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The Relationship between English Proficiency and Student Experiences in EMI Courses

EMI 授業履修者の英語習熟度と授業経験の関係について

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Abstract

Students' success in English Medium Instruction (EMI) courses is determined, in part, by their level of proficiency in English. This paper reports on questionnaire data from 192 students enrolled in EMI courses at a university in Japan concerning their English proficiency level, the extent to which they felt their proficiency level was sufficient for their EMI course, and the difficulties experienced in their EMI course, which were analysed in terms of their relationship with proficiency. It was found that (i) the majority of students were at a B1 level of proficiency on the CEFR scale – that is, below the B2 level widely viewed as necessary for success in courses taken in a second language; (ii) many students felt that their English proficiency was insufficient for the course they were taking, and among those students the principal concern was fundamental problems with comprehending course readings and lectures; and (iii) proficiency level was clearly related to the extent and number of difficulties that students experienced with different aspects of the course and with the tasks that were required of them. These findings raise questions about whether a proficiency threshold for enrolment in EMI courses should be introduced or whether greater support for students can be provided prior to or during EMI courses.

学生が EMI コースで成功するかどうかは、学生の英語習熟度にある程度左右される。本論文は、日本のある大学で EMI コースを履修した 192 名の学生を対象に、英語の習熟度と EMI 授業の履修に関するアンケートを行った結果を分析した。アンケートで自分の英語力が EMI コースでどれほど通用したか、EMI コースで経験した困難な点とその程度について問い、客観的な習熟度との関係について分析した。その結果、以下の点が明らかになった。(i) 大多数の学生の英語力は CEFR の B1 レベルであり、第二言語で学ぶコースで成功するために必要とされる B2 レベルよりも低い。(ii) 多くの学生が自分の英語力は EMI コースには不十分であると感じており、特にコースで課された読み物や英語による講義を理解するといった授業の基本的なことが難しいと回答した。(iii) 学生の英語習熟度は、学生が授業や課題に対して経験した困難の度合いと明らかに関係していることがわかった。これらの結果は、EMI を受講するのにある一定以上の英語のレベルを履修要件にするべきかどうか、EMI の授業の履修前あるいは履修中にサポート支援を提供したほうが良いかどうかについて考える必要性を示している。

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1. Introduction

English Medium Instruction (EMI)—“the use of the English language to teach academic subjects in countries or jurisdictions where the first language (L1) of the majority of the population is not English” (Dearden, 2015, p. 2)—has seen tremendous growth around the world in recent years. As EMI has become prevalent, a continuing concern has been whether students enrolled in EMI programmes/courses have a sufficient level of English proficiency to be able to benefit from them. Macaro (2018) reviews studies in various countries in which those involved in EMI programmes have raised concerns about the proficiency of the students enrolled. Genuine or perceived lack of proficiency was reported to have a number of impacts: a course may progress more slowly, content may be covered in less depth, and classes may be less interesting as instructors feel they must focus solely on core content. Indeed, it has been suggested that rather than the intended double gain from EMI—that is, the concurrent acquisition of both linguistic knowledge/skills and content knowledge—there may in fact be a double loss as content teachers lack the skills to foster language development in students and students’ English proficiency inhibits content learning (Hamid et al., 2013). One graphic illustration of the consequences of attempting to implement EMI with students who lacked the necessary proficiency is provided by Toh (2016) who describes the virtual collapse of an ambitious EMI programme that ensued. Nevertheless, as detailed below, the level of proficiency that is required for successful participation in EMI is not clear. Further, it is not even clear whether proficiency is the key factor in determining success.

This paper thus reports on a study that explored the connections between English proficiency and student experiences in EMI classes. The paper utilizes data from a questionnaire-based study of students enrolled in EMI courses at a Japanese university and is part of a programme of investigation into EMI and its consequences for EAP provision at the institution. Our first study (Brown et al., 2019) examined the views of faculty members teaching EMI courses regarding the demands of their EMI course, how well students could meet those demands and whether, as instructors, they felt restricted in what they could do in the course or ask of students due to limitations in students’ skills/abilities. A second study then sought the views of students in EMI courses on similar matters. Brown et al. (2021) reported the findings of that study with respect to students’ perceptions of the challenges faced in EMI courses and the degree to which they were able to meet those challenges. The current paper now focuses on the issue of proficiency and how it relates to the challenges of EMI, exploring the proficiency level of students in EMI courses, their views as to whether their proficiency is sufficient and relationships between proficiency and experiences of difficulties in EMI courses.

2. English proficiency and EMI

2.1 L2 learner proficiency standards and academic success

For overseas students studying in a foreign language environment, the importance of proficiency

in that language to academic success is well recognised. This is reflected in the fact that tests of academic English proficiency, such as TOEFL and IELTS, have long been used as gatekeepers for enrolment in universities in English-speaking countries. Despite evidence that stakeholders are uncertain as to what such test scores represent and have some concerns about their usefulness in gauging readiness for academic study (Ginther & Elder, 2014; O'Loughlin, 2011), the widespread use of such tests indicates acceptance of their general validity. Moreover, the validity of this use of standardized tests is supported by recent research looking at the relationship between standardized test scores and success in university studies. Such research is complicated by a number of factors: analyses must be conducted over a restricted range of data points since those who did not meet the entrance requirement are not included in the data; differences among students from different L1 backgrounds and variation in the demands of different subjects may influence findings; and a wide range of other factors (besides language proficiency) affect success in university. Nevertheless, studies that have taken account of the above intervening factors have shown that standardized test scores have a relationship with academic success (see Bridgeman, Cho, & DiPietro, 2016; Cho & Bridgeman, 2012; Ginther & Yan, 2018).

