



Roles of Teacher Feedback in Promoting Effective English-Medium Instruction of a Business Subject

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Despite the recent expansion of English-medium instruction (EMI) in a non-English speaking educational context, few studies have investigated teaching methodology for EMI. Using a mixed method, this study examines the effects of teacher feedback on college students' perspectives of learning a business subject through EMI. The quantitative part of the study investigated questionnaire responses of two groups of students enrolled in a course on entrepreneurship: the control group of the lecture-style class offering little teacher feedback ($n = 158$) versus the experimental group featuring extensive feedback ($n = 153$). For the cross-examination of these quantitative results, a semi-structured interview with four respondents followed. The analysis showed that the students' disciplinary backgrounds (general studies, business, and engineering) create differences in their perspectives of EMI and learning the business subject. Among the three major groups, the business major students ranked English proficiency as the most important for their career purposes. The feedback-concentrated instruction contributed not only to learning the subject, but it also moderated the differences between the disciplines. Notably, the participants' comprehension of the subject significantly correlated with their evaluation of EMI. These findings highlight the crucial effect of teacher feedback on acquiring discipline-specific knowledge and cultivating new perspectives of EMI.

Keywords: teacher feedback, English-medium instruction, disciplinary knowledge, internationalization of higher education

Introduction

For the past two decades, English-medium instruction (EMI) has become a common approach to increasing the internationalization of non-English-speaking Asian universities. In the context of Korean higher education (HE), EMI has been adopted to be a strategic action of individual HE institutions in response to a top-down drive from the government. By means of this action, individual institutions could recruit international students to their campuses and cope with a decreasing student population. This increase in international student population has been viewed to help each HE institution to secure financial stability as well as cultivate its global competitiveness (See Shin, 2009 for an overview of internationalization of Korean HE). Meanwhile, as a corollary to this top-down policy approach, extensive research on various challenges of EMI has been conducted in a wide range of geographical settings including Asian HE institutions (e.g., Cho, 2012; Evans & Morrison, 2011; Hou, Morse, Chiang, & Chen, 2013; Hu, Li, & Lei, 2014; Kim, Tatar, & Choi, 2014; Manakul, 2007). Against presumed

benefits of EMI, these studies have continuously reported a decrease in subject learning as well as a lack of evidence of EMI in improving the English proficiency of the students in the context of English as a foreign language (EFL) (e.g., Cho, 2012; Hou et al., 2013; Kim et al., 2014; Manakul, 2007).

Due to their dependency on research collaboration on the global level, Korean universities specialized in science and technology have led the expansion of the proportion of EMI class offerings (Kim et al., 2014; Kim, Kim, & Kweon, 2018). Intriguingly, although EMI has been found to interfere with teaching and learning subjects, it is generally favored by both instructors and students alike in these HE institutions (Kim et al., 2014; Kim et al., 2018). However, instructors teaching non-science subjects have noted the need for more diversified approach to implementing EMI (e.g., the use of local language according to local characteristics of subjects). These stakeholders have highlighted the importance of enhanced and systemized support for EMI implementation on an institutional level, including the development of an EMI-specific teaching methodology (Kim & Tatar, 2017; Kim et al., 2018). These voices are to be more comprehensively noted, since learners' beliefs in a particular instructional context are interrelated with their performance (Trinder, 2013). Their perceptions about English learning should also depend on their disciplinary backgrounds as well as the changing atmosphere of HE (Li & Ruan, 2015). Further studies thus are needed for effective implementation EMI within academic disciplines.

This study focuses on the roles of feedback in improving EFL learners' beliefs in acquiring the discipline-specific knowledge of a business subject through EMI in a Korean tertiary-level educational context. Our investigation of whether this feedback-focused class enhances students' perceptions of EMI is grounded on the prevailing notion of teacher feedback as a crucial tool to mediate learners' cognitive development and facilitate learning through scaffolding (Vygotsky & Cole, 1978). This perspective of sociocultural learning has been adopted vastly in language learning practice, and, a great number of studies have shown the specific, positive contributions of teachers' feedback to second language (L2) acquisition (e.g., Bitchener & Ferris, 2012; Hyland, 2003; Lee, 2014). However, little attention has been paid to those EFL learners undertaking academic studies in EMI vis-à-vis the sociocultural practice of teachers' feedback-giving activities. Given the need, this study aims to uncover the roles of corrective feedback in reconstructing learners' beliefs in acquiring the business-related subject knowledge through EMI. The research site is a university heavily concentrated on science and engineering, in which interdisciplinary studies are highly encouraged and systematically implemented (e.g., the completion of a business course as a degree requirement). As EMI education has been expanded globally (Evans & Morrison, 2011), exploring learner beliefs within such educational settings is deemed important for language policy and teaching research. It is hoped that the findings will provide new insights into EMI-specific teaching methodology for EFL learners.

Review of Related Literature

EMI and Academic Disciplines

As widely noted by researchers, EMI has been promoted for its major advantages in simultaneous acquisition of both English language skills and subject matter knowledge, which is presumably an unprecedented learning environment in non-English-speaking societies (Hu et al., 2014; Smit & Dafouz, 2012). Rigorous research has confirmed that EMI has been a key to the globalization of the HE campus in those societies, and, apparently, helped the HE institutions to increase the international population (Hou et al., 2013; Kim et al., 2014; Manakul, 2007; Tsuneyoshi, 2005). Whereas some studies have reported positive effects of EMI on language proficiency and content learning (Dafouz & Smit, 2016; Tatzl, 2011), researchers have explicitly questioned for the lack of evidence of students' English development and for its ineffective delivery of course content and attendant problems in subject learning (e.g., Cho, 2012; Kim et al., 2014; Kim et al., 2018; Manakul, 2007). Frequently commented challenges in EMI implementation include: limited language proficiency of both professors and students (Cho, 2012); increasing tensions

between EMI and local languages (Kim et al., 2014; Kong & Wei, 2019); and ineffective teaching methodology as in a lack of feedback on students' work and classroom interaction (Byun et al., 2011; Cho, 2012; Kim & Tatar, 2017). As these studies show, those remaining questions on the validity of benefits of EMI in learning call for further in-depth studies on its practicality in various learning contexts.

Several studies on EMI have focused on the effects of disciplinary characteristics on stakeholders' perceptions of the policy and disclosed fruitful and intriguing results (Bolton & Kuteeva, 2012; Hyland, 2013; Kuteeva & Airey, 2014; Tatzl, 2011). Given the significance of globalization to science and engineering areas, instructors and students were found to favor EMI mainly for the benefits of internationalization (Kim et al., 2018; Kim & Tatar, 2017; Tatzl, 2011). For example, according to Tatzl (2011), in the study of EMI in an Australian science HE context, the students recognized the improvement of their English language skills through EMI, whereas their instructors did not explicitly note any linguistic improvement. Between their language skills and teaching methodologies, the teachers were found to make little effort to change teaching methodology for EMI. In Korean HE context, students taking EMI classes at a Korean engineering school were found to hardly receive feedback on language forms in oral and written activities from their engineering subject instructors (Kim & Tatar, 2017). Likewise, Kim and colleagues (2018), in their study of EMI at several Korean prestigious engineering schools, claim that one of the major problems with English development was strongly related with the lack of curricular or methodological interventions in teaching. While teaching non-science/engineering subjects (humanities and social sciences) in this context, instructors' concerns grew on the discipline-specific consideration in EMI implementation. While the majority of the instructors considered their lack of autonomy from selection to implementation of the policy as a serious problem, the local language was perceived as crucial to teaching the non-science disciplines and to conducting their professional roles.

Science and engineering major students should have different beliefs and behavior patterns from those of business majors, which are unlikely to change (Trinder, 2013). As noted by Kankaanranta and Louhiala-Salminen (2010), English prevails in the discipline of business as the lingua franca, frequently displaying discipline-specific features within genres of business. Indeed, recent trends in EFL education contextualize English within strategic use of language. The studies on the disciplinary features embedded in an EMI context confirm the significance of English for Specific Purposes (ESP) in the curriculum for students learning diverse subjects through EMI. Given the lack of research on ESP in EMI context, further studies on EMI should focus on how to incorporate discipline-specific language as well as students' disciplinary backgrounds into the curricular design for EMI.

Roles of Feedback in Learning at Higher Education

Several previous studies discussed EFL learners' perception of EMI in terms of teacher dependence, indicating connection between teaching practices and the formation of learner beliefs (Li & Ruan, 2015). For example, teacher feedback is an important teaching practice that may accommodate benefits of EMI (Kim & Tatar, 2017). Hattie and Timperley (2007) emphasize teacher feedback as the most powerful driver that enhances learners' achievement. It is prevalent in educational practice, providing a vehicle for integrating all components of formative instructional practices, building the foundation of formative assessment. According to Chan and colleagues (2014), teacher feedback is relevant to teaching practices, ranging from setting clear learning goals, engaging learners in target-oriented learning activities, and collecting evidence of student learning, to analyzing the data to provide effective feedback (Chan, Konrad, Gonzalez, Peters, & Ressa, 2014).

In L2 teaching, teacher feedback on linguistic errors in L2 learners' writing has been investigated in terms of its effectiveness on improved L2 production. A fairly large volume of research has documented various patterns and functional characteristics of corrective feedback (CF) on ESL/EFL writing: written versus oral feedback (e.g., Bitchener & Ferris, 2012; Han & Hyland, 2015; Kim, 2018); formative versus summative feedback (e.g., Hyland & Hyland, 2006; Lee, 2014); and explicit versus implicit feedback (e.g., Ferris & Roberts, 2001; Hyland, 2003; Williams, 2004). Despite various arguments on the efficacy

of the typified feedback on L2 learning, previous research commonly shows that teacher feedback is an effective practice in writing instruction; it helps ESL/EFL learners to revise and correct diverse issues in their texts (Williams, 2004). It has also been noted that the effectiveness of CF depends on multiple factors: learners' developmental readiness or proficiency level (e.g., Ammar & Spada, 2006; Gitsaki, & Althobaiti, 2010), the target language structure (e.g., Ellis, 2007; Yang & Lyster, 2010), and interactive, collaborative learning environment (Alvarez, Espasa, & Guasch, 2012; Zhang & Hyland, 2018). In a recent study on teacher CF, Zhang and Hyland (2018) argue that it is effective to the extent that it promotes learners' interactions with a teacher. Interaction is a crucial event in which CF may mediate learning, by addressing individual learners' zone of proximal development (Vygotsky & Cole, 1978). While engaging in task-oriented problems, learners may obtain scaffolding, necessary to acquire knowledge, which is useful only when it is provided to learners in an appropriate, interactive manner (Bitchener & Ferris, 2012; Kim, 2018; Lee, 2014).

