of 36 male and 25 female first- or second-year medical students. The lecturer of the course was a Korean professor in the College of Medicine in his forties, who was a competent speaker of English with experience of studying in the United States to obtain a Ph.D.

Data Collection

The data were collected at the fall semester of 2009 during a medical course required for first-year medical students. For the current study, three successive class hours (about 150 min) in a single day were specially designed as follows. At the beginning of the lecture, a 10-min pre-test was conducted in Korean to assess students' prior knowledge on the current lecture, followed by the professor's 50-min lecture in English, and another 50-min lecture in Korean about different content from the lecture in English, with a 10-min break between the two lectures. When the two lectures were completed, a post-test was administered to determine the subjects' comprehension of the lecture. On this test, the questions were administered in the language of instruction, so that the items learned in English were to be answered in English and those learned in Korean were asked and answered in Korean. The pre- and post-test covering similar contents consisted of 14 T/F questions and seven cloze-type items.

Other than the medium of instruction, the two lectures delivered in different languages were very similar in terms of the teaching method. Covering the textbook written in English, the content in the two lectures was parallel in terms of the difficulty; during the English-medium lecture session, the lecturer introduced one clinical therapeutic case and another clinical case study during the Korean-medium lecture. As the tests were one of the components determining the students' course grade, the students tried to do their best to write as much as they understood during the lectures. And, this fact would support the reliability of the data.

Upon the completion of all lectures, a survey was conducted at the end of the entire session. The students' questionnaire was developed by studying earlier survey instruments used in Chia et al. (1999), Kim (2002) and Kang and Park (2006). The questionnaire conducted in Korean asked for demographic information including their academic level, gender, and scores on standardized tests. It also asked about their levels of comprehension of and satisfaction with the English-medium lecture on a five-point Likert scale from 1, strongly disagree, to 5, strongly agree. The reliabilities of the survey items were quite high; the Cronbach α values ranged from 0.80 to 0.92. Finally, students were asked for suggestions to raise the efficiency of English-medium courses in the medical school.

Meanwhile, students' general English proficiency levels were determined from their self-reported scores on a standardized English test. The 61 students had taken either the TOEFL from the ETS (Educational Testing Service) or the TEPS (Test of English Proficiency developed by Seoul National University) from the TEPS Council in Korea. Note that students entering the medical school are required to submit a proof of English proficiency on a standardized English test. To compare the subjects' English proficiency levels, scores on TEPS were converted into PBT TOEFL scores by referring to the score conversion information provided by the TEPS Council. Overall, the students' English proficiency level was quite high, given that the mean of the 61 students was 590.38 with a 34.15 standard deviation on PBT TOEFL.

Data Analysis

The data were computer analyzed by an SPSS program. Both pre- and post-tests were graded by the course professor on a 100-point scale. In particular, the post-test items related to the Korean-medium lecture were graded on a 50-point scale, as were those covering the English-medium lecture; the two parts summed to 100 points. The students' scores on the pre- and post-tests were analyzed with descriptive statistics and the means were compared with *t*-tests. Students' responses to survey questionnaires were also analyzed descriptively to determine the mean and frequency of the respondents. Additional correlation analyses were conducted with the test scores and the means of the survey questionnaire in order to answer the questions at issue in this study.

Results

Students' Performance on the Pre- and Post-Tests

On the pre-test, overall, students revealed a somewhat low level of prior knowledge of the content with a mean of 58.36 out of 100. However, in the post-test, the students showed great improvement with a mean of 75.74. Further, the variance in the scores decreased to a great degree on the post-test, and the difference in the means between the pre- and post-test scores was statistically significant ($p = 0.00$). These facts imply that the lecture was quite successful in conveying the target content and in decreasing the knowledge gaps among the students. Table 1 presents the descriptive statistics of the pre- and post-tests.

