

Content teachers' and lecturers' corrective feedback in EMI classes in high school and university settings

Jiye Hong ✉

Sungkyunkwan University, Seoul, South Korea

<https://orcid.org/0000-0001-8035-3065>

jhon860@skku.edu

Abstract

To date, very limited research interest has been given to the strategies English-medium instruction (EMI) teachers or lecturers deploy to provide corrective feedback (CF) on the language use to their students during class interaction. In other words, when EMI teachers incidentally focus on students' problematic language use, how do they correct it – providing explicit correction or using recast or elicitation? This article reports on a study that examined CF types EMI teachers and lecturers used during classroom discourse, drawing on data collected from classroom observations and recordings of six different EMI classes in high school and university settings in Korea. The frequency and types of CF used in reactive language-related episodes (LREs) were identified in the EMI classes and compared between the two settings and across disciplines (social science, mathematics, and computer science). Findings showed that all the EMI teachers and lecturers offered CF to their students but with different frequency; the schoolteachers offered CF more frequently than the university lecturers. Also, the schoolteachers used more various types of CF than the lecturers. In both settings, CF occurred most frequently in mathematics compared to the other two disciplines. This article ends with suggestions for ways the findings of this study can be used to raise EMI teachers' awareness of various options for providing CF on students' linguistic errors during their incidental teaching practices.

Keywords: EMI; corrective feedback; language-related episodes; second language acquisition; disciplinary literacy

1. Introduction

Research on English-medium instruction (EMI) has reported that EMI teachers or lecturers do not consider teaching or correcting English as a part of their role (Aguilar, 2017; Airey, 2012; Margic & Vodopija-Krstanovic, 2017). Recent classroom-based studies, however, provide empirical evidence that EMI teachers or lecturers in various disciplines support their students with language by taking quick moments to offer information about linguistic items or correct students' linguistic errors in class interaction in EMI settings (An et al., 2019; Basturkmen & Shackleford, 2015; Costa, 2012; Hong, 2022; Hong & Basturkmen, 2020; Martinez et al., 2021). In second language acquisition (SLA) literature, such moments have been termed *language-related episodes* (LREs), which are defined as "instances when teachers and learners talk about the language they are producing, question their language use, or correct themselves or others" (Basturkmen & Shackleford, 2015, p. 89). LREs are divided into two types: *pre-emptive LREs* and *reactive LREs*. The former occur "regardless of any perceived linguistic errors or linguistic questions" (Hong & Basturkmen, 2020, p. 5). According to Ellis et al. (2002), pre-emptive LREs address a gap in students' knowledge about linguistic items. The latter refers to LREs that "arise in response to perceived linguistic errors or because a participant fails to comprehend something that another has said" (Hong & Basturkmen, 2020, p. 5).

Previous studies on LREs in EMI settings have found that EMI teachers or lecturers used both pre-emptive and reactive LREs as a means to integrate the focus on language into their content teaching seamlessly and smoothly (Basturkmen & Shackleford, 2015; Costa, 2012; Doiz & Lasagabaster, 2021). Also, these studies have shown somewhat similar findings that the teachers or lecturers initiated LREs far more frequently than their students. They also initiated LREs mostly pre-emptively rather than reactively. The lower frequency of reactive LREs in the EMI classrooms reported in the previous studies is not surprising. As the explicit focus of EMI classes is on disciplinary content education, EMI teachers or lecturers would not pay much attention to students' linguistic errors that incidentally occur during classroom interaction. Also, EMI teachers or lecturers are usually not trained to correct students' linguistic errors. Thus, they may be confused by whether and how they should address linguistic errors that unexpectedly arise during classroom interaction (Jacobson, 2015) or unsure about the effects of providing a correction. They may also be concerned about the possibility that their correction of students' linguistic errors would demotivate or put a burden on their students.

However, Williams (2001) argues that students can profit considerably from teachers' feedback on their linguistic errors in reactive LREs. A recent study (Hong, 2021b) in the South Korean context examined the effects of LREs on students' learning of language items in high school and university settings by administering

a tailor-made language test. It has been confirmed that student-initiated, pre-emptive LREs were the most effective in students' learning of the target language items; however, reactive LREs initiated by the teachers were also effective. That is, despite the transient nature of LREs, the students were able to learn the correct forms or ways of using the language items that had been previously corrected by the teachers in reactive LREs. Hong (2021a) suggests that EMI teachers' corrective feedback (CF) does not necessarily impede the flow of classroom discourse in EMI classrooms and that LREs with CF can be of benefit to students who thus notice a gap in their knowledge about a language item and learn their second language (L2) in a meaningful way.

To date, however, very limited research interest has been given to the ways EMI teachers or lecturers correct their students' language use in classroom interactions. Before making any claims about the effects of EMI, it is crucial to observe what actually happens in EMI classrooms. Given that LREs provide meaningful opportunities for students in EMI settings to learn how language is used in a discipline (Basturkmen & Shackelford, 2015; Martinez et al., 2021), it is crucial to examine the strategies that EMI teachers with various discipline backgrounds deploy to provide their students with CF in their classes. The current study aimed to provide an illustration of the CF types used in six EMI classes, three in high school (economics, politics, and mathematics) and three in university settings (accounting, computer science, and mathematics). It examined the frequency and types of CF that occurred during class interaction in EMI settings and compared the types of CF across the disciplines.