Another major strand of research on teacher CF has centralized on teachers' and learners' perceptions of CF (Chen, Nassaji, & Liu, 2016; Cho, 2015; Hyland, 2013). As much as CF is manifested in its multi-faceted nature, learners' engagement in CF varies depending on the individual differences demonstrated by learners using feedback. Some learners are highly committed to using written CF to improve their drafts and even their subsequent writing, while others are reluctant to accept or utilize feedback to improve their texts (Ferris, Liu, Sinha, & Senna, 2013; Hyland, 2003). EFL writing students were also found to experience different discrete emotions, while engaging in teacher feedback with varying object foci, such as valence and activation (Han & Hyland, 2019). Concerning this aspect of learner responses to teacher CF, Han and Hyland (2019) illuminated discipline-specificity of beliefs and ESP in improving efficacy of feedback on L2 writing. Further into the discussion of differences between successful and unsuccessful students, the advanced/successful group of students were found to maintain their facilitating beliefs despite little opportunity to learn in their preferred way (Han & Hyland, 2019).

Admittedly, curricular foci of HE should be placed on knowledge and skills for the students to more effectively participate in the debates of their disciplines and to demonstrate their learning to their colleagues/peers or other experts. However, subject teachers tend to consider academic literacy as a naturalized, self-evident, and non-contestable way of participating in their discipline, failing to provide the kind of support that students need to acquire discipline-specific language uses (e.g., Lea & Street, 1998). When teaching and learning occur in EMI, learners' reactions to CF may be more complex, as the learners should handle different cognitive, behavioral, and the affective aspects of learning within a discipline. Most of the previous studies on EMI in HE have predominantly focused on teacher and/or student perceptions towards its introduction and practice and identified challenges for EMI. Based on the implications and suggestions for enhanced EMI pedagogy and teacher CF, the current study is geared towards teaching practices of CF and efforts to improve the quality of EMI of a discipline-specific subject.

Methods

Research Questions

The following three research questions have guided the investigation of teacher CF in its contributions to changing the views of acquiring a disciplinary knowledge of business through EMI.

- (1) How differently do the students taking Entrepreneurship perceive the roles of English and EMI comprehension by major?
- (2) How differently do they perceive their comprehension of the topics on entrepreneurship under different conditions of CF, limited- versus extensive teacher feedback?
- (3) In what ways do their general EMI comprehension levels relate to learning the business course under the two CF conditions?

Context and Participants

The present study was conducted at a science and technology-specialized university located in a metropolitan city in South Korea. As a strategy to internationalize the campus, and achieve top-tier university rankings, the institution employs an English-officialization policy, including EMI conducted for all the credit courses. Other than this top-down EMI policy in education, its curricular design emphasizes practicality of academic studies. For example, a business course on entrepreneurship is included as a mandatory course in undergraduate study regardless of students' majors, for a presumed advantage in their future career. The specific goal of this course was to introduce students to the essential attributes of an entrepreneur and the stages the entrepreneur goes through in taking the seed of an idea and growing it into a successful business. Team activities were particularly important for learning the topics of the subject, as the students were to experience the dynamics of participation in a business team through the activities. The team projects included creating/presenting a business plan, identifying how startup finance works, and developing strategies for firm growth.

A total of 311 undergraduate students participated in this study. They were enrolled in four sections of the course. The initial number of the participants was slightly larger with international students, who were excluded from the study for the homogeneity of the participants. Two sections of the course were assigned to the control group (CG) of 158 students (114 males, 44 females), and the other two sections to the treatment/experimental group (EG) of 153 students (117 males, 36 females).

The majority of the participants self-reported their English ability, ranging from intermediate (69%) to advanced (11%) levels, while the rest (20%) reported either beginner (4%) or low-intermediate levels (16%). Their perceived English proficiency levels were quite consistent in both CG and EG. Likewise, few participants in either group had been to foreign countries, as most of the students (93% of the CG participants and 87% of the EG participants) had spent either no time or less than three months staying in any English-speaking country. The participants' years of study and majors were diverse; the seniors accounted for approximately half of CG (51%) and 41% of EG. In both groups, most of the students indicated engineering as their majors (Table 1).