Table 1 Descriptive statistics of the pre- and post-tests

	Min–max	Mean	SD
Pre-test	20–100	58.36	15.19
Post-test on EMI (a)	27–45	38.69	5.17
Post-test on KMI (b)	20–50	37.05	6.35
Post-test (a + b)	47–95	75.74	9.23

Interestingly, the scores on the post-tests of the English- and Korean-medium lectures did not vary considerably. The score on the Korean-medium lecture was slightly higher than that of the English-medium lecture, although the difference was not statistically significant at $p = 0.05$ ($t = 1.831$, $df = 60$, sig $= 0.072$).

Students' Perception of English-Medium Lecture Comprehension and Satisfaction

Responses to the questionnaires were grouped and analyzed in two categories, students' perceived levels of understanding of the English-medium lecture and their satisfaction levels with it. Tables 2 and 3 illustrate the summary of the survey results.

With respect to how well they understood the English-medium lesson, only 26 % of the students showed positive responses, while 23 % showed negative responses. That is, almost the same number of students held opposite opinions and about half of the students held a neutral opinion as can be seen in the mean of the responses, 3.03. When it came to the question of whether it was easier to understand the English-medium lesson than the Korean-medium lesson, many students responded negatively with only 15 % of the students answering that the English-medium lecture was easier to understand.

As for student satisfaction with the English-medium lecture, the mean of the responses was 2.93 on a five-point scale. Sixteen (26 %) out of 61 students had positive opinions, whereas the same number of students had negative opinions of the English-medium lesson. In response to the question about the helpfulness of the English-medium lecture in their major subject, students showed quite a negative opinion with a mean of 2.8. About 38 % of the students fell into the categories "strongly disagree" or

Table 2 Students' perceived levels of understanding of EMI

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	M	SD
I understand EMI	2 (3.3 %)	12 (19.7 %)	31 (50.8 %)	1 4 (23 %)	2 (3.3 %)	3.03	0.84
It is easier to understand EMI than KMI	13 (21.3 %)	2 5 (41 %)	14 (22.9 %)	9 (14.8 %)	0 (0 %)	2.31	0.98

Table 3 Students' satisfaction levels with EMI

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	M	SD
Overall, I am satisfied with EMI	4 (6.6 %)	12 (19.7 %)	29 (47.5 %)	16 (26.2 %)	0 (0 %)	2.93	0.85
EMI is helpful for my major studies	5 (8.2 %)	18 (29.5 %)	23 (37.7 %)	14 (23 %)	1 (1.6 %)	2.80	0.95
I want to take EMI again	10 (16.4 %)	19 (31.1 %)	19 (31.1 %)	10 (16.4 %)	3 (4.9 %)	2.38	1.09
I am more satisfied with EMI than with KMI	9 (14.8 %)	24 (39.3 %)	24 (39.3 %)	4 (6.6 %)	0 (0 %)	2.62	0.82

"disagree," while 25 % marked "strongly agree" or "agree." Student perception of the EMI worsened with regard to whether they would take another EMI course. On that question, 47.5 % of students reported that they were not willing to take it again and only 21 % thought they would. Thus, the mean of the question decreased to 2.38. Finally, more than half of the students, 54.1 %, perceived that the EMI was less satisfying than the Korean-medium instruction (KMI), whereas only four people were more satisfied with the EMI than with the KMI.

Relationships Among Students' General English Proficiency, Lecture Understanding, and Their Lecture Satisfaction

To quantify the students' degree of comprehension of the English-medium lecture, students' scores on the post-test of the English lecture, which were originally measured on a 50-point scale, were rescaled onto a 100-point scale and were subtracted from their scores on the pre-test. The correlation between the post- minus pre-test score in EMI and the students' TOEFL score was slightly negative, -0.094, being insignificant ($p = 0.473$). In other words, students' general English proficiency level had no effect on their EMI understanding. In correlation analysis for the relationship between students' satisfaction and the EMI comprehension, students' self-reported scores on the survey questionnaire were used as an indicator of their satisfaction with the EMI, and the post- minus pre-test score in the EMI was used to measure the students' level of the EMI comprehension. The correlation between the two variables was again negative, -0.124, and was not significant ($p = 0.342$). This clearly indicated that the extent of student comprehension of the EMI had nothing to do with his/her level of satisfaction with the EMI.