2. Literature review

2.1. Oral CF in English as a second language (ESL) classrooms

Corrective feedback has been defined as responses that "learners receive on the linguistic errors they make in their oral or written production in L2" (Sheen & Ellis, 2011, p. 593). Cognitive theories, including the interactional hypothesis (Long, 1996), the output hypothesis (Swain, 1995), and the noticing hypothesis (Schmidt, 2001), have emphasized that CF facilitates the process of L2 acquisition by providing learners with an opportunity to notice the gap and to repair or correct the linguistic errors they have made.

SLA research that investigated strategies teachers used to correct learners' oral linguistic errors arising during classroom interactions has consistently shown that recasts were the most frequently used CF type in the ESL context (e.g., Loewen, 2002; Lyster & Ranta, 1997; Zhao & Bitchener, 2007), supporting Seedhouse's (2001) claim that teachers prefer recasts because of its non-threatening

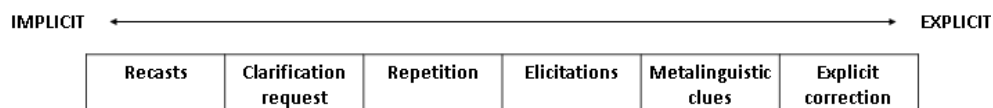
and unobtrusive nature. Also, previous studies in the ESL context examined the effects of various CF types in ESL classrooms, using uptake and repair as measures. Uptake refers to “an optional student move that occurs in episodes where learners have demonstrated a gap in their knowledge,” in reaction to the teacher’s implicit or explicit provision of information about linguistic features (Ellis et al., 2001, p. 286).

An influential study by Lyster and Ranta (1997) examined the frequency of the oral CF type used in French immersion classrooms. They identified six types of oral CF, including explicit correction, clarification requests, recasts, elicitation, metalinguistic feedback, and repetition, and found that recasts were used the most often despite the finding that they were the least likely to lead to students’ uptake. The study also showed that three types of CF, that is, metalinguistic feedback, clarification requests, and repetition, led to students’ successful uptake the most.

Many researchers have classified CF types in terms of the degree of implicitness and explicitness. Sheen and Ellis (2011) have developed a taxonomy of oral CF types in classroom discourse, which includes the distinction between *input-providing* (correct form provision) and *output-prompting* (attempt to elicit learners’ self-correction) CF and the distinction between *implicit* and *explicit* CF. Implicit CF occurs “when the teacher simply requests clarification in response to the learner’s erroneous utterance,” and explicit CF occurs “when the teacher directly corrects the learner and/or provides some kind of metalinguistic explanation of the error” (Sheen & Ellis, 2011, p. 593).

Milla and Mayo (2014) have also classified CF types in accordance with the explicitness of correction. Figure 1 illustrates the continuum of the CF strategies in order of the degree of explicitness, with recasts being the most implicit and explicit correction being the most explicit. The present study draws on Lyster and Ranta’s (1997) and Milla and Mayo’s (2014) classification of CF types and definitions of each type.

Figure 1 Continuum of CF types (Milla & Mayo, 2014, p. 4)



Loewen (2002) explored the effects of form-focused episodes (FFE) on L2 learners’ subsequent learning of the targeted language items in L2 communicative ESL classrooms, using tailor-made language tests. He found that in this setting, the two most commonly used CF types were recasts and informs (51.4% and 36.8%, respectively), distantly followed by prompts, clarification requests, and repeats. Loewen (2002) also found that elicitation of responses was significantly

more effective in leading to students' successful uptake than the provision of the language information.

Sheen (2004) compared teachers' use of CF and learners' uptake arising in four different L2 communicative classroom contexts, that is, French immersion, Canada ESL, New Zealand ESL, and Korean ESL, drawing on Lyster and Ranta's (1997) CF type taxonomy. Similar to the findings of the previous studies, Sheen found that recasts were the most dominant CF type, which accounted for over 50% in all four classes. Despite the high frequency, however, recasts led to the lowest rate of learner uptake, and explicit correction also resulted in a lower rate of learner uptake. In contrast, the other less frequent CF types, including elicitation, clarification requests, metalinguistic feedback, and repetition, led to a high rate of learner uptake. The study also found that the effectiveness measured by learner uptake or repair and the nature of recasts significantly differed according to the instructional settings.

A study by Panova and Lyster (2002) investigated the types of CF and the relationship between CF types and learner uptake in adult ESL classes in Canada. The teachers in the study used recasts the most frequently; however, other CF types, such as elicitation, repetitions, clarification requests, and metalinguistic feedback, were more effective for learner uptake or repair. The researchers explain that because recasts involve the reformulation of learners' erroneous utterances with correct linguistic forms, they are not necessarily followed by learners' responses. Lyster and Mori (2006) compared CF in French immersion and Japanese immersion classrooms in the elementary school setting. They found that the proportion of linguistic errors the teachers corrected was similar in both classrooms. Also, the predominant CF type was recasts, and the explicit correction was infrequently used in both settings. However, the patterns of students' uptake and repair in relation to CF types varied between the classes; in the French immersion classroom, it was prompts that resulted in the highest frequency of repair, whereas in the Japanese immersion classroom, it was recasts. The authors suggested the counterbalance hypothesis, which argues that in the meaning-focused French classroom, the teacher's use of prompts, a form-focused strategy, led to more students' uptake. On the other hand, in the form-focused Japanese classroom, an implicit or more meaning-focused strategy such as recasts led to more student uptake and repair. The authors further assert a need for the balanced use of different CF strategies in accordance with the focus of classes to help students notice their linguistic gaps.