TABLE 1
Participant Information

<i>Major and Year</i>	<i>CG N (%)</i>	<i>EG N (%)</i>
Major		
Business Management	9 (6%)	20 (13%)
Engineering	118 (75%)	106 (69%)
General studies (freshmen)	31 (20%)	27 (18%)
Academic year		
Freshmen	31 (20%)	27(18%)
Sophomore	11 (7%)	25(16%)
Junior	35 (22%)	39(25%)
Senior	81 (51%)	62(41%)

Research Design

The classes met twice per week, each for a 75-minute class period, over the course of a 16-week semester. The two groups, CG and EG, shared the same syllabus, with homogeneous assignments/tests and criteria for their evaluation. Each of the four sections afforded approximately 10 teams, with 7-8 students per team. In order to establish a balance in majors, year of studies, gender, and nationality, the students were randomly assigned to a team by instructors. Both instructors were female Koreans, with foreign degrees in business. They were both fluent in English, having taught the course for more than three semesters. As shown in Figure 1, Instructor A of CG taught the class through a lecture-type EMI. Although the CG students received basic oral feedback during in-class team discussions, the feedback on

the business plan and presentation was unavailable. Instructor B, by contrast, provided CF on business ideas and all assignments as to three main areas: 1) oral feedback on business ideas during in-class team discussions; 2) oral feedback on business ideas through team conferences with the instructor; and 3) written feedback on the assignments via the university’s learning management system (LMS). The EG students thus received extensive feedback from the instructor, as shown in Figure 1. For instance, instructor B provided advice on what her students as a team needed to do to enhance the contents and style of their business plan. For written CF, she used the drawing annotation mode and/or the comment bubbles on LMS, as shown in Figure 2. Additionally, although supplementary to content-related feedback, there was feedback on mechanics of the English language, such as typos, subject-verb agreements, and preposition usage.



Figure 1. Major activities of the control and the experimental group sections.

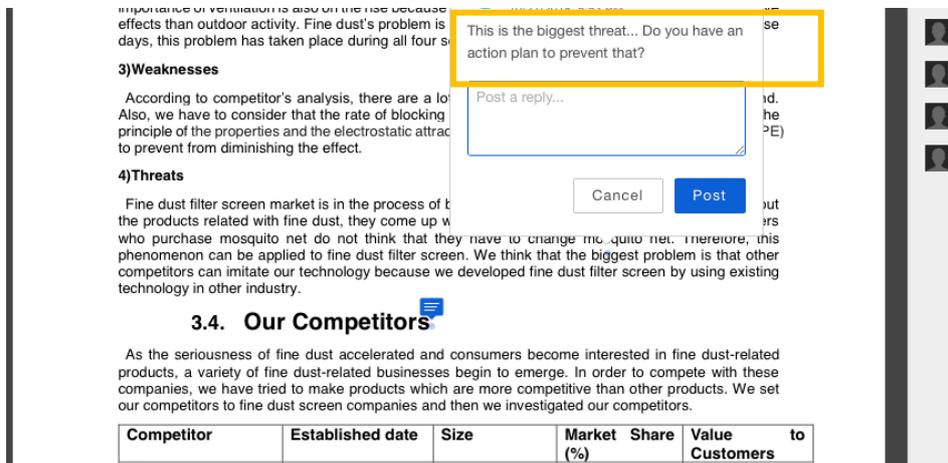


Figure 2. Instructor B’s feedback on LMS.

Data Collection and Analyses

The project was a part of a large project regarding feedback effect on EFL learners’ perceptions of EMI and ESP. The present study was instrumented using a mixed method, employing a quantitative and qualitative analytic framework. Questionnaires to compare any differences in the two groups were constructed based on the previous research (Kim et al., 2014; Kim et al., 2018) and revised by the researchers. Consisting of 30 items, the questionnaires are divided into three parts. A brief description of the purpose of the survey and questions on the participants’ demographic information were included in

Part A (7 items), followed by Part B (12 items) including questions on EMI experiences (e.g., perceived importance of English and ability to comprehend EMI lectures). Part C was related specifically to the perceptions of the business course in terms of understanding, interaction, motivation, and professor's feedback (11 items). Except for some questionnaire items which ask the respondents to briefly describe a reason for their answer to a previous item, most of the items were presented on a five-point Likert scale (1-5), 1 corresponding to 'strongly disagree' and 5 to 'strongly agree'. The first research question on the participants' perception of an EMI policy was connected with the survey items mainly on their perspectives regarding the English language in their academic and career purposes and the overall comprehension level of EMI courses. For the second research question, we examined the items on comprehension of the subject by major within CG and EG respectively. Finally, in order to answer the third research question, we tested correlation coefficients between the ability to understand EMI lectures and their perceived comprehension of entrepreneurship, within CG and EG, respectively.

The questionnaires were administered two weeks before the end of the semester. The quantitative data were analyzed, using the SPSS statistics program. We first selected the items for the relevant variables for each research question. The reliability estimates were calculated as Cronbach's coefficient alpha scores on three major variables: participants' perceived importance of English; their comprehension of EMI courses in general; and their comprehension of Entrepreneurship (Table 2). The scores ranged from 0.635 (perceived importance of English, CG) to 0.870 (comprehension of EMI in general, EG), which were considered acceptable for the further examination of the data. We then ran descriptive statistics in terms of means and standard deviation by three major groups: general studies, business, and engineering. The statistical significance of between-group differences by major was tested through ANOVA. When the differences were significant, we ran a post-hoc TUKEY test to identify the points of differences.

TABLE 2

The Reliability Estimates of Variables (Cronbach's coefficient alpha)

Variables	Item number (Questionnaire Part)	Reliability	
		CG	EG
Perceived importance of English	8, 9, 11, 12, 13, (Part B)	0.635	0.651
Comprehension of EMI courses in general	16, 17, 18, 19 (Part B)	0.846	0.870
Comprehension of Entrepreneurship	25, 26, 28, 29 (Part C)	0.700	0.670

Note. The items offered on a Likert scale are included for the reliability estimates.

In addition to the questionnaires, we used the answers from the semi-structured focus group interview to further explore the research questions. A focus group interview, as a powerful qualitative research method, has been found to effectively elicit participants' views in depth through focused, conversational, two-way communication (Denzin & Lincoln, 2000). We recruited the participants in this interview through emails. Among the volunteers, four Korean students from EG were selected for the balance in major and academic experiences (three males and one female, two engineering and the other two business major students, 3-4th year students). The interview revolved around three questions: (1) How important is the English language for your career success?; (2) What difficulties do you have in the EMI classrooms?; and (3) How helpful was feedback on your assignments? According to the interviewees' agreement, the interview was conducted in English and Korean for one hour in a classroom with a researcher. The data included interviewees' comments and answers to the questions, which were transcribed verbatim. The transcripts were cross-examined with the results in quantitative study, and some of excerpts were included as the reasons and explanation for the results.

Results and Discussion

Students' Perceptions of the Roles of English and EMI

We first examined whether the participating students show different perspectives regarding the English language in their academic and career purposes and the EMI policy of the university. We ran a statistical test to investigate the differences between majors: business, engineering, and general studies. Business students were found to think more highly of English proficiency for their career and other various purposes than the other two major groups, as their mean score was the highest among the three groups (4.4368). The freshmen students with no designated majors, or general studies, showed the least concern about the role of English (4.0), which was followed by the engineering major students (4.0521). Table 3 summarizes the result.

TABLE 3
Perceived Importance of English by Major

Major (N)	Minimum	Maximum	Mean	SD
Business (29)	4.00	5.00	4.4368	.32248
Engineering (224)	3.00	5.00	4.0521	.45829
General studies (58)	3.00	5.00	4.0000	.51489
Total (311)				

The differences between groups were found to be statistically significant in the subsequent ANOVA statistics ($F = 10.058, p < .01$). In order to identify the points of differences, a post hoc test, TUKEY HSD, was run. The differences were significant in the comparisons between business and engineering majors and between business and general studies ($p < .01$) (Table 4). However, the difference between engineering versus general studies was not statistically significant.

TABLE 4
Tukey HSD for Multiple Comparisons (Importance of English by Major)

Major	Major	Mean Difference	Std. Error	Sig.
Business	Engineering	.38470**	.09056	.000
Business	General studies	.43678**	.10437	.000
General studies	Engineering	-.05208	.06761	.721

** The mean difference is significant at the 0.01 level.

Given these results, we examined whether our research design (CG versus EG) may disclose differences in the perceived importance of English proficiency. A t-test (Levene's Test for Equality of Variances) showed no statistically significant difference between CG and EG (see Table 5).

TABLE 5
Difference in the Perceived Importance of English

Group (N)	Mean	SD	t	df	Sig.
CG (158)	4.0781	.48057	.205	309	.838
EG (153)	4.0675	.42295			

The focus group interview revealed differences in students' perception of English proficiency between majors. As shown below, INT01, a business major student, indicates the significant roles of English in relation to his career expectations, whereas INT 03, an engineering major, identifies reading as an important skill to his discipline.

I think all four [skills] are important, because when I contract foreigners from other foreign company, I need to exchange each of opinions by letter or email. At this stage I think writing and reading are really important, and after that stage, we need to negotiate at the desk, face to face, and at this stage I

think speaking and listening are really important, so I think all four skills are important for my career. (INT01, Business, Junior)

I think reading is very important, because I am in the scientific field, I always read papers, and paper is very important for scientific field. Reading is very important because usually recently we use the translator, so speaking and listening is not important in that field. I think reading papers is very important for accumulating knowledge, so I think reading is very important. (INT03, Engineering, Junior)

These excerpts show the participants' different perspectives of English depend on their disciplinary backgrounds. These backgrounds are in effect throughout their learning activities significant in their areas of the study and their career purposes.

We then examined how they self-evaluate their comprehension level of EMI lectures. In the descriptive statistics, the means were lower than the mid-point in all the major groups, indicating the participants' difficulty to acquire subject knowledge in EMI classes (Table 6). The freshmen (general studies) showed the lowest score, 2.3233, while business majors showed the highest, 2.9741.

TABLE 6
Comprehension of EMI by Major

Major (N)	Minimum	Maximum	Mean	SD
Business (29)	1.00	5.00	2.9741	.16523
Engineering (224)	1.00	5.00	2.8438	.06082
General studies (58)	1.00	4.00	2.3233	.09800
Total (311)			2.7588	.05119

Between-group differences were significant by major in ANOVA statistics ($F = 9.008, p < .01$). In the subsequent post hoc TUKEY test, general studies students, mostly consisting of first year students, showed significant differences from both business and engineering students, while the difference between business and engineering was statistically insignificant (Table 7). This result indicates that EMI comprehension increases by students' academic experiences, although the perceived comprehension remains low even when the students have had sufficient EMI experience.