It may therefore be asked what level of proficiency is necessary. IELTS (2019) recommends that individual institutions determine their own score requirements, but does give guidance on this matter. This guidance suggests that an IELTS score of 7.5 is “acceptable” for linguistically demanding academic courses and 7.0 is acceptable for linguistically less demanding courses. With regard to the Common European Framework of Reference (CEFR) levels, IELTS does not provide exact thresholds since the CEFR levels and IELTS score bands are not believed to align perfectly, but a score comparison chart produced by IELTS (n.d.) suggests that such IELTS scores are equivalent to CEFR C1 level. Pearson (2020), however, reports that among 131 higher education institutions in the UK, by far the most commonly used threshold for undergraduate admissions was an overall IELTS score of 6.0. The IELTS score comparison chart suggests that this equates to the B2 level. Furthermore, according to Ginther & Yan (2018), a TOEFL score of 80 is a widely used entry requirement for higher education institutions in the US, and Papageorgiou et al. (2015) report that a TOEFL score of 72 is considered the threshold for B2 and a score of 95 the threshold for C1. Thus, the widely used requirement of 80 is also equivalent to B2 level.

These proficiency requirements are in accordance with wider practice. Deygers et al. (2018) report that in 22 European countries that set language requirements for L2 university applicants with reference to CEFR levels, the most common level required was B2, and only two had a lower required level than this. However, informants (language testing experts from 28 European countries) interviewed by the authors differed in their views as to whether B2 is a sufficiently high level of proficiency to operate linguistically at the start of university. In addition, the majority of the informants from countries that have a requirement (19 out of 23) reported that the level requirement was not based on empirical evidence, with some also reporting that it was in part selected to regular

student numbers for financial reasons or labour market reasons.

Nonetheless, B2 as an appropriate level does have empirical support from Hamnes Carlsen (2018). This study looked at language test scores of 449 overseas students at Norwegian universities and self-reported ratings of academic success. On the basis of these ratings, two groups were formed—low performers and high performers—and the mean language proficiency scores of the two groups calculated. The low performers were found to have mean language proficiency scores just below the B2 level, while the high performers had mean language proficiency scores just above the B2 level. Thus, based on students' self-reporting, they needed at least B2 to have a minimum level of language proficiency to succeed in higher education in Norway.

In sum, CEFR B2 level is widely used as the minimum level of proficiency necessary for overseas students who wish to study at a university in an L2 environment. The basis for this is not perfectly clear and sceptical voices can be found, but there is some empirical support for it and the fact that so many institutions and countries have adopted this threshold also gives it weight.

2.2 EMI learner proficiency standards and academic success

With regards to EMI, a number of studies have looked at the proficiency of students and success in EMI courses/programmes, though few have made use of data from standardized tests of academic English. One that did is Schoepp (2018) which reports on a study at an EMI university in the UAE. It was found that among students ($n = 417$) who had an IELTS score of 5.0 and so gained direct entry into undergraduate programmes, the correlation between IELTS overall score and overall GPA in the three-semester general education courses all students were required to take was .256 (correlation uncorrected for range restriction). Moreover, Schoepp reported the mean GPA (overall and on different groups of courses) achieved by students who had achieved different IELTS scores and this showed clear steps up in GPA at each IELTS score point. Importantly, it also showed that the mean GPA for science courses by those with an IELTS score of 5.0 was below the university's threshold for passing. In addition, it was found that the differences between overall GPA at each IELTS score point were significant between 5.0 and 5.5, and between 5.5 and 6.0, but not beyond this (e.g., 6.0 vs 6.5). This suggests that, in this context, 6.0 might be the threshold beyond which other factors become more important in determining GPA than language proficiency.

Aizawa et al. (2020) in contrast were not able to identify a proficiency threshold for EMI. This study had 264 students in an EMI programme in a Japanese university complete a questionnaire from Evans and Morrison (2011) on challenges in EMI, with the students categorized into CEFR levels on the basis of TOEIC test scores. Median scores for each CEFR level group suggested that the challenges of listening and writing in EMI were seen as manageable by learners (in that scores surpassed the mid-point on the difficulty–ease scale) at the B2 and C1 levels, but reading and speaking seemed to be challenging even for learners at C1 level. In addition, the study compared the EMI challenges questionnaire results with the students' TOEIC scores and scores on a prior English

for Specific Purposes (ESP) course. A multiple regression found that TOEIC scores were a significant predictor of EMI challenges but ESP course scores were not; that is, students with higher TOEIC scores reported a lesser degree of challenge in EMI. The study therefore concluded that while it is difficult to identify a threshold for EMI, it is clear that as proficiency increases students experience fewer difficulties.

Building on the above study, Rose et al. (2020) investigated several factors predicting the success of students in an EMI programme at a Japanese university. They assembled data from 146 students concerning motivation (based on questionnaire responses), language proficiency (TOEIC scores), academic language ability (scores on a prior ESP course), and content learning (exam scores in an EMI course). It was found that language proficiency and academic language ability were both significant predictors of content learning, while motivation was not. However, Rose et al. also noted that despite the clear relationship between language proficiency and content learning, students at all proficiency levels were able to pass the course. They thus recommended that students should not be excluded from EMI programmes/courses by rigid proficiency requirements, but instead less proficient students should receive support to help them deal with the demands of EMI.