In a recent study on oral CF in Chinese as a second language (CSL) classrooms in a Chinese university, Bao (2019) examined and compared CSL teachers' practices and beliefs regarding CF. Bao found that the CSL teachers in a Chinese university corrected most of the linguistic errors (71.6%) using recasts most frequently (52.8%). In the interview all the CSL teachers agreed on the importance of

CF provision and consideration of student factors (e.g., personality, preferences) when providing CF for students' L2 development and ability to communicate accurately and appropriately. In terms of the thoughts about the frequency of CF, some teachers in the study reported providing CF infrequently because of the possibility of interruption of the flow of class, while the others reported their frequent use of CF. The study also reported some discordance between CSL teachers' beliefs about CF and their actual practices; the teachers thought elicitation and repetition to be preferred by students, which they rarely used in practice. Also, the frequency of CF that the teachers perceived was much higher than the actual frequency of CF.

Yüksel et al. (2021) investigated the oral CF beliefs and actual practices of 20 ESL teachers in an intensive ESL program in a Turkish university. The data were collected from the transcripts of the video recordings of the classes and stimulated recall interviews with the teachers and the results of a tailor-made task for the teachers. The study found that the teachers' perceived effectiveness of oral CF was approximately 65%. Also, teachers' stated CF percentage and actual practices showed a similar ratio (63% and 68% respectively). In terms of linguistic focus of oral CF, the teachers were found to provide more CF for vocabulary errors (69%) followed by pronunciation errors (68.5%) and grammatical errors (50.5%). Incongruence was found between the teachers' beliefs and practices regarding the timing of CF provision; they provided far more immediate CF in practice than they had believed (79.6% and 48% respectively) and less delayed CF in practice than was their expectation (20.4% and 52% respectively). The teachers' beliefs and practices were similar regarding recasts and elicitations as the types of CF that they favored the most.

Previous studies using meta-analysis have reported that oral CF is an effective means by which teachers provide language learners with scaffolding to support their L2 learning in ESL classrooms (e.g., Li, 2010; Lyster & Saito, 2010; Norris & Ortega, 2000). A study by Li (2010) found that explicit CF had greater immediate effects on L2 acquisition; however, it was implicit CF whose effects were more sustainable. A meta-analysis by Lyster and Saito (2010) has shown that prompts were more effective for L2 learning than recasts in ESL classroom settings, a different finding from the ones reported in previous studies (e.g., Lyster & Ranta, 1997; Sheen, 2004), and that CF was more beneficial for younger learners than older learners. Li (2014) found that explicit CF was more effective for learners with low L2 proficiency level, while both explicit and implicit CF was equally beneficial for advanced proficiency level learners.

2.2. Oral CF in content classrooms

Recent research has compared CF strategies used in ESL and content classrooms. Schuitemaker-King (2013) compared the frequency and types of CF arising in

content-language integrated learning (CLIL) classes, bilingual ESL classes, and non-bilingual ESL classes in the Netherlands. Overall, nine different types of CF strategies were identified in the data. The study found that the CF strategies were most frequent in bilingual ESL classes, followed by CLIL classes and non-bilingual ESL classes. Also, the frequently used CF strategies differed between the classes. In the CLIL classes, three CF strategies, modification and addition to an answer, recasts, and clarification requests, occurred most frequently. In both bilingual and non-bilingual ESL classes, metalinguistic comment in the L2 was most commonly used, whereas it was the least used strategy in the CLIL classes.

A study by Milla and Mayo (2014) investigated CF episodes in classroom interaction in ESL and CLIL (business) classes in a Spanish high school. The study found that while the ESL teacher used various CF types, the CLIL teacher mainly used recasts. The CF strategies the ESL teacher used were more explicit than those used by the CLIL teacher. Also, the findings of the study indicated that CF had a significant effect on students' uptake in the ESL classes but not in the CLIL classes.

There is an SLA context that has scarcely been researched, namely, the EMI context. EMI is expected to provide ESL students with opportunities for natural acquisition of academic English. Many studies have shown that content teachers in EMI settings had a role of facilitating their students' academic English development even though they did not have sufficient knowledge about L2 teaching and learning (e.g., Martinez et al., 2021). Moreover, findings from the previous EMI studies (e.g., Doiz & Lasagabaster, 2021) have shown differences in terms of the frequency and types of LREs across disciplines. It is possible that the ways EMI teachers correct students' linguistic errors vary according to their disciplinary backgrounds. Thus, there is a need for research that examines the strategies EMI teachers use to correct students' linguistic errors during their content teaching practices and compares them with those adopted by ESL teachers or specialists. A limited amount of information about CF used in EMI settings led to the present study. It was part of a broader investigation into classroom discourse in EMI classes across disciplines, which aimed to examine whether EMI teachers and students initiate LREs during content classes, and if so, how these LREs occurred. The present study examined the extent to which EMI teachers and lecturers corrected their students' linguistic errors and the types of CF they used to address linguistic errors during their incidental teaching. Also, this study compared the use of CF between two settings and across disciplines. This study was guided by the following research questions:

1. To what extent do EMI teachers/lecturers correct students' linguistic errors during teacher-student interaction in high school and university settings?
2. What types of CF do EMI teachers/lecturers use to address students' linguistic errors in teacher-student interaction in these settings?