TABLE 7
Tukey HSD for Multiple Comparisons (EMI Comprehension)

Major	Major	Mean Difference	Std. Error	Sig.
Business	Engineering	.13039	.17374	.734
Business	General studies	.65086**	.20022	.004
General studies	Engineering	-.52047**	.12970	.000
Total (311)				

** The mean difference is significant at the 0.01 level.

Given these results, we examined whether the participants would self-evaluate their comprehension level of EMI differently according to the variable of feedback, i.e., CG versus EG. A t-test revealed no statistically significant difference between CG and EG (see Table 8).

TABLE 8
Comprehension of EMI

Group (N)	Mean	SD	t	Df	Sig.
CG (158)	2.7500	.89674	-.175	309	.861
EG (153)	2.7680	.91187			

Students' comments on learning subjects through EMI frequently included instructor-related factors, such as subject instructors' English. For example, instructors' being native or non-native speakers of

English hardly concerned them; rather, the instructors' actions to improve EMI helped students' comprehension. For example, as shown in the following excerpt, despite being a non-native English speaker, a Korean instructor was preferred for his effort to help students to understand his lecture by speaking slowly.

In my case, I can understand more easily when the professor is Korean, because actually Korean professors speak English more slowly than international professors. (INT02, Engineering, Sophomore)

In sum, the students' disciplinary backgrounds were found to be the indicators of their perspectives of both the English proficiency and the acquisition of subject knowledge in an EMI environment. The business major students regarded English proficiency as a significant factor for their career. This is not surprising, given the relative importance of interpersonal or intercultural communication in the discipline of business in general compared with other majors (Charles, 2007). As Kankaanranta and Louhiala-Salminen (2010) also claim, knowledge of the specific business context, the genres used within the business area, and overall business communication strategies are tightly intertwined with students' proficiency in English. The results on the freshmen students' lack of awareness of the role of English in relation to their individual goals illuminate that learning a business subject should place additional challenge to them. This notion of English used in intercultural communication (e.g., Jenkins, 2015; Seidlhofer, 2004) should thus be foregrounded in promoting English proficiency through EMI of business courses.

Students' Major in Learning Entrepreneurship and Roles of Feedback

The second research question specifically asked how EG (extensive feedback) differs from CG (limited feedback) with respect to students' perspectives of learning the subject on entrepreneurship. Both groups being taught in EMI, the CG students were enrolled in sessions in which the instructor A taught the course on exactly the same subject according to the syllabus and the weekly schedules homogenous to the EG sections taught by the other instructor (instructor B). In the questionnaire items on students' perceived comprehension level of the subject, these two groups revealed significant differences, as EG showed higher mean score (4.1078) than CG (3.4304) (Table 9). A t-test confirmed the significance of the difference between CG and EG ($t = -10.360$, $df = 309$, $p = .000$). This result is tantalizing, compared with the lack of differences between the two groups in the perceived level of comprehension of the courses taught in EMI. With the instructor B's various feedback on their assignments and presentation, either online and offline, the EG students displayed the higher level of comprehension while learning about the entrepreneurship than their counterparts in CG learning the subject mainly through lectures and little feedback.

TABLE 9
Comprehension of Entrepreneurship

<i>Group (N)</i>	<i>Mean</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>Sig.</i>
CG (158)	3.4304	.65683	-10.360**	309	.000
EG (153)	4.1078	.48549			

** The mean difference is significant at the 0.01 level.

Given the difference between the groups, we ran the statistics to identify the roles of students' majors in their self-evaluation of comprehension. The CG students' comprehension of the subject differed by majors, as the business major students evaluated their comprehension the highest (4.22). Apparently, topics on entrepreneurship were found more comprehensible by the business major students than non-business majors taking the course to complete curricular requirement. For those without academic affiliation, general studies, it was even more difficult, as the mean score was below the mid-point, 2.9355 (Table 10).

TABLE 10
Comprehension of Entrepreneurship by Major (CG)

Major (N)	Minimum	Maximum	Mean	SD
Business (9)	4.00	5.00	4.2222	.36324
Engineering (118)	2.00	5.00	3.5000	.58104
General studies (31)	2.00	4.00	2.9355	.66761
Total (158)			3.4304	.65683

The differences between majors were significant according to ANOVA ($df = 2, F = 19.844, p = .000$). The subsequent post hoc test for multiple comparisons (Tukey HSD) indicated significant differences across all the paired groups: business versus engineering; engineering versus general studies; and business versus general studies (Table 11). Therefore, academic disciplines and possibly academic experiences, freshmen (general studies) versus sophomores or above (majors), were significant factors for learning the subject.

TABLE 11
Tukey HSD for Multiple Comparisons (Entrepreneurship, CG)

Major	Major	Mean Difference	Std. Error	Sig.
Business	Engineering	.72222**	.20397	.002
Business	General studies	1.28674**	.22334	.000
General studies	Engineering	-.56452**	.11904	.000
Total (158)				

** The mean difference is significant at the 0.01 level.

In EG, the mean scores on students' perception of the subject learning were higher than the corresponding majors in CG. It was also noteworthy that the minimum scores in engineering and general studies students were at the mid-point or higher than the mid-point. While this result highlights the effect of the instructors' feedback-focused instruction on learning the subject of entrepreneurship, the trend of mean differences by students' majors was homogeneous to CG. The business and the engineering major students' means, 4.55 and 4.08, respectively, were higher than that of the students from general studies (3.87) (Table 12), which was found statistically significant in the subsequent ANOVA procedure ($df = 2, F = 13.637, p = .000$). Thus, like CG, the students' academic disciplines were crucial to determining their comprehension of the business-specialized subject. The subsequent post hoc test for multiple comparisons (Tukey HSD) also confirmed the significant differences in all the paired groups: business versus engineering majors; engineering versus general studies; and business versus general studies (Table 13).

TABLE 12
Comprehension of Entrepreneurship by Major (EG)

Major (N)	Minimum	Maximum	Mean	SD
Business (20)	4.00	5.00	4.5500	.35909
Engineering (106)	4.00	5.00	4.080	.47877
General studies (27)	3.00	5.00	3.8704	.38211
Total (153)			4.1046	.48549

TABLE 13
Tukey HSD for Multiple Comparisons (Entrepreneurship, EG)

Major	Major	Mean Difference	Std. Error	Sig.
Business	Engineering	.46981**	.10960	.000
Business	General studies	.67963**	.13263	.000
General studies	Engineering	-.67963**	.13263	.000
Total (153)				

** The mean difference is significant at the 0.01 level.

The focus group interview revealed which aspects of the instructor's intervention were effective to students' class performances. The EG instructor's feedback was found helpful in guiding the students to the next stage of a project. For example, as shown in the following excerpt, it was important for the feedback to be responsive to students' needs.

We thought the feedback was very helpful. In our team, we got three ideas, but we couldn't choose one thing, and we asked the professor. She explained why each idea was appropriate or not, and gave us feedback on- for example- this idea is good from this perspective. So it was helpful in selecting one idea. Also, later, when we were working on our business plan, she told us what we have to focus more. Every time we did something, it was very comfortable for us. (INT03, Engineering, Junior)

In this case, the instructor's feedback was effective due to its scaffolding function to students' learning. Intriguingly, this feedback helped him to feel quite "comfortable" while engaging in the project. Another interviewee commented on the interactive aspect of feedback. Here, teacher feedback was found to lead to students' participation in classroom interaction (e.g., asking questions).

In most classes, very few students have questions, and there is a tendency that the same students are asking questions... But in Prof. B's class, various students were at least trying to ask questions, and that was amazing. There are sometimes this kind of classes, and when I take this kind of course, I also feel comfortable. (INT02, Engineering, Sophomore)

To discuss the results on the students' perspectives of learning the business course, the trend of mean differences by students' majors observed in EG was homogeneous to that of CG. Apparently, those with business-related background knowledge and motivation should understand the subject better than the other students. It is noted that taking the Entrepreneurship course in EMI at the institution was challenging particularly for those with no affiliated majors (i.e., freshmen level). Academic experience may thus be significant in learning this subject. On the other hand, across all of the three majors, the feedback-concentrated instruction contributed to the increase in students' comprehension. As indicated by the participants in the focus group interview (INTs 02 and 03), the effect of feedback extends to increased classroom interaction beyond providing contingent assistance to learning. These positive effects corroborate the previous findings on the effect of teacher feedback on triggering students' interaction and engagement in learning (Williams, 2004; Zhang & Hyland, 2018). More importantly, the feedback on their written and oral assignment moderated the differences between the students in each major group, which is shown in the smaller gap between minimum and maximum points. This shows the effect of the instructors' feedback-focused instruction on forming positive learner beliefs in learning the entrepreneurship subject. Thus, added to the specific, positive contributions of teachers' feedback to L2 acquisition, such as writing (e.g., Bitchener & Ferris, 2012; Lee, 2014; Hyland, 2003), instructors' feedback contributes to improving learners' perception of acquisition of subject knowledge.

Relationship between EMI Comprehension and Learning Entrepreneurship

Given the stark differences between CG and EG in learning the business subject, we further examined the relationship between the students' comprehension of EMI courses and the Entrepreneurship course. For both groups, those who felt more confident about understanding EMI lectures tended to evaluate higher their comprehension level of the entrepreneurship subject, and vice versa. The Pearson correlation coefficients were significant at $p < .01$ level within each of the groups (Table 14).

TABLE 14
Correlation coefficients between EMI and Entrepreneurship (CG)

Groups(N)	Pearson R(sig.)
CG (158)	.434** (.000)
EG (153)	.420** (.000)
Total (311)	

** Correlation is significant at the 0.01 level.

The results highlight that the entrepreneurship course is neither different nor separate from other major or non-major courses in terms of the way in which the students feel concerning their own comprehension. Some of the interviewees related general EMI experience to learning about a business subject. When asked about EMI classes at the institution, an engineering major student, INT02, clearly noted the relationship:

I think passion of students is most important, because engineering class, of course, business classes, all of college classes are need deep information and, of course, this is true. To succeed in learning, the students' attitude is important, it is wrong to try to understand 100% of the lecture contents. I think it is wrong when a student wants the professor to teach him everything. Actually, also in case of studying for the exam, it is hard to pass the Physics exam, only because you understood the lecture before the exam. Similar to Entrepreneurship class, through that course, it is more important how my way of thinking about startups has changed. (INT02, Engineering, Sophomore)

The interviewee's perspective of learning is centered on 'the change of thinking', which applies to all the EMI courses regardless of disciplinary differences. According to him, what is important in learning is individual learners' "attitude" towards it. Approached in this manner, learning entrepreneurship (i.e., a non-major subject) is not necessarily different from learning other subjects in an EMI environment (e.g., physics as his major). Admittedly, as the significant statistical correlation shows, the contribution of teacher feedback is seen to extend to the domains of metacognition and attitudes towards the emerging HE context with modality for internationalization. It is noted that the increased positivity in EG's belief in learning entrepreneurship is closely tied to the improved perception of EMI comprehension that EG showed. As highlighted by previous research, teacher feedback can facilitate learning through negotiated interaction, i.e., through questions or other implicit forms that seek clarifications of feedback, clarify misunderstandings, and negotiate intended meaning (Alvarez, Espasa, & Guasch, 2012; Lee, 2014). These positive experiences during the teacher-student interactions in EG are thus critical as they contribute to not only learning, but also improving or transforming their views of an EMI policy.

Implications and Conclusions

This study explored the roles of teacher feedback on students' perceptions of EMI in learning a business subject. Special foci of the study were placed on the influences of students' academic disciplines (business, engineering, and general studies) on forming learner beliefs. The discussions of the results have underlying implications for the initial plans and ensuing implementations of EMI, which are effective to teaching subjects to the students from different disciplines. First, as shown in the significance of the disciplinary differences, an EMI policy for HE should take a new perspective of English, English as a lingua franca (ELF). This notion of ELF, widely supported by many researchers (e.g., Jenkins, 2015; Seidlhofer, 2004) is of profound importance in alignment with a rationale for an EMI policy in HE. The view of ELF in an educational context should be more contextualized in certain disciplines, like the subject of entrepreneurship in the present study. The speakers and writers of ELF in business are members of the global business discourse community and use the language to do their work and exercise

membership (Kankaanranta & Louhiala-Salminen, 2010). The instructors should first recognize ELF in business and instruct this especially to teach the subject through EMI in a non-English speaking society. Additionally, when a disciplinary knowledge is to be acquired by those from other disciplines (e.g., engineering major students), there should be additional support on the institutional level. For example, through ESP curricular programs, the students should be instructed concerning the overall goals and the genres and discourses specific to business professions (Louhiala-Salminen et al., 2005).

Another major implication rests on the new insight of teacher feedback in forming students' beliefs in their own learning (Li & Ruan, 2015; Trinder, 2013). Two major realms of learner belief, drawn from the discussions of this study, include the acquisition of the knowledge of a disciplinary subject and the development of English proficiency, which should be explicitly noted in EMI-centered professional development programs. On the one hand, individual instructors teaching a disciplinary subject should be clearly aware of this significant effect of teacher feedback on learners' cognitive development, interactional engagement, and affective responses to their learning context (Cho, 2015; Han & Hyland, 2015). On the other hand, the programs should illuminate teacher feedback as a crucial means to overcome a major challenge of EMI in EFL context, namely the lack of evidence for English improvement (Cho, 2012; Kim et al., 2014; Kim et al., 2018; Manakul, 2007). When effectively coordinated by subject teachers in an EMI context, it engages learners in using English even more, an opportunity that might not be available outside the classroom.

Given the dual contributions of teacher feedback to subject learning and English improvement, these programs should provide opportunities for the instructors to both learn and practice diverse discipline-specific strategies to enhance students' engagement in the teacher feedback. It is of tantamount importance to highlight that feedback should be constructed based on individual instructors' correct understandings of their students in terms of their academic disciplines, levels of academic experiences, and beliefs in learning brought to a certain learning context (Han & Hyland, 2015). Notably, learner responses to teacher feedback can establish teacher-learner interactions (Alvarez et al., 2012; Williams, 2004). Those interactions may be exemplified as in teacher-student conferences, an effective way to supplement students' uptake of teacher feedback (Williams, 2004).

Although this study provides crucial information on the roles of teacher feedback in learner belief in an EMI environment, it also presents several limitations in its design. First, the study was conducted on the students enrolled in two CG, and another two EG sections of an Entrepreneurship course. Due to the academic curricula of the university, those who belong to the major in general studies were mostly first-year students, whereas those in the other two majors, i.e., business and engineering, were second-year or higher. Therefore, as discussed, those features shown in the group of general studies may not be entirely about the disciplinary background, but partly about their lack of academic experiences. Another limitation in the design of the study is placed on the imbalance of the number of the students in each group as well. Constrained by the context of the science-engineering school, engineering students outnumbered business students, and female students were underrepresented in both CG and EG. Future studies may address these variables, including gender and types of feedback (e.g., oral versus written feedback) and investigate the extent to which teacher feedback is efficient in learners' acquisition of major versus non-major disciplinary knowledge. These studies will ultimately contribute to promoting effective (inter)disciplinary education through EMI in a non-English-speaking HE context.

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(Received March 22, 2020; Revised August 29, 2020; Accepted September 11, 2020)