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An evaluation of English Medium Instruction on content learning and language knowledge and recommendations for practice

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Abstract

Driven by the perception that English Medium Instruction can lead to gains in both content learning and English language knowledge, the number of EMI courses in institutions worldwide has proliferated in recent years. However, an examination of research on EMI shows that outcomes in both these areas are unclear, due to methodological errors or studies that neglect individual learner differences. Recommendations at both practitioner and institutional level, such as specialised pre-sessional courses for EMI students and EMI teacher training, are given to ensure that students can achieve in both subject knowledge and English language ability.

Keywords English Medium Instruction, content learning, subject knowledge, language learning

1. Introduction

English Medium Instruction (EMI) is "the use of the English language to teach academic subjects in countries where the first language of the majority is not English" (Macaro, et al., 2018, p.37). Although EMI's primary goal is content learning (CL), many institutions expect language learning (LL) gains with this approach (Akıncıoğlu, 2023; Lasagabaster, 2022). Consequently, EMI has been touted as 'killing two birds with one stone,' by improving students' CL and LL (Curdt-Christiansen et al., 2023). However, empirical studies supporting this claim are methodologically flawed, or neglect learner differences that can affect EMI success (Macaro et al., 2018; Murphy et al., 2023). This essay will evaluate research on EMI's effect on CL and LL, then propose pedagogical conditions that consider learner variables for success in both CL and LL.

2. How valid are 'two birds one stone' claims?

Systematic reviews (Macaro et al., 2018; Lo & Lo, 2014; Goris et al., 2019; Fitzpatrick et al., 2018; Murphy et al., 2020; Graham et al., 2018) have investigated how L2 medium of instruction (MOI) affects CL and LL, with inconclusive findings due to methodological issues.

3. Language Learning

Macaro et al. (2018) investigated eighty-three higher education studies that measured the impact of EMI on English LL. Their findings were inconclusive because only seven studies objectively measured LL through standardised or researcher designed tests. Even within these studies, it was difficult to ascertain the overall effect of EMI, as some tests only measured certain language competencies, or the study had other methodological problems.

For example, Rogier's (2012) comparison of the university entrance and exit IELTS scores of fifty-nine Emirati university students studying a variety of majors found that there was only a 0.5 band score increase after four years of EMI. These modest gains in LL are further limited because the IELTS grading rubric changed after June 2007 to half band scoring being introduced for speaking and writing. Therefore, the participants who took the test before this date may have had a higher score in these areas than reported, so their language gain could not be accurately measured.

These inconclusive findings are supported by Fitzpatrick et al. (2018) and Goris et al.'s (2019) systematic reviews. Fitzpatrick et al. (2018) examined six European studies about the effect of CLIL (Content and Language Integrated Learning) on vocabulary development. They found that, overall, CLIL led to higher gains in vocabulary, but they also note that this could be due to outside factors such as motivation, hours of exposure to the L2 or the quality of input. Goris et al. (2019) investigated the longitudinal effects of CLIL on LL at primary and secondary level in Europe. They found that CLIL provided no clear advantage over non-CLIL contexts. The researchers also highlight variables that may have affected the efficacy of CLIL, such as prior preparation for CLIL courses, or self-selection. Although Goris et al. and Fitzpatrick et al. explore CLIL, which focuses explicitly on

both LL and CL, the variation in EMI policies means that in some institutions, EMI approaches are like CLIL (Macaro et al., 2018).

Studies conducted outside these systematic reviews have also shown only tentative links between L2 MOI and LL (Lei and Hu, 2014; Yuksel et al., 2021).

4. Content Learning

Systematic reviews by Lo and Lo (2014) and Graham et al. (2018) respectively looked at the effect of EMI in Hong Kong and EMI and CLIL's effect on CL. Lo and Lo (2014) found that EMI students may have "sacrificed academic achievement for L2 proficiency," (p.63) but also suggested that learner variables may have moderated CL differences between EMI and L1 MOI. Graham et al. (2018) also found that L2 MOI achieves equally as well or better than L1 MOI in CL, but that methodological issues in many of the studies limit the findings.

A Rapid Evidence Assessment (REA) by Murphy et al. (2020) added to Graham et al. (2018) and Lo and Lo (2014) and found that evidence that L2 MOI was not detrimental to CL was weak, and that it depended on students' L2 proficiency and motivation. A limitation of the REA is that it was performed under a time constraint, and therefore only studies from the time of publication of the seed reviews to 2019 were explored, so the authors could have searched from an earlier date to ensure no relevant studies were missed by the original authors. However, Macaro et al. (2018) also investigated content comprehension and learning in EMI higher education contexts and concluded that results were mixed because there were only three objectively measured studies of the relationship between EMI and content learning, which were methodologically flawed.