3. What are the similarities and differences regarding the frequency and types of CF between the two settings?

3. Methodology

3.1. Setting and participants

This study was conducted in three different EMI classes in two high schools, one public and one private, and three different EMI classes in a university in South Korea (see Table 1). The high schools taught all content subjects except languages and Korean history through English with the aim of preparing Korean L1 students' transition to HE overseas. All the students in this study were Korean L1 speakers except 19 international students in the accounting class in the university who had neither Korean nor English as their L1.

Table 1 Information on research settings

	Subject	L1 of teacher/ lecturer	Years of teaching	Number of students	Length of recordings (minutes)
A high school (public)	Economics	Korean	8 years	27	214
	Mathematics	English	7 years	23	203
B high school (private)	Politics	English	11 years	25	256
	Accounting	Chinese	6 years	42	480
C university	Mathematics	English	7 years	31	357
	Computer science	Vietnamese	4 years	35	245
					1,755

3.2. Data collection and analysis

The data for the present study comprise reactive LREs identified in the recordings of the six EMI classes, part of the data collected in Hong and Basturkmen (2020) and Hong (2021a, 2021b). This study used different research questions and data analysis methods from the ones used in Hong and Basturkmen (2020) and Hong (2021a, 2021b). The data were collected using classroom observation and audio recordings. Four lessons of each EMI class were observed and audio-recorded. The researcher was present during the observation in order to take field notes. Class recordings were verbatim transcribed by the researcher, and LREs were identified in the transcriptions of the class recording.

The first analysis was carried out to examine to what extent the teachers or lecturers corrected students' linguistic errors during teacher-student interaction. Students' linguistic errors were identified in the transcriptions of class recordings and coded for either *corrected (reactive LRE)* or *not corrected*. Example

1 shows a student's linguistic error (*y is same as*) that the mathematics teacher did not pay attention to.

Example 1 (Mathematics)

T: Then, how about D? What's the answer for D?

S: Uh . . . *y is same as* one over x minus three plus one.

T: Okay, so what we are gonna do is to translate two units to the right and . . .

Then, for the reactive LREs in which students' linguistic errors were corrected, the second analysis was conducted. Reactive LREs refer to episodes that "arise in response to perceived linguistic errors or because a participant fails to comprehend something that another has said" during classroom discourse (Hong & Basturkmen, 2020, p. 5). This study used only the reactive LREs that the teachers or lecturers initiate in response to students' linguistic errors, providing CF. In this study, any reactive LREs initiated by students were excluded. Thus, the data set comprises 107 reactive LREs initiated by the teachers or lecturers in classroom interaction in the EMI classes (see Table 2).

Table 2 Number of reactive LREs

	Subjects	Number of teacher-initiated reactive LREs
A high school	Economics	23
	Mathematics	42
B high school	Politics	26
C university	Accounting	4
	Mathematics	9
	Computer science	3
Total		107

Reactive LREs were coded for six CF types, explicit correction (EC), metalinguistic clues (MC), elicitations (EL), repetitions (RP), clarification requests (CR), and recasts (RC), drawing on Milla and Mayo (2014). A translation that follows a student's unsolicited use of the L1 was coded as recasts, following Lyster and Ranta (1997).

Example 2 (Economics)

T: So, what kind of function is this?

S: Um . . . *combined function*?

T: *Com* . . . ?

S: *Combined function*?

T: *Composition function*. We don't have the exact amount of output, yet, but . . .

Reactive LREs often involved multiple CF types, as seen in Example 2 above. In this example, the economics teacher attended to a student's mistaken use of 'combined' and used two CF types, elicitation (*com...?*) and recast (*composition function*) to address the linguistic error. Drawing on Lyster and Ranta's (1997) conventions, multiple CF types used in a single LRE were counted separately. To check the reliability of the coding of the CF types used in the LREs, a randomly selected sample of 10% of the reactive LREs was coded independently by a second coder. In terms of the inter-reliability, the results of Cohen's kappa analysis showed substantial agreement between the researcher and the second coder ($k = .933$).

4. Findings

Overall, of the students' linguistic errors that occurred during teacher-student interactions, 79.9% were corrected by the teachers or lecturers. As shown in Table 3, most of the linguistic errors were corrected in all the EMI classes (range from 76.7% to 100%) except in the computer science class in the university setting (37.5%). When comparing the two settings, more students' linguistic errors were corrected in the school setting than in the university setting (81.3% and 72.7%, respectively).

Table 3 Distribution of students' linguistic errors in teacher-student interaction

	Subjects	Corrected	Not corrected	Total
High school	Economics	23 (76.7%)	7 (23.3%)	30
	Mathematics	42 (79.2%)	11 (20.8%)	53
	Politics	26 (89.7%)	3 (10.3%)	29
University		91 (81.3%)	21 (18.7%)	112
	Accounting	4 (80%)	1 (20%)	5
	Mathematics	9 (100%)	0	9
	Computer science	3 (37.5%)	5 (62.5%)	8
		16 (72.7%)	6 (27.3%)	22
Total		107 (79.9%)	27 (20.1%)	134

Table 4 shows the frequency of each CF type in the two settings. In the high school setting, all the types of CF were observed, and in the university setting, four types were observed. In both settings, EMI teachers and lecturers used recasts the most frequently (78.1% and 73.7%, respectively). A different pattern was seen regarding the other CF types in these two settings. In the school setting, elicitation was the second most frequent CF type, while it was infrequent in the university setting (8.8% and 5.3%, respectively). In the university setting, explicit correction was the second most frequent type, but it was far less frequent in the school setting (15.8% and 2.6%, respectively).

Table 4 CF strategy in two different settings

	High school	University
Explicit correction (EC)	3 (2.6%)	3 (15.8%)
Metalinguistic clues (MC)	6 (5.3%)	-
Elicitations (EL)	10 (8.8%)	1 (5.3%)
Repetitions (RP)	1 (0.8%)	1 (5.3%)
Clarification requests (CR)	5 (4.4%)	-
Recasts (RC)	89 (78.1%)	14 (73.7%)
Total	114	19

As shown in Table 5, in the high school settings, the most frequently used CF type was recasts (78.1%), followed distantly by elicitations (8.8%) and metalinguistic clues (5.3%). The least frequently used CF type was repetitions (0.8%). In the high school EMI classes, the teachers provided all the CF in a way the students had no chances for uptake or repair.

When looking at each discipline, the mathematics teacher provided CF more frequently and used a more comprehensive range of CF types than the other two teachers. In the economics class, five CF types were observed, and only three types of CF were identified in the politics class.

Table 5 Distribution of CF type in the high school settings

	Economics	Mathematics	Politics	Total
Explicit correction (EC)	2 (6.7%)	1 (2.2%)	-	3 (2.6%)
Metalinguistic clues (MC)	2 (6.7%)	2 (4.4%)	2 (5.2%)	6 (5.3%)
Elicitations (EL)	5 (16.7%)	3 (6.7%)	2 (5.2%)	10 (8.8%)
Repetitions (RP)	-	1 (2.2%)	-	1 (0.8%)
Clarification requests (CR)	2 (6.7%)	3 (6.7%)	-	5 (4.4%)
Recasts (RC)	19 (63.3%)	36 (77.8%)	34 (89.5%)	89 (78.1%)
Total	30	46	38	114

In the school settings, the teachers occasionally provided a combination of CF types for the same linguistic errors in some LREs analyzed. A combination of elicitation and recasts (EL-RC) was commonly used in these classes. In the economics class, five types of combined CF, EC-EL, EC-MC, EL-RC-MC, EL-RC, and CR-RC, were observed. Excerpt 1 shows an LRE in the economics class, which involves a combination of elicitation, recast, and metalinguistic clues. In response to a student's use of Korean, the economics teacher elicits the translation from the student by using a question. Then, he provides a recast to the student's linguistic error and immediately offers a metalinguistic clue.

Excerpt 1 (EL¹-RC²-MC³)

T: And ultimately, the companies will?

S: 규모의 경제를 실현한다?

T: *Can you say that in English?*¹

S: . . . in English?

T: Yes.

S: Ah, companies can . . . *get economic scale*²?

T: Good. Companies can *achieve economies of scale*² by lowering costs. Alternately you can say, economies of scale occur in the companies. Don't forget this, this *preposition*³ (of) here. And what happens after these (companies) lower costs . . .

In the mathematics class, five types of combined strategies, CR-EC-RC, MC-RC, EL-RC, EL-CR, and RP-RC, were observed. In Excerpt 2, the mathematics teacher has to use two additional CF types, elicitation and recast, as clarification request is inefficient.

Excerpt 2 (CR-EC-RC)

S: X equal to and bigger than minus two or the same.

T: *Sorry? Say that again?*¹

S: X plus two is *larger*² or *the same as*³ zero.

T: Yes. Well, x plus two is *g [g] . . .?*²

S: Greater.

T: Yes. Or *equal to*³ zero.

In the politics class, two types of combined CF, MC-RC and EL-RC, were identified. Excerpt 3 shows an episode in which the politics teacher used metalinguistic clues and recast to correct a student's linguistic error.

Excerpt 3 (MC¹-RC²)

T: What's this then? What kind of system, yes, **?

S: *Hierarchy*².

T: Yeah, it's hie-, *it should be adjective*¹, so, *hierarchical*² system. It's related to what?

In the university setting, the mathematics lecturer offered CF more frequently than the other two lecturers (see Table 3). In this setting, four different CF strategies were observed, with recasts being the most frequently and commonly used (73.7%) in all the classes. Two types of CF, metalinguistic clues and clarification requests, were not observed in this setting (see Table 6). When looking at each discipline, three CF types, including recasts, repetitions and explicit correction, were identified in accounting. Two CF types (recasts and elicitation) in mathematics and two CF types (recasts and explicit correction) in computer science were identified.

Table 6 Distribution of CF strategy in the university setting

	Accounting	Mathematics	Computer science	Total
Explicit correction	1 (20%)	-	2 (50%)	3 (15.8%)
Metalinguistic clues	-	-	-	-
Elicitations	-	1 (10%)	-	1 (5.3%)
Repetitions	1 (20%)	-	-	1 (5.3%)
Clarification requests	-	-	-	-
Recasts	3 (60%)	9 (90%)*	2 (50%)	14 (73.7%)
Total	5	10	4	19

Note. *One student uptake occurred

In the university setting, none of the reactive LREs involved student uptake or repair except one episode observed in the mathematics class, as illustrated in Excerpt 4 below.

Excerpt 4 (RC followed by a student uptake)

S: . . . and the, and to take the derivative of this formula *with response to* . . .

L: *With respect to*.

S: *Ah, I see. With respect to x*, it comes out to be . . .

A combination of CF strategies for the same linguistic errors was observed only in the accounting class. In Excerpt 5, the accounting lecturer first repeats a student's linguistic error, raising his intonation. He then offers the correct form (recast), after noticing the student cannot repair the error by herself.

Excerpt 5 (RP-RC)

L: So, again, how can we calculate retained earning?

S: Uh, it's equal net income minus *dividence*?

L: *Dividence*¹?

S: *Dividences*?

L: *Dividends*². Yes, so, net income minus dividends.

5. Discussion

This article reported on a study into the frequency and types of CF that content teachers and lecturers provide to their students during content teaching in the different EMI settings, two high schools and a university, in South Korea. Classroom-based research in various EMI settings has shown that EMI teachers or lecturers often dealt with language issues to offer information about linguistic items or correct students' linguistic errors during classroom interaction focused on disciplinary content (An et al., 2019; Basturkmen & Shackleford, 2015; Martinez et al., 2021). Applied linguists have consistently argued that language has a crucial

role in content classrooms and content teachers are responsible for facilitating students' disciplinary literacy development, especially in EMI classrooms (Doiz & Lasagabaster, 2021; Hong, 2022; Macaro, 2018). However, little information has been available on strategies content teachers or lecturers deploy to provide CF on students' linguistic errors and how the strategies might compare in different disciplines or educational levels. This study examined EMI teachers' and lecturers' use of CF during their teaching in six different EMI classrooms in South Korean high school and university settings.

The findings indicated that the EMI teachers or lecturers corrected more than 70% of the students' linguistic errors in all the EMI classes except the computer science class in the university setting, where only 37.5% of the linguistic errors were corrected. The EMI teachers and lecturers in this study appeared to perceive the provision of CF on students' linguistic errors as a part of their EMI teaching practices even though the focus of their classes was content knowledge development. In terms of the frequency of CF, there was a difference between the high school and university settings; CF was provided far more frequently in the school settings (one CF every 7.40 min) than in the university setting (one CF every 67.2 min) despite the shorter length of class time in the schools. This can be explained by the size of each EMI class; because of the relatively small class size, the high school students may have had more opportunities to make more linguistic errors during teacher-student interaction than the students in the university EMI classes in which they did not talk much. Also, possibly, the importance of the CF provision perceived by the schoolteachers may have been higher than that perceived by the university lecturers.

In both high school and university settings, the mathematics teacher and lecturer corrected students' linguistic errors more often than those in the other disciplines. This could be due to the finding reported in Hong and Basturkmen (2020) and Hong (2021a) that the reactive LREs identified in the mathematics classes occurred to correct students' errors in using "the conventional way of articulating ideas using language patterns associated with mathematical terms" (Hong, 2021a, p. 111) during class activities such as solving mathematics questions, while the reactive LREs in the other classes mostly focused on vocabulary. Had there been more class activities in the other classes, there would have been more chances for students to make linguistic errors on which the EMI teachers and lecturers provide CF.

Another interesting finding was that like the ESL teachers in previous studies (e.g., Lyster & Mori, 2006), the EMI teachers in the school setting in this study used a wide range of CF types. However, in the university setting, the EMI lecturers used only four types of CF. This could be explained with the finding that all the schoolteachers used multiple CF types to deal with the same linguistic error more often than the university lecturers. As Milla and Mayo (2014) argue, using

multiple CF types is much richer and more effective than a single CF type as it enables teachers to draw students' attention to the linguistic errors in various ways. Considering that the schoolteachers shared a goal of supporting their students' transition to universities abroad, they may have felt more accountable for students' academic English development and learning of correct, accurate linguistic forms. In addition, they may have believed that the effects of each CF type can vary according to students' individual differences (English proficiency, L1 backgrounds, personalities) and tried to use as various CF types as possible to support students' learning.

This study revealed that regardless of disciplines and educational levels, recasts were the most predominant CF type in all the EMI classes, reflecting the findings of previous studies into the ESL context (e.g., Loewen, 2002) and the CLIL context (e.g., Milla & Mayo, 2014; Llinares & Lyster, 2014). As Lyster (2007) argues, recasts enable teachers to keep the flow of classroom communication and retain the attention of students focused on disciplinary content. Because these EMI classes were disciplinary content-oriented (Coyle, 2007), the content teachers and lecturers may not have wanted to interrupt the flow of discussion of disciplinary content and preferred to provide CF implicitly rather than explicitly maintaining the focus of their classes on content. Also, it is possible that the EMI teachers and lecturers in these settings were unsure of the effects of correcting students' linguistic errors and concerned about the possibility that their CF provision would demotivate their students. In terms of the frequency of the other CF types, different patterns were found between the settings; in the school setting, elicitation was the second most often used, while in the university setting, it was explicit correction. This could be because the schoolteachers may have felt more responsibility to give students more chances for them to come up with the correct form themselves and to check their learning of it.