In a similar study, Xie and Curle (2022) looked at 100 students in an EMI programme at a university in China. The study considered how perceptions of success in EMI (self-rated questionnaire responses), motivation (questionnaire responses), and mean scores on four ESP courses were related to scores on an EMI course. It was found that, when considered separately, perceptions of success and mean ESP score were each significant predictors of EMI success. However, when the three predictor variables were jointly considered, only mean ESP score was a significant predictor of EMI success.

Curle et al. (2020), however, found suggestions that proficiency may be of less importance. This study involved 159 students at a university in Turkey. All were in the final year of a partial EMI programme in which they had taken a considerable number of EMI courses (around a third) as well as courses in the L1, Turkish. The study explored how general English proficiency (score on an adapted version of the Cambridge Preliminary English Test) and success in Turkish-medium instruction (TMI) courses predicted achievement in EMI courses. It was found that general English proficiency was not a significant predictor of EMI achievement, but TMI course success was. It was therefore suggested that general English proficiency is of less consequence (though academic English might nonetheless be important) and that courses taken in the L1 first might help students subsequently take EMI courses by providing a base of knowledge that can be transferred. This last point echoes suggestions by some faculty members teaching EMI in Brown et al. (2019). It is not clear from Curle et al.'s study, though, whether the preparatory effects of TMI courses were the key factor in students' success in EMI or whether general academic ability and/or good study skills meant that students who did well in TMI courses also tended to do well in EMI courses.

The above studies show that language proficiency is a key factor in success in EMI. Several of

the authors of these studies are keen to observe that proficiency is not the only factor, and indeed the studies do highlight other factors that seem to play a role. Nevertheless, proficiency in English consistently appears as central to EMI success even though a particular threshold for proficiency is not clear.

2.3 Challenges in EMI and their relation to proficiency

As discussed above, proficiency is clearly related to how well students do in EMI courses/programmes, but what is the nature of the challenges students at different proficiency levels face? A broad answer is provided by Aizawa and Rose (2020) who administered a questionnaire (from Evans & Morrison, 2011) concerning linguistic challenges faced in EMI to 103 students enrolled in an EMI programme at a university in Japan. It was found that the correlation of proficiency with ease in facing the challenges of writing was .517, with reading it was .596, with speaking .595 and with listening .540. A clear relationship was therefore found between proficiency and the challenges students face in each of the four skills. Aizawa and Rose (2019) complements these findings by providing a more detailed picture based on interviews with seven students in an EMI programme at a Japanese university. This study also found a relationship between proficiency and the challenges students experience. Specifically, more proficient students described challenges centred on academic literacy, such as the amount of writing required and essay organisation. Intermediate students spoke of comprehending lectures and reading materials, technical terms and asking questions as challenges. Less proficient students described challenges that were general rather than academic, such as understanding instructors, taking part in discussions and taking notes. This study therefore provides some initial suggestions regarding the specific challenges that students at different proficiency levels face in EMI.

3. Research questions

This paper reports on further analyses of questionnaire data that was collected as part of Brown et al.'s (2021) study on students' perspectives on the challenges of EMI courses. In view of the discussion above, three questions were investigated:

- (1) What level of English proficiency (measured subjectively and objectively) do students enrolled in EMI courses possess?
- (2) To what extent do students enrolled in EMI courses feel that their English proficiency is sufficient for the course?
- (3) Is there a relationship between subjective and objective measures of English proficiency and reports of difficulties experienced in EMI courses?

4. Method

The questionnaire instrument (see Appendix in Brown et al., 2021), which was given in

Japanese, contained both multiple-choice and open-ended questions. These questions concerned students' motivation for taking the EMI course, their English ability and the demands of the EMI course, challenges faced while taking the EMI course and perceptions of how well the first-year EAP courses prepared them for their EMI experiences. The questionnaire was administered, with cooperation from heads of department and faculty members in charge of departmental EMI courses, via the university's learning management system (see Brown et al., 2021, for further details).

A total of 192 students out of 1,132 enrolled in the participating courses completed the questionnaire, a 17% response rate. There were 148 participants in courses offered by the College of Science and Engineering, 44 in courses provided by the College of Human and Social Sciences and none in courses provided by the College of Medical, Pharmaceutical and Health Sciences (which offers a smaller number of EMI courses). Participants were enrolled in 43 different EMI courses, with quite a number of participants from some courses (Max. = 30) while from others there was only a single response.

Most of the participants (67%) stated that their enrolment in the EMI course was due to it being compulsory for them. In addition, 26% enrolled as the course featured content that interested them, 5% to improve their English and 1% to improve their academic skills. Whether the course was compulsory or whether it was taken for other reasons was thought to potentially affect the motivation and views of students regarding the EMI course, and hence in some cases, separate analyses for "compulsory" and "non-compulsory" course-takers were conducted in addition to overall analyses of the student sample.

Analyses for the three research questions were conducted as follows. Research question 1 centred on students' ratings, on a five-point scale from 1 = low to 5 = high, of their ability in each of the four skills (subjective measures of proficiency) and students' reports of any scores obtained on a variety of standardized tests (objective measures of proficiency). The analyses required simple tabulation of responses, the calculation of descriptive statistics and the use of Friedman's test, with post hoc Wilcoxon signed-rank tests, and Mann-Whitney U tests to compare ratings.