The next inquiry was whether the students' English proficiency level was related to the degree of their satisfaction with the English-medium lecture. A very low correlation was revealed between the two, -0.073 ($p = 0.577$), suggesting that the level of students' satisfaction with the EMI was not related with their English proficiency levels. Overall, the levels of students' actual understanding of the EMI were affected neither by their general English proficiency level nor by their satisfaction level with the lecture.

Although students' measured performance of understanding the EMI lecture was not related to their satisfaction level, the students' self-reported level of understanding of the EMI lecture did show some association with their satisfaction level with the EMI. The relation was moderate, yet with a Pearson correlation of 0.353 ($p < 0.005$). This result is in contrast with the results utilizing the students' measured understanding of the EMI lecture with pre- and post-test scores. It was found that students who perceived that they had understood the lecture quite well did not necessarily perform well in the post-test of the EMI, which led to a discrepancy between their own perception about their comprehension level and the measured EMI comprehension.

The Students' Needs for Raising Efficiency in English-Medium Lectures

The final question in the survey pertained to ways of increasing the efficiency of English-medium lectures. When students were asked to choose one of the five suggested ways to improve the efficacy of an English-medium lecture in their major, 28 (45.9 %) students thought that during the lecture, the lecturer needed to summarize the main points in Korean. Next, 14 students (23 %) expressed the desire to take a preliminary course in medical English

Table 4 Students' needs for effective EMI

What is needed for Effective EMI?	*f* (%)
Summary of main points in Korean	28 (45.9)
Need for a preliminary course in medical English	14 (23.0)
Need for a preliminary course in general English	10 (16.4)
In-class explanation of English nomenclature	6 (9.8)
Need for a teaching assistant in EMI	3 (4.9)

before taking an English-medium course. Further, ten students (16 %) expressed the need for a preliminary English remedial course. The preliminary course here can be considered an English course in the sheltered or adjunct model (Brinton and Snow 1989; Snow 1991), in which a supportive lecture on English itself is held to assist students in understanding the course content in advance of or simultaneously with the content course. Along these lines, three students (5 %) wanted to have a teaching assistant in all English-medium courses. Six (10 %) spoke of the difficulty of English vocabulary, hoping that the lecturer would provide a separate in-class session to explain English nomenclature and jargon. The respondents' perception of EMI warrants particular attention for the efficiency of English-medium lectures. Table 4 summarizes the students' needs of assistance of an English-medium course.

Discussion

The study revealed important aspects of English-medium lectures. First, it was found that as far as the medical students are concerned, the level of student comprehension of the lecture was not affected by the medium of instruction and that students' general English proficiency level did not determine their level of understanding of an English-medium lecture or their final grades. That is, EMI itself is not ineffective for delivering a non-language subject lecture in comparison with KMI. One important thing to note is that the participants in this study had attained an advanced level of general English proficiency, scoring an average of 590 points on the PBT TOEFL. This score can be converted into 96–97 points out of 120 on iBT TOEFL, the 86th percentile of all examinees (ETS, 2005). The College Scholastic Aptitude Test cut-ff score of medical schools in Korea is quite high regardless of the university within which the medical school is housed, implying that a majority of medical students are proficient learners of English in Korea. This fact suggests the possibility of generalizing the study findings to all medical students in Korea, which would yield insightful implications for implementation of EMI, in particular in the Korean educational context and in other English as a foreign language (EFL) countries in general.