Unlike the findings that teachers' CF was followed by students' uptake or repair reported in the previous study in the CLIL context (Llinares & Lyster, 2014), this study found scant student uptake or repair in these EMI settings. This could be explained by the length of the EMI classes in this study. In the school settings, the classes lasted 50 minutes, and in the university setting, the classes lasted between 60 and 90 minutes, the same class length as classes taught in Korean. Because of the limited class time, it is possible that the EMI teachers and lecturers tried to avoid spending much time focusing on linguistic issues. Also, they may have preferred providing students with the correct linguistic forms immediately so that they could quickly return to discussing the disciplinary topic. For example, the length of EMI classes in the high school settings was the same as that of classes taught in Korean in other high schools. Also, the classroom interaction in these settings was mainly teacher-dominated, which An et al. (2021) criticized for limiting the quantity and quality of student participation. Had the

length of class time been longer, the teachers and lecturers would have given more opportunities to their students to talk and taken more time to address students' linguistic errors even during their content teaching. Thus, when implementing EMI, institutions may need to consider ideal class length for EMI classes.

In addition, as these were content teachers and lecturers, they may not have been aware of the importance of students' uptake or repair in L2 development. One suggestion this study would propose is to provide language teaching-related information to EMI teachers or lecturers so that they can apply it when planning and teaching their EMI classes. ESL teachers or language specialists may collaborate with EMI teachers or lecturers in this process. EMI teachers could observe ESL classes to understand how ESL teachers provide students with CF to address linguistic errors and facilitate L2 learning.

6. Conclusion

This study examined content teachers' and lecturers' corrective feedback (CF) that occurred during six different EMI classes in high school and university settings in South Korea. It can be concluded that the provision of CF was a usual part of incidental EMI teaching practices in both school and university settings. In all EMI classes, recasts were the most frequent CF type; however, for the frequency of other CF types, different patterns were revealed in the two settings. The schoolteachers provided CF far more frequently than the university lecturers. Also, the schoolteachers used more various types of CF than the lecturers. In terms of the differences between the disciplines, it was mathematics that involved more frequent CF than other disciplines (social science and computer science).

In order to discuss the potential benefit of EMI, detailed classroom observation must take place. The present study contributes to our better understanding of the ways EMI teachers and lecturers deal with students' linguistic errors in their content teaching, which has scarcely been studied. However, this study has some limitations that are worth noting. Due to the small number of EMI classes in the South Korean context, the findings should not be generalized to other geographical contexts. This study involved highly experienced EMI teachers and lecturers; novice EMI teachers may provide more or less oral CF during their teaching than the teachers and lecturers in this study. Also, the relationship between the types of CF and students' acquisition of language items targeted in reactive LREs was not examined in this study. It is hoped that future research will examine this issue so as to confirm the effects of CF on students' English acquisition in EMI settings.

References

- Aguilar, M. (2017). Engineering lecturers' views on CLIL and EMI. *International Journal of Bilingual Education and Bilingualism*, 20(6), 722-735.
- Airey, J. (2012). "I don't teach language." The linguistic attitudes of physics lecturers in Sweden. *AILA Review*, 25, 64-79.
- An, J., Macaro, E., & Childs, A. (2019). Language focused episodes by monolingual teachers in English medium instruction science lessons. *Journal of Immersion and Content-Based Language Education*, 7(2), 166-191.
- An, J., Macaro, E., & Childs, A. (2021). Classroom interaction in EMI high schools: Do teachers who are native speakers of English make a difference? *System*, 98, 102482. <https://doi.org/10.1016/j.system.2021.102482>
- Bao, R. (2019). Oral corrective feedback in L2 Chinese classes: Teachers' beliefs versus their practices. *System*, 82, 140-150.
- Basturkmen, H., & Shackelford, N. (2015). How content lecturers help students with language: An observational study of language-related episodes in interaction in first year accounting classrooms. *English for Specific Purposes*, 37, 87-97.
- Costa, F. (2012). Focus on form in ICLHE lectures in Italy: Evidence from English-medium science lectures by native speakers of Italian. *AILA Review*, 25(1), 30-47.
- Coyle, D. (2007). Content and language integrated learning: Towards a connected research agenda for CLIL pedagogies. *International Journal of Bilingual Education and Bilingualism*, 10(5), 543-562.
- Doiz, A., & Lasagabaster, D. (2021). Analysing EMI teachers' and students' talk about language and language use. In Lasagabaster, D. & Doiz, A. (Eds.), *Language use in English-medium instruction at university: International perspectives on teacher practice* (pp. 34-55). Routledge.
- Ellis, R., Basturkmen, H., & Loewen, S. (2001). Learner uptake in communicative ESL lessons. *Language Learning*, 51(2), 281-318.
- Ellis, R., Basturkmen, H., & Loewen, S. (2002). Doing focus-on-form. *System*, 30(4), 419-432. [https://doi.org/10.1016/S0346-251X\(02\)00047-7](https://doi.org/10.1016/S0346-251X(02)00047-7)
- Hong, J. (2021a). *Attention to language in English-medium instruction in high school and university settings in South Korea* (Doctoral dissertation, ResearchSpace@ Auckland).
- Hong, J. (2021b). Incidental attention to language during disciplinary teaching: An observation study of LREs in a first-year EMI computer programming lecture. *Asia-Pacific LSP & Professional Communication Association News*, 3, 9-12.
- Hong, J. (2022). A study of language-related episodes in online English-medium instruction classes in high schools in South Korea. *English for Specific Purposes*, 67, 65-75.

- Hong, J., & Basturkmen, H. (2020). Incidental attention to academic language during content teaching in two EMI classes in South Korean high schools. *Journal of English for Academic Purposes, 48*, 100921. <https://doi.org/10.1016/j.jeap.2020.100921>
- Jacobson, D. M. (2015). Oral error feedback for English learners in the cotaught content classroom. *TESOL Journal, 6*(4), 659-679.
- Li, L. (2014). Corrective feedback in classrooms at different proficiency levels: A case study of Chinese as a foreign language. *Journal of the National Council of Less Commonly Taught Languages, 16*, 2-32.
- Li, S. (2010). The effectiveness of corrective feedback in SLA: A meta-analysis. *Language Learning, 60*(2), 309-365.
- Llinares, A., & Lyster, R. (2014). The influence of context on patterns of corrective feedback and learner uptake: A comparison of CLIL and immersion classrooms. *The Language Learning Journal, 42*(2), 181-194.
- Loewen, S. (2002). *Attention to grammar in incidental focus on form* (Doctoral dissertation, University of Auckland, Auckland, New Zealand).
- Long, M. (1996). The role of the linguistic environment in second language acquisition. In W. Ritchie & T. Bhatia (Eds.), *Handbook of second language acquisition* (pp. 413-468). Academic Press.
- Lyster, R. (2007). *Learning and teaching languages through content: A counter-balanced approach*. John Benjamins.
- Lyster, R., & Mori, H. (2006). Interactional feedback and instructional counter-balance. *Studies in Second Language Acquisition, 28*(2), 269-300.
- Lyster, R., & Ranta, L. (1997). Corrective feedback and learner uptake: Negotiation of form in communicative classrooms. *Studies in Second Language Acquisition, 19*(1), 37-66. <https://doi.org/10.1017/S0272263197001034>
- Lyster, R., & Saito, K. (2010). Oral feedback in classroom SLA: A meta-analysis. *Studies in Second Language Acquisition, 32*(2), 265-302.
- Macaro, E. (2018). *English medium instruction*. Oxford University Press.
- Margić, B. D., & Vodopija-Krstanović, I. (2017). *Uncovering English-medium instruction: Glocal issues in higher education*. Peter Lang.
- Martinez, R., Machado, P., & Palma, C. (2021). An exploratory analysis of language related episodes (LREs) in a Brazilian EMI context: Lecturers' and students' perspectives. In R. Martinez, P. Machado, & C. Palma (Eds.), *Language use in English-medium instruction at university* (pp. 11-33). Routledge.
- Milla, R., & Mayo, M. P. G. (2014). Corrective feedback episodes in oral interaction: A comparison of a CLIL and an EFL classroom. *International Journal of English Studies, 14*(1), 1-20.
- Norris, J. M., & Ortega, L. (2000). Effectiveness of L2 instruction: A research synthesis and quantitative meta-analysis. *Language Learning, 50*(3), 417-528.

- Panova, I., & Lyster, R. (2002). Patterns of corrective feedback and uptake in an adult ESL classroom. *TESOL Quarterly*, 36(4), 573-595.
- Schmidt, R. (2001). Attention. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 3-32). Cambridge University Press.
- Schuitmaker-King, J. (2013). Giving corrective feedback in CLIL and EFL classes. *Levende Talen Tijdschrift*, 14(2), 3-10.
- Seedhouse, P. (2001). The case of the missing "no": The relationship between pedagogy and interaction. *Language Learning*, 51, 347-385.
- Sheen, Y. (2004). Corrective feedback and learner uptake in communicative classrooms across instructional settings. *Language Teaching Research*, 8(3), 263-300.
- Sheen, Y., & Ellis, R. (2011). Corrective feedback in language teaching. In E. Hinkel (Ed.), *Handbook of research in second language teaching and learning* (Vol. 2, pp. 593-610). Routledge.
- Swain, M. (1995). Three functions of output in second language learning. In G. Cook & B. Seidlhofer (Eds.), *Principle and practice in applied linguistics* (pp. 125-144). Oxford University Press.
- Williams, J. (2001). The effectiveness of spontaneous attention to form. *System*, 29(3), 325-340.
- Yüksel, D., Soruç, A., & McKinley, J. (2021). Teachers' beliefs and practices about oral corrective feedback in university EFL classes. *International Journal of Applied Linguistics*, 31(3), 362-382.
- Zhao, S. Y., & Bitchener, J. (2007). Incidental focus on form in teacher-learner and learner-learner interactions. *System*, 35(4), 431-447.