For research question 2, both quantitative and qualitative analyses were used. Students' ratings of how sufficient their English ability was for the EMI course were analysed quantitatively and their explanations of these ratings were subject to a content analysis following guidelines in Gillham (2007) and Dörnyei and Taguchi (2010).

Research question 3 involved the calculation of correlation coefficients between proficiency measures and students' reports of how well they could deal with various challenges in the EMI class and specific tasks required in the class. As regards the proficiency measures, a composite self-assessed proficiency rating was created by summing each individual's ratings of their ability in the four skills (a subjective measure). In addition, students' reports of the band into which their TOEIC score fell (e.g., in the 400s, in the 500s) were used as an objective proficiency measure. Reports of difficulties were used directly as variables, and in addition summative measures of

difficulties were created by counting the number of different challenges/tasks students reported difficulty with. Correlation coefficients used were Pearson’s, for continuous variables, and Kendall’s tau, for ordinal variables, following guidance in Field (2009). To evaluate the size of the correlations, Plonsky and Oswald’s (2014) benchmarks were used: correlations close to .25 are considered small, .40 medium, and .60 large.

5. Results

5.1 Proficiency of students in EMI courses

Our first research question concerned the English proficiency level of students enrolled in EMI courses. The questionnaire elicited details on both subjective measures of proficiency, in the form of self-assessed ratings of ability in each of the four skills, as well as objective measures in the form of scores on standardized tests.

Beginning with the former, respondents were asked to rate their ability, on a five-point scale from 1 = low to 5 = high, in each of the four skills. The results are depicted in Figure 1 and

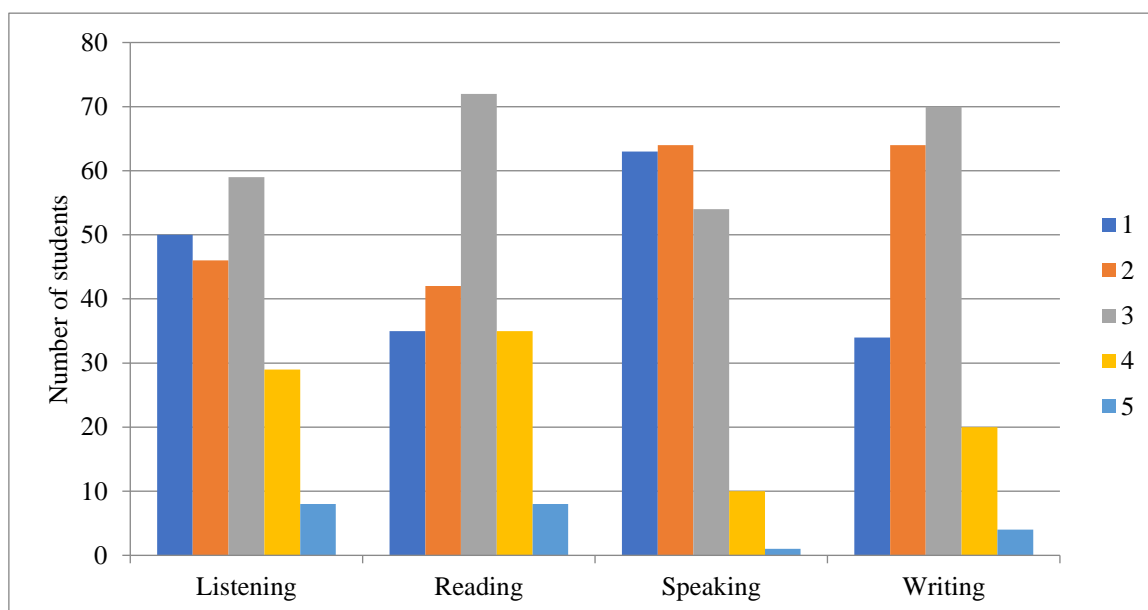


Figure 1: Frequency of students’ self-assessed ratings of ability in each skill (1 = low, 5 = high)

Table 1. Summary statistics for students’ self-assessed ratings of ability in each skill on a five-point scale (1 = low to 5 = high)

	Mode	Median	Mean
Listening	3	3	2.5
Reading	3	3	2.7
Speaking	2	2	2.1
Writing	3	2	2.5

summarised in Table 1. A Friedman’s test found a significant difference in the ability ratings for the different skills: $\chi^2(3) = 79.3, p < .001$. Pairwise comparisons of the skills using Wilcoxon signed-rank tests with a Bonferroni correction applied found significant differences in each case except for the listening vs. writing comparison. Thus, the students’ ratings of their speaking ability were significantly lower than those of the other three skills, and their reading ability ratings were significantly higher than those of the other three skills. It seems then that these students had less confidence in their speaking and more confidence in their reading.