Other important findings of the study are that the students simply disliked the English-medium lecture and that they thought the lecture was more difficult to understand than the Korean-medium lecture. Such negative opinions toward EMI, however, turned out to be an unwarranted misgiving, given that their performances on the post-tests for the EMI and KMI lectures were similar. Overall, they performed far better on the post-test in comparison to the pre-test, which proves that the students increased their knowledge by taking the lecture. Furthermore, their perceptive level of comprehending the English-medium lecture did not correlate with their actual performance of the lecture comprehension. These findings indicate that whether or not students have high English proficiency, they tend to dislike English-medium lectures and feel dissatisfied with having to take an English-medium course. Even with the plentiful evidence that perception toward the English-medium course did not conform to actual performance, students' negative impression of and excessive anxiety about the English-medium course could impinge upon the successful implementation of English-medium courses in universities.

To increase the efficiency of English-medium lectures, university curriculum reformers and English education professionals need to inform students that the English-medium course itself does not put them at a disadvantage compared with the Korean-medium course; instead of their general English proficiency, students' academic ability or attitude toward the subject may more highly impact their performance in the course, just as it does for a regular Korean-medium course. The professionals also need to account for students' desire such as their preference of an in-class summary session in Korean. The result is consistent with previous research (Kang and Park 2005), which reported that engineering students perceived that lecture summaries in Korean were helpful for understanding an English-medium lecture. The issue of whether the use of L1 should be prohibited in an English-medium class has triggered much debate among many English teaching practitioners in Korea. Before reaching any conclusions, however, it should be acknowledged that allowing minimal use of Korean during the lecture would clearly evoke a hospitable atmosphere toward an English-medium lecture among students and may reduce anxiety caused by the sudden introduction of English-medium lectures in their major. Meanwhile, English language teaching (ELT) researchers and teachers are set to investigate the effect of the use of students' native languages in English-medium courses.

The result that the students showed a proclivity for a preliminary English course for medical English or general English would provide useful information for ELT practitioners. Such remedial courses have long been supported in the field of ELT. These types of supportive courses can be

categorized as sheltered models, in which the instructor provides a scaffolded English lesson related to the content lecture, or adjunct models, in which English as a second language (ESL) courses are incorporated with content area courses to better integrate English and the study skills required for academic success (Brinton et al. 1989; Snow 1991). Compared to the ESL context which has adopted a wide use of these models, there has been a lack of attempt to implement the models in higher education in the EFL context. Future researchers may attempt to test the models in the EFL context. Previous literature has demonstrated that EFL students require more assistance in learning English than ESL students because they have less exposure to and narrower resources for English outside of the classroom. Unless they recognize the students' diverse needs for remedy of English education, university policy makers and administrators' attempts to implement 100 % English-only courses in a relatively short time period will impose too great a burden on students, lowering the chances for a successful program.

Conclusion

The findings of the study provide supporting evidence for the effectiveness of EMI and the great potential of successfully implementing EMI in higher education in Korea. When the content of an English-medium lecture is highly technical and embedded with specialized jargon and concepts like medical subjects, and when students' general English level is sufficient enough to understand the content in an English-medium lecture, EMI does not hamper students' content learning compared to KMI. To develop a wider implementation of English-medium lectures to less technical and language-loaded majors and for students with a lower level of English proficiency, however, more empirical evidence should be accumulated.

Regardless of the irrelevance of students' language proficiency and the English-medium lecture comprehension, students were not positive toward English-medium courses. As noted by Lynch (1996), to achieve success with a new educational policy or program in educational institutions, subjects' proactive participation and prolonged positive beliefs in the program are indispensible. In this sense, the university needs to be conscious of students' perceptions and must develop methods for enhancing students' awareness of their capabilities to succeed in English-medium courses. Meanwhile, ELT researchers should exert rigorous efforts to explore an effective teaching model for assisting students with English in English-medium courses, which fits well into universities in Korea and other countries where similar situations are present.

References

Brinton, D. M., Snow, M., & Wesche, M. (1989). *Content-based second language instruction*. New York: Newbury House.