Outside these systematic reviews, studies have found mixed results on the efficacy of EMI on CL (Lin and Lei, 2021; Dafouz and Camacho-Minano, 2016; Aizawa et al., 2023).

In a four-year longitudinal study, Dafouz and Camacho-Minano (2016) compared 175 EMI and 208 non-EMI L1 Spanish university students' accounting subject knowledge. They found no difference between the groups' final grades, suggesting that EMI did not hinder CL. A great strength of this study was the consistency between the EMI and non-EMI conditions, as the same bilingual teacher was used for both groups, as well as the same syllabus. However, the findings of this study are limited because variables like prior subject knowledge or the exact language ability of the participants were not measured. In addition, the course teacher speculated that motivation affected achievement, as they stated that the lower achieving students had a higher language ability than the higher achieving students, which suggests that outside variables influenced the results.

Similarly, Lin and Lei (2021), who compared 303 EMI and non-EMI students' accounting CL at a Chinese university, found no significant difference between the groups' content tests. However, the researchers did not account for teacher differences between groups.

Hence, this selection of literature shows the efficacy of EMI on LL and CL is mixed, due to the need to consider learner differences and outside variables that can affect achievement in these areas.

5. Recommendations under which EMI can 'kill two birds with one stone' Increasing Student English Proficiency

Studies have investigated the relationship between English proficiency and CL (Rose et al., 2020; Xie & Curle, 2022; Curle et al., 2020).

Xie and Curle (2022) studied how language proficiency affects CL of 106 Chinese L1 university sophomores in an EMI Business Management course. The participants all took the same Management content course, as well as a Business English Proficiency (BEP) ESP course, taught by the same teachers. The researchers collected end of term content and BEP scores and used simple linear regression to find the relationship between the scores. The results showed that there was a positive correlation between content and English proficiency scores, with a 0.71 increase in content score for every point increase in language proficiency. The R^2 showed that 30.36% of the variance in content scores were due to BEP. The researchers therefore found a statistically significant relationship between English proficiency and EMI CL. These findings can only be generalised to the smaller, convenience sample of only Business students in one university in China, but these findings are echoed by Rose et al. (2019) who found a significant medium correlation between ESP and EMI International Business scores at a Japanese university.

Conversely, Curle et al. (2020) found no connection between English proficiency and EMI success. In their study of 159 partial EMI Economics students at a Turkish university, the researchers compared fourth year General English Proficiency (GEP) scores to an average of the EMI Economics final scores. They found that there was no statistically significant relationship between GEP and EMI success. However, this study measured GEP, versus Rose et al. (2019) and Xie and Curle (2022) who measured academic and Business English, so only specialised vocabulary from ESP courses may aid students' CL.

Considering these studies, several conditions to ensure L2 MOI success can be recommended. Firstly, EMI entrants should have a minimum level of proficiency, determined through an entrance test or foundation language course. On the course, lower proficiency students should especially be given language support to boost their specialised language knowledge, leading to LL and CL gains. However, as Aizawa et al. (2020) found, even higher proficiency students seek to develop English proficiency to overcome challenges in EMI. If the subject teacher does not feel confident in providing language adequate support (see Aguilar, 2017), then the subject department should liaise with the language centre to provide a supplementary programme. Students could learn skills specific to EMI courses like English writing, communication and

presentation with support from a language programme. A language programme may allow students to achieve LL gains by ensuring that there is a direct focus on attaining academic language and practicing the four skills.

6. Developing Student Self Efficacy

Students' belief in their ability to succeed in academic tasks (Bandura, 1977) has been shown to be a great indicator of EMI success (Thompson et al., 2022; Sahan et al., 2023; Soruç et al., 2022).

For example, Thompson et al. (2022) investigated the relationship between self-efficacy and EMI success in their study of 139 International Business students at a university in Japan. They measured self-efficacy using a questionnaire with a single item on a 100-point scale which assessed the participants' confidence in achieving at least 80% on the course. EMI success was operationalised as mid-term and final exam scores. After conducting a significant regression equation, the researchers found that self-efficacy was a significant predictor of EMI success (β=0.145). Seven students took part in follow-up interviews, where a reciprocal link between higher self-efficacy and preparation for classes was found. Students with higher self-efficacy also found the mandatory EMI preparatory course more useful in equipping them for EMI study, which could explain higher achievement. In contrast, researchers found a negative cycle with lower performing students, who focused on their lack of confidence and perceived tasks to be more difficult, leading to less class participation, lower self-efficacy, and lower achievement. The findings from the interviews are limited because the interviewers were volunteers, and therefore those with higher academic achievement and self-efficacy may have been more likely to opt-in. Another limitation of this study is that self-efficacy was only measured with one item, but these findings are supported by Sahan et al. (2023), who used a multi-item measure of self-efficacy and found that students with higher self-efficacy faced fewer challenges in EMI and may therefore achieve higher content and language scores.

Therefore, alongside improving language proficiency, preparatory and supplementary language courses should include self-efficacy building activities. As described in Thompson et al. (2022), language support programmes that are closely tailored to the needs of the specific EMI courses could build students' self-efficacy and confidence to participate fully in their programmes. For example, practicing asking questions in English could give students confidence to ask during EMI lectures, thus enhancing their CL and LL. As Thompson et al. (2022) suggested, raising self-efficacy could lead to a positive cycle of more class preparation and participation, and higher achievement in CL and LL.

7. Developing EMI Teacher Language Proficiency

A systematic review by Dang et al. (2023) identified non-native EMI lecturers' issues with language proficiency, which could affect students' CL and LL gains (Ball & Lindsay, 2013; Airey, 2011; Jiang et al., 2019).

In Airey's (2011) comparison between video recordings of English and Swedish lectures by eighteen Swedish lecturers on a training course about teaching content in English, participants expressed less detail, fluency, flexibility, and an unwillingness to correct students' English when lecturing in English. Due to their lack of expertise in English, they felt that their lecture lacked enough detail, which could affect CL versus an L1 MOI. Regarding fluency, lecturers used more fillers, false starts, and hesitations, which could lead to longer lecture times. A study by Thøgerson and Airey (2011) suggested lecturers took 22% longer to present the same content in their L2 than L1, which the researchers state poses no CL detriment to students. However, if lectures are conducted in a time slot, not all content in an EMI class may be covered, losing content gains. In terms of flexibility, lecturers were more likely to 'stick to the script' when lecturing in English, using fewer spontaneous examples or digressions. This may also lead to a loss in CL gains compared to L1 MOI, as students may receive less elaboration beyond what the lecturer pre-planned. Finally, lecturers did not want to correct students' English, which could lead to a loss in LL gains. This lack of confidence in correcting English is echoed in Jiang et al. (2019) and Airey (2012). A limitation of Airey's (2011) study is the fact that it was conducted with inexperienced EMI teachers, whereas experienced L2 lecturers may experience fewer challenges of this kind.

Dearden and Macaro (2016) have suggested that teacher training for EMI practitioners is scarce. However, providing teacher training and language classes could improve their confidence in teaching in English, as well as provide a space for EMI teachers to share experiences of teaching in an L2. For example, a study by Tuomainen (2018) described an EMI support course for teachers in Finland, which included working on accuracy, fluency, and pronunciation, conducting example lectures and receiving individual feedback. Participants found the course useful in considering their EMI needs, although no delayed survey was conducted to show how well it prepared new EMI teachers. Furthermore, considering institutions' goals for EMI, teacher training could emphasise the responsibilities of teachers as both content and language teachers, providing strategies for practitioners to aid students in both areas. As O'Dowd (2018) suggests, formal EMI teacher accreditation could help teachers to develop these skills and perhaps enact a standard of teaching. This would also circumvent attitudes like those in Airey (2012), whereby lecturers expressed that they are not language teachers, only content teachers. Finally, institutions should provide both funding and time for practitioners to access teacher training, as some have expressed little support for professional development from their institutions (O'Dowd, 2018). Enabling EMI teachers to be sufficiently trained to work in the context may therefore allow students to gain in both content and language.

8. Conclusion

The conditions presented in this paper showcase only a few of the conditions under which EMI can lead to gains in LL and CL. Other variables, such as L1 academic success (Curle et al., 2020), strong and weak forms of EMI (Merino and Lasagabaster, 2018) and vocabulary knowledge (Feng et al., 2023; Uchihara and Harada, 2018) may also affect these areas and should be considered when implementing an L2 MOI.

The empirical evidence on the efficacy of EMI in 'killing two birds with one stone' is inconclusive due to methodological issues and the effect of outside variables. To ensure gains in both LL and CL, students should be given closely course-tailored language support and prepared for EMI study to bolster their self-efficacy, so that they can achieve success. On a policy level, institutions should make clear the goals of EMI programmes to teachers and provide them the support to help them achieve this.

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.