Separate examinations of the ratings of the “compulsory” and “non-compulsory” participants (Figure 2; Table 2) found identical patterns of responses for the two groups. In each case, there was an overall significant difference in their ratings (compulsory $\chi^2(3) = 52.0, p < .001$; non-compulsory $\chi^2(3) = 27.7, p < .001$) and pairwise comparisons of the skills showed significant differences in each case apart from listening vs. writing and listening vs. reading. That is, the students rated their

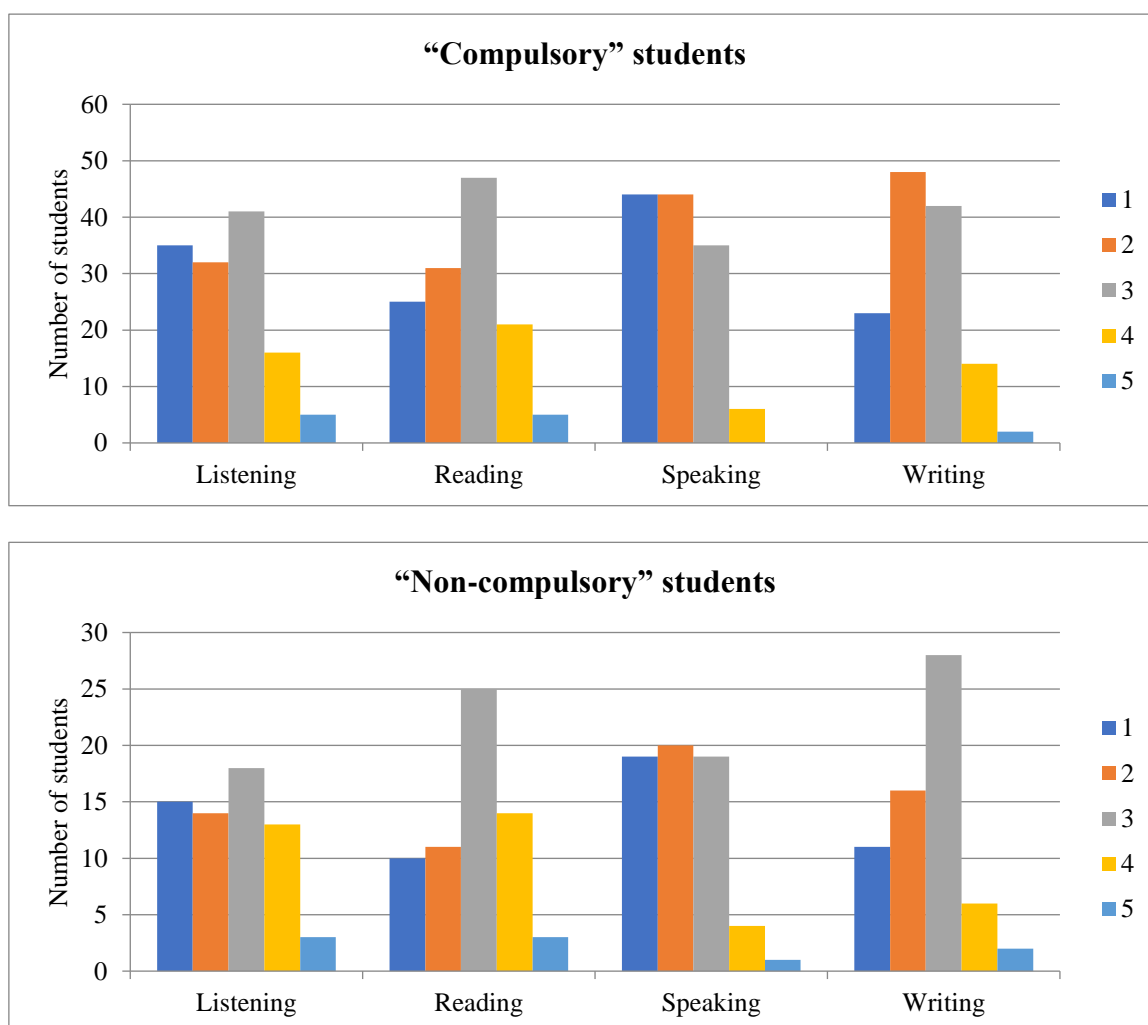


Figure 2: Frequency of students’ self-assessed ratings of ability in each skill (1 = low, 5 = high) for “compulsory” students (upper panel) and “non-compulsory” students (lower panel)

Table 2. Summary statistics for “compulsory” and “non-compulsory” students’ self-assessed ratings of ability in each skill on a five-point scale (1 = low to 5 = high)

Skill	“Compulsory” students			“Non-compulsory” students		
	Mode	Median	Mean	Mode	Median	Mean
Listening	3	2	2.4	3	3	2.6
Reading	3	3	2.6	3	3	2.8
Speaking	1, 2	2	2.0	2	2	2.2
Writing	2	2	2.4	3	3	2.6

speaking ability as significantly weaker than the other three skills, and their reading ability as significantly better than their speaking and writing skills. Moreover, direct comparisons of the two groups on each skill using Mann-Whitney U tests did not reveal any significant differences between them: listening $U = 3688$, $p = .283$; reading $U = 3600.5$, $p = .183$; speaking $U = 3751.5$, $p = .364$; writing $U = 3696.5$, $p = .287$. The two groups of participants were thus very similar in their self-assessments of their abilities.

In terms of objective measures of respondents’ English ability, the questionnaire asked students to report scores on standardized tests. Only very small numbers reported scores for the IELTS and TOEFL tests, so this data could not be analysed. For EIKEN, 101 (53%) of the students responded: 56 reported that they had passed pre-second level, 37 reported passing second level and 8 reported passing pre-first level. Comparison of the EIKEN data between the compulsory and non-compulsory participants was not considered viable since rather different proportions of each group responded to this question.

For TOEIC scores, a more complete set of responses was given, and a more similar proportion of each group responded. Table 3 presents the data for the two sets of participants and for the complete student sample. As shown, over half of the students had scores in the 500s or 600s, with relatively few scores above or below these levels. The compulsory and non-compulsory participants

Table 3. Self-reported TOEIC scores

TOEIC score	Compulsory		Non-compulsory		Full sample	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Under 400	3	3	0	0	3	2
In the 400s	14	14	8	16	22	15
In the 500s	28	28	9	18	37	25
In the 600s	36	36	20	39	56	37
In the 700s	13	13	7	14	20	13
In the 800s	4	4	6	12	10	7
In the 900s	1	1	1	2	2	1

were again broadly similar: while it might appear that there were more non-compulsory students of higher proficiency, there was no significant difference between the groups (Mann-Whitney U test: $U = 2155, p = .128$).

5.2 Sufficiency of English proficiency for EMI courses

Our second research question asked whether students enrolled in an EMI course believed their English proficiency to be sufficient for the course. Participants were asked to rate the sufficiency of their ability for the EMI course from 1 (insufficient) to 5 (sufficient). Figure 3 displays the proportion of students that selected each rating in the sample as a whole and for the “compulsory” and “non-compulsory” students separately. As shown, the most frequent response was the middle rating of 3, but a substantial proportion of the students felt their ability was somewhat insufficient, with 44% of the participants choosing 1 or 2 on the scale. Comparing compulsory and non-compulsory students, there was a statistical difference between the two ($U = 3205, p < .05$), indicating that the non-compulsory students rated their English ability as somewhat more sufficient.

Further to the above, students were asked to explain the ratings of the sufficiency of their English ability. Despite the differences between the compulsory and non-compulsory students in their sufficiency ratings, the explanations provided by students from each group at each sufficiency rating were similar and thus the following description deals only with the sample as a whole.

Among students who chose 4 or 5 (i.e., those who judged their English ability to generally be sufficient for the course), there were 35 explanatory comments, analysed as falling under 9 categories. By far the most prominent comment (43% of these students) was that they did not

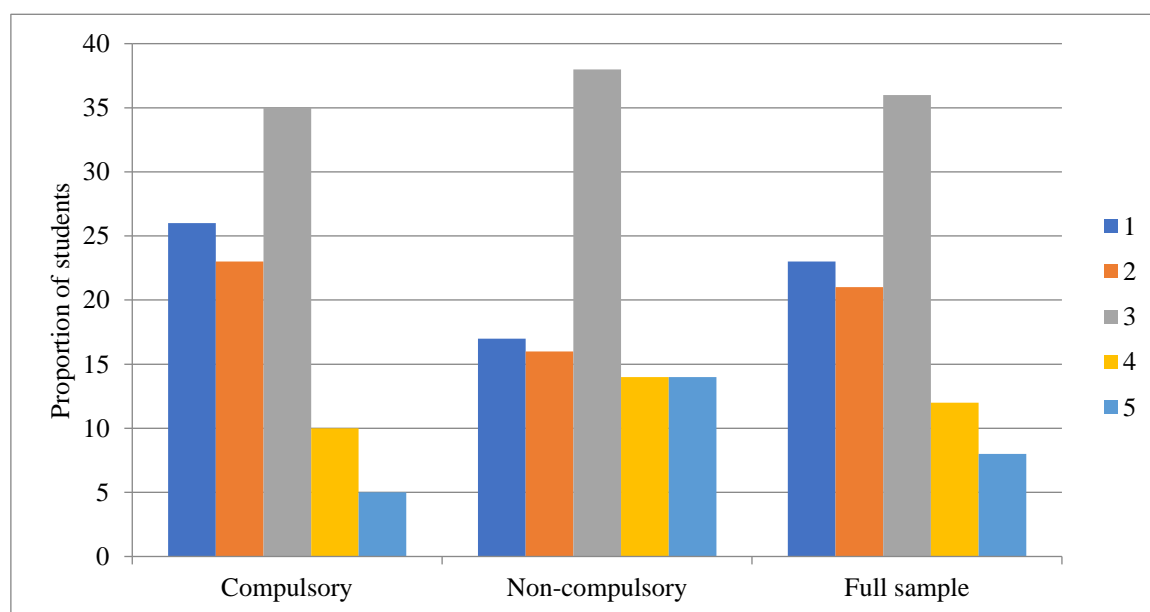


Figure 3: Students' self-assessed ratings of sufficiency of English ability for the EMI course (1 = insufficient to 5 = sufficient)

experience difficulties in the course, while a further 26% reported feeling that they mostly understood it.

Among students who chose 1 or 2 (i.e., those who felt their English ability was generally insufficient for the course), there were 69 explanatory comments, which were classified under 11 categories. While several of these categories had small numbers of responses, four were prominent: 13% of these students were concerned with difficulties with understanding readings or other written materials; 15% mentioned insufficient vocabulary knowledge; 16% described difficulties with listening; and 18% reported difficulties with understanding the class. A substantial proportion of these comments were then about receptive issues.

Among students who chose 3, there were 57 explanatory comments, grouped into 11 categories. As might be expected given 3 was the middle rating, both positive and negative explanations were evident, the most prominent comments on the rating being difficulties understanding specialised terms (13%), a feeling that they mostly understood the class (16%), and a feeling that some parts of the course were understood and some were not (25%).

5.3 English proficiency and difficulties experienced in EMI courses

The final research question was about the relationship between subjective and objective measures of English proficiency and reports of difficulties experienced in EMI courses. First, correlations were calculated between a composite measure of self-assessed English proficiency and TOEIC score band on the one hand and students' reports of how much difficulty they had with various aspects of their EMI course (see Brown et al., 2021, Figure 1). Table 4 presents the results. As shown, there were significant negative correlations between each proficiency measure and difficulty with each aspect of the class ranging in size from small to large. That is, as proficiency increased, the degree of difficulty reported fell. Table 5 gives the correlation between each proficiency measure and a summative measure of students' difficulties: the number of aspects of the EMI course students reported difficulty with. It can be seen that more proficient students reported having difficulty with fewer aspects of their EMI course.

Second, correlations were calculated between the two measures of English proficiency on the one hand and students' reports of problems experienced with different tasks required in their EMI course (see Brown et al., 2021, Figure 2), as well as with a summative measure: the proportion of required tasks in the EMI course students experienced some or significant problems with. Tables 6 and 7 present the results. As can be seen, a more varied picture emerges. For some tasks, there was a large negative correlation (e.g., total self-assessed skill rating – writing essays/reports in English = $-.578$), while for others there was only a small correlation (e.g., TOEIC score band – taking notes in English = $-.152$). For the majority of tasks, there was nonetheless a clear relationship with proficiency, and, as Table 7 shows, the correlations between proficiency and the summative measure of problems experienced were small to medium.

Table 4. Correlations between subjective and objective proficiency measures and aspects of the EMI course

	Total self-assessed skill rating ^a		TOEIC score band ^b	
	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>
	Degree of difficulty with . . .			
orally responding in English to questions that the teacher asks	-.559**	157	-.351**	122
understanding vocabulary used in the class	-.565**	183	-.452**	143
remembering specialised terminology related to the content of the course	-.367**	179	-.236**	139
interacting with other students in English	-.511**	156	-.322**	121
understanding what other students are saying in English	-.541**	164	-.357**	128
understanding the teacher's expectations for class participation	-.503**	159	-.334**	124
getting used to the style of the class	-.465**	177	-.360**	137
understanding the teacher's expectations for assignments	-.557**	163	-.383**	126

^aPearson's.^bKendall's tau.

**Significant at .01 level.

Table 5. Correlations between subjective and objective proficiency measures and the number of aspects of the EMI course students reported difficulty with

	Total self-assessed skill rating ^a		TOEIC score band ^b	
	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>
	Number of aspects of the course students reported difficulty with	-.522**	192	-.338**

^aPearson's.^bKendall's tau.

**Significant at .01 level.

Table 6. Correlations between subjective and objective proficiency measures and problems experienced with tasks required in the EMI course

	Total self-assessed skill rating ^a		TOEIC score band ^b	
	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>
Extent of problems with . . .				
listening to lectures given in English	-.532**	101	-.341**	75
taking notes in English	-.346**	59	-.152	45
reading papers/book chapters/ other written materials in English	-.510**	45	-.420**	38
watching videos that present content in English	-.503**	40	-.298	33
engaging in discussions in English	-.314	31	-.208	25
synthesizing information from multiple sources written in English	-.525 ^c	21	^d	17
writing essays/reports in English	-.578**	23	^d	15
giving presentations in English	^d	17	^d	15
finding sources in English	^d	10	^d	9
writing summaries in English of reading materials	^d	9	^d	7

^aPearson's.

^bKendall's tau.

^cSignificance not calculated as a Kolmogorov-Smirnov test indicated this variable was not normally distributed.

^dCorrelations not reported since fewer than 20 participants reported the extent to which problems were experienced with this task.

**Significant at .01 level.

6. Discussion

This paper set out to consider three questions with respect to the challenges of EMI and how they relate to students' English proficiency. The first question concerned the English proficiency level of students enrolled in EMI courses at the institution in question. In terms of subjective measures of proficiency, it was found that on average students rated their ability somewhat negatively (between 2 and 3 on a scale from 1 to 5) in each of the four skills (Figure 1; Table 1). There were though some statistical differences between the skills, with speaking ability rated particularly weakly and reading ability rated more strongly. With regard to objective measures, over three fifths of the students reported TOEIC scores in the 500s or 600s (Table 3). Extrapolating from

Table 7. Correlations between subjective and objective proficiency measures and the proportion of required tasks students experienced some or significant problems with in the EMI course

	Total self-assessed skill rating ^a		TOEIC score band ^b	
	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>
Proportion of required tasks students experienced some or significant problems with	-.426**	192	-.286**	150

^aPearson's.

^bKendall's tau.

**Significant at .01 level.

Tannenbaum and Wylie (2013), the TOEIC scores suggest that around 30% of the students were at A2 level on the CEFR, about 60% at B1 level and perhaps 10% at B2. Only a small proportion of the students are therefore at the level (B2) that is generally considered the minimum necessary for study in a language.

The second research question asked to what extent students enrolled in EMI courses consider their English proficiency sufficient for the course. The most frequent response on a five-point scale from 1 (insufficient) to 5 (sufficient), accounting for 36% of students, was the middle rating of 3 (Figure 3). However, almost half of the students (44%) reported that their English proficiency was insufficient. A content analysis of these students' explanations for their responses found that these feelings of insufficiency had a variety of causes, but a large number were concerned with receptive issues (understanding the class, difficulties with listening, understanding reading materials), with vocabulary knowledge a further concern. Our previous studies (Brown et al., 2019; 2021) suggested that in the eyes of EMI faculty and students taking EMI as a whole, receptive understanding is relatively unproblematic (though nonetheless important since it is so vital to EMI), with productive uses of English viewed as a particular challenge. This finding, focused on students who see themselves as struggling to an extent, is therefore revealing: it may be that for these students, productive uses of language in EMI are not front and centre because they perceive that first the fundamental challenge of following the class by understanding lectures and readings must be overcome.

A comparison between the "compulsory" and "non-compulsory" students in their ratings of the sufficiency of their English proficiency for their EMI course showed a significant difference between the two. In fact, whereas almost half of compulsory students felt their ability was somewhat insufficient, only a third of non-compulsory students felt this way, while fewer than one in six compulsory students rated their ability as somewhat sufficient, with proportionally twice as many non-compulsory students giving such ratings. This is interesting given that there were no statistical

differences between these groups of students in terms of either subjective or objective proficiency. It is possible that the non-compulsory students had a more positive approach to their EMI course and higher levels of motivation, and this finding may be an indicator that such factors can influence students' perceptions of the challenge of EMI, though as noted previously Rose et al. (2020) and Xie and Curle (2022) did not find a relationship between motivation and success in EMI courses/programmes.

The third question concerned possible relationships between students' English proficiency and the difficulties they experience in their EMI courses. Two sides of this were examined: aspects of the EMI course, such as orally responding in English to questions from the teacher and understanding vocabulary, and tasks required in the course, such as listening to lectures and taking notes in English. First, it was found that for eight different aspects of EMI classes, there were small to large correlations with both subjective and objective proficiency (Table 4). Similarly, there were also correlations between the number of aspects of the EMI course students reported difficulty with and subjective and objective proficiency (Table 5). Second, on the extent of problems experienced with specific tasks demanded by their EMI courses, there were significant small to medium correlations between subjective proficiency and five tasks demanded in EMI courses and significant small to medium correlations between objective proficiency and two tasks (Table 6). Further, there were small to medium correlations between the proportion of tasks students experienced problems with and both subjective and objective proficiency (Table 7).

There was therefore a clear relationship between proficiency and difficulties experienced in EMI: more proficient students generally reported having fewer difficulties and difficulties were experienced to a lesser extent in comparison with less proficient students, findings very similar to the studies of Aizawa and Rose (2019; 2020). With regard to the particular aspects of the class and tasks required in the class and their relationship with proficiency, there were few differences among them. However, one interesting observation was that the aspect of the EMI course for which the smallest (albeit significant) correlation was seen with both proficiency measures was remembering specialised terminology. This makes intuitive sense in that even for more proficient learners, such words are unfamiliar and require learning, and accords with Evans and Morrison (2011) who found that specialised terminology was a key concern for EMI students regardless of proficiency.

Clearly, the above findings should be approached with a degree of circumspection. This study has a number of limitations: 17% of students in the EMI courses responded – a not untypical response rate for questionnaire-based research but one that should nonetheless prompt caution; the participants were, to a degree, self-selecting and so may not be fully representative of students taking EMI courses at the institution; and the objective proficiency measure available, TOEIC scores, might be questioned in that the TOEIC test concentrates on a limited domain of language and only tests receptive skills.

Yet if the findings are taken as they stand, one obvious question is whether a proficiency

requirement should be introduced for students wishing to take EMI courses at the institution where this study was conducted. At present, with no proficiency requirement in place (and indeed with students in some cases being required to take certain EMI courses), it appears that a good number of students in EMI courses face constant struggle which raises questions about the degree to which content learning is taking place, while EMI faculty may be continuously forced to narrow the scope of the course, reduce the demands on students or use Japanese to some extent rather than English in their teaching (as some faculty members reported in Brown et al., 2019). This may suggest the introduction of a proficiency requirement could be beneficial. On the other hand, Aizawa and Rose (2019) found through interviews with students and faculty some scepticism regarding whether a proficiency requirement would be appropriate for EMI courses, with it being suggested that a lack of proficiency can be compensated for. Furthermore, Rose et al. (2020) reported that, while more proficient students do show better achievement in EMI classes, students at lower proficiency levels (similar to the majority of the students in this study) also manage to get through EMI courses (though it is not clear if this is due to actions taken by the students to make up for their lack of proficiency or due to accommodations by EMI faculty). Moreover, the university's commitment to expanding EMI provision and its involvement in the government funded Top Global University Program means that placing limits on who can take EMI courses could cause difficulties both within the university and externally.

A more feasible reform may be to improve students' preparedness for EMI and to make more support available to students taking EMI courses. On the former, the university's EAP programme, taken by all first-year students, continues to evolve to try to advance students' academic English skills and knowledge as much as possible. With regard to the latter the university offers a variety of learning support services and has recently founded a writing centre at which students can seek support with all aspects of academic writing in English. Encouraging greater student take-up of this support may therefore yield benefits.

7. Conclusion

This paper has explored how the English proficiency level of students affects their experiences in EMI courses at a Japanese university. It was seen that the majority of students were at a proficiency level below that which the literature suggests is necessary to successfully take classes in a second language. It was also seen that many students in EMI courses have concerns about their proficiency level, and among those students primary issues seem to be fundamental problems with comprehension of course input (i.e. readings and lectures). Finally, it was found that students' proficiency level had a clear connection with their experiences of difficulty with various aspects of the course and with various tasks they were required to undertake. The introduction of a proficiency standard may therefore seem advisable, but is not a simple matter. What may be more feasible is to

concentrate on improving the readiness of students for EMI and encouraging students in EMI courses to make use of the support services that are available.

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