Chia, H., Ruth, J., Chia, H., & Olive, F. (1999). English for college students in Taiwan: A study of perceptions of English needs in a medical context. *English for Specific Purposes, 18*(2), 107–119.

Chosun Daily Newspaper. (2009, March 19). Jeonkuk daehak euidae jeonhyeong bunseok, [Analysis of matriculation of medical schools around the country]. Retrieved June 30, 2011, from the World Wide Web: http://www.chosun.com/site/data/html_dir/2009/03/18/2009031801294.html.

Evans, S. (2002). The medium of instruction in Hong Kong: Policy and practice in the new English and Chinese streams. *Research Papers in Education, 17*(1), 97–120.

Evans, S., & Green, C. (2007). Why EAP is necessary: A survey of Hong Kong tertiary students. *Journal of English for Academic Purposes, 6*(1), 3–17.

Flowerdew, J., Li, D., & Miller, L. (1998). Attitudes towards English and Cantonese among Hong Kong Chinese university lecturers. *TESOL Quarterly, 32*(2), 201–231.

Johnson, R. K., & Swain, M. (1994). From core to content: Bridging the L2 proficiency gap in late immersion. *Language and Education, 8*(4), 211–229.

Kang, S., & Park, H. (2005). English as the medium of instruction in Korean engineering education. *Korean Journal of Applied Linguistics, 21*(1), 155–174.

Kim, E. (2002). Voices of learners from English-medium lecture. *Korean Journal of Applied Linguistics, 18*(2), 145–163.

Kırkgöz, Y. (2009). Students' and lecturers' perceptions of the effectiveness of foreign language instruction in an English-medium university in Turkey. *Teaching in Higher Education, 14*(1), 81–93.

Klaassen, R. G., & Graaff, E. (2001). Facing innovation: Preparing lectures for English-medium instruction in a non-native context. *European Journal of Engineering Education, 26*(3), 281–289.

Lynch, B. K. (1996). *Language program evaluation, theory and practice*. Cambridge: Cambridge University Press.

Marsh, H., Hau, K.-T., & Kong, C. (2000). Late immersion and language instruction in Hong Kong high schools: Achievement growth in language and non-language subjects. *Harvard Educational Review, 70*, 302–346.

Olsen, L. A., & Huckin, T. H. (1990). Point-driven understanding in engineering lecture comprehension. *English for Specific Purpose, 9*(1), 33–47.

Park, H. (2006). The effectiveness of English-mediated courses with engineering students. *English Education, 63*(3), 86–119.

Park, H. (2007). English medium instruction and content learning. *English Language and Linguistics, 23*(2), 257–274.

Snow, M. A. (1991). Content-based and immersion models for second and foreign language teaching. In M. Celce-Murcia (Ed.), *Teaching English as a second or foreign language* (pp. 308–318). Boston: Heinle & Heinle.

Stryker, S., & Leaver, B. (1997). *Content-based instruction in foreign language education: Models and methods*. Washington, DC: Georgetown University Press.

Swain, M., & Johnson, R. K. (1997). Immersion education: A category within bilingual education. In R. K. Johnson & M. Swain (Eds.), *Immersion education: International perspectives* (pp. 1–16). Cambridge: Cambridge University Press.

Wesche, M., & Skehan, P. (2002). Communicative, task-based, and content-based language instruction. In W. Grabe, M. Swain, & R. Tucker (Eds.), *The Oxford handbook of applied linguistics* (pp. 207–228). Oxford: Oxford University Press.

Educational Testing Service. TOEFL internet-based test: Score comparison tables. Educational Testing Service. http://www.ets.org/Media/Tests/TOEFL/pdf/TOEFL_iBT_Score_Comparison_Tables.pdf. Accessed 5 May 2010.

Yip, D., Coyle, D., & Tsang, W. (2007). Evaluation of the effects of the medium of instruction on science learning of Hong Kong secondary students: Instructional activities in science lessons. *Education Journal, 35*(2), 77–107.