

Immerse or rescue? —The effects of using the first language in EMI class

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Abstract. Our paper reports a mixed-methods study that explores how the using of first language (L1) in classroom affects content learning in English Medium Instruction (EMI) at a transnational higher education institution located in China. Questionnaires, assessment scores, and semi-structured interview data were collected from undergraduate students in business school. We still cannot conclude English-only instruction is detrimental to content learning compared to bilingual instruction, as the impacts on individual students are different and dynamic. English-only instruction can affect students' interests and motivations adversely under circumstances. Findings show that English proficiency is an important factor, which can affect students' content learning through a "confidence-effectiveness" spiral. There is not enough evidence that English-only instruction can improve English proficiency more than bilingual instruction. These results may be relevant for other EMI contexts and the transnational higher education community in general.

1 Introduction

English media instruction (EMI) refers to the use of the English language to teach academic subjects (other than English itself) in countries or jurisdictions where the first language (L1) of the majority of the population is not English" [1].

EMI has emerged along with the internationalization of higher education (HE). Three scenarios of EMI in higher education coincide with three forms of internationalization: internationalization at home, export, and import. English is an international language, particularly in the domain of research publications [1]. Universities in non-English speaking countries offer EMI courses for their local students, which aim to providing students with cutting-edge knowledge and a global perspective view, improving their English proficiency and cross-cultural communication skills, training bilingual teachers, and building world-class universities.

Exporting is a source of revenue for universities, EMI courses improve the attractiveness of academic qualifications while lowering the entry threshold. On the one hand, qualifications in EMI are more attractive in the job market; on the other hand, it is easier to achieve the threshold level of English proficiency than other languages. The demand for higher education in developing countries is increasing as their economy are growing and globalizing, there is a gap between the demand and capacity. Higher education is imported from developed countries in the form of transnational education (TNE) institutions and programs where EMI courses are offered.

The definition of EMI is straightforward, but actual practices vary greatly at geographical, institutional, and even classroom levels [1]. It will be English-only in cases where English is used as a lingua franca (ELF), such as by foreign teachers employed by a local university, teaching undertaken by overseas partner staff in TNE, and EMI courses taken by international students. It also could be bilingual instruction when English is the second language (L2) for both teachers and students, and they have the same L1. We use EMI as the cover term to refer to the pedagogical strategy of using English, to various extents, as the medium in teaching non-English academic subjects [2]. English-only EMI is often referred to as the "immersion model of EMI" or "full EMI", while bilingual EMI is also known as the "maintenance or infiltrative model of EMI" or "partial" EMI. In the second case, the proportion of L1 usage in EMI class has been long proposed as a question by practitioners but unresolved till today.

2 Theoretical basis and literature review

Communication using L1 is more efficient, therefore using L1 in EMI is beneficial to content learning. Using L2 only in EMI is not only detrimental to students' understanding but also to teachers' expression, such as explaining the content in less detail due to the reduction of vocabulary at their disposal [3], which can trigger cognitively lower-order student responses[4] and limit the variety of pedagogical activities otherwise available. L1 in EMI teaching is not only a medium of instruction for auxiliary purposes, but also an integrally applied

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pedagogical tool[5]. The arguments supporting the L1 in EMI classrooms also include the translation of difficult concepts by teachers to make it easier for students to understand [6], as well as effective communication and close interaction through activities such as group discussions[7]. Prohibiting L1 in EMI classrooms may lead to students giving up efforts and avoiding learning, especially for students with poor English proficiency [8]. English-only instruction requires more after-school learning, and the challenges increase students' external motivation to learn. However, reducing leisure and entertainment time can lead to students' resistance to learning, and there is a risk of damaging teaching & learning effectiveness. English-only is considered to be more conducive to improving English proficiency, however, this is doubted especially when students can understand very little their teacher speaking.

For the concern of "quality assurance", some degree awarding institutions In TNE activities may request their overseas campus or offshore program to adopt English-only instruction just like their home campus. The objection to the request is that awarding a degree is because they reach certain academic achievements, but no matter how one gets there.

The Separate Underlining Proficiency (SUP) Model believes that students' native language ability and foreign language ability are two independent parts, and they are in a balanced relationship. When the ability of one language increases, the ability of the other language decreases[9]. SUP model holds that the more English is used in teaching, the stronger the students' English proficiency correspondingly. On the contrary, the frequent use of L1 can harm students' English proficiency. SUP model supports English-only instruction. Common Underlining Proficiency (CUP) Model holds that two language abilities are like two icebergs, separated on the sea surface and attached to the bottom. Bilingual skills use the same central processing system, and students mastering one language can facilitate or promote the acquisition of other languages [9]. The CUP model does not object to the use of the L1 in EMI.

Existing literature mainly uses questionnaire surveys and classroom observation methods to collect teachers' and students' perceptions of EMI and subjective evaluation of teaching effectiveness. Extensive research has explored stakeholders' attitudes, perceived benefits, and challenges of EMI based on self-report data. However, the actual effectiveness of EMI on content learning and English proficiency with objective measures has accrued little evidence. No consensus can be reached on the impact of EMI on content learning and English proficiency may be due to the diversity of EMI activities and different research designs, which revealed different or even contradictory findings [2]. There is a lack of a clear answer as to whether the "benefits" of English-only instruction can make up for the "losses" in content learning.

At present, there are few studies on the impact of English-only instruction on teacher-student relations. The empirical analysis of the effects of EMI mainly focuses on the comparison between EMI(not specified as English-only or bilingual instruction) and first language medium

instruction(L1MOI), while there is rarely a comparison of the effects of the English-only and bilingual model of EMI. In addition, there is a lack of in-depth discussion on the extent and mechanism of the impact of English-only instruction on content learning, whether this effect is static or dynamic, such as short-term negative effects turning into long-term positive effects or vice versa. We will explore the above issues in detail.

3. Research design

3.1 purpose and methods

We attempt to explore the impact of using L1 in EMI on content learning and English proficiency through a controlled experiment. The following questions will be answered: (1) Does the usage of the L1 in EMI improve content learning? (2) Does the English-only instruction improve students' English proficiency significantly? (3) Does English-only instruction affect individual students equally? (4) Is the effect static or dynamic?

The teaching experiment lasted for a total of 18 weeks, and the researcher conduct classroom observation during the whole process. The assessment scores of the experimental subject, English pre and post-test scores, and other subjects scores before and after the experiment are collected for research purposes. Questionnaires and non-structured interviews were conducted during the course, and semi-structured interviews were conducted after the experiment.

3.2 sample selection

This study uses a quasi-experimental design. The experimental subject is "Economics Principles", which is offered by a TNE university located in China while curriculums are provided by an Australian university. The course materials and assessments are in English and set by staff other than the subject teacher.

204 students are randomly divided into two groups (see Table 1), the control group adopted bilingual instruction while the experimental group adopted English-only instruction.

Table 1. Baseline equivalence

		C*	%	E**	%
Gender	Male	28	27	30	30
	Female	75	73	71	70
Major	Accounting	52	50	36	36
	Finance	30	29	48	47
	Business	21	21	17	17
English level	A	59	57	56	55
	B	22	22	26	26
	C	22	21	19	19

Note: *control group using bilingual instruction; **experimental group using English-only instruction.

The demographic feature of the two groups is comparable, while their English proficiency and academic abilities in terms of previous semester performance are also comparable (Table 2).

Table 2. Comparison of academic abilities

Group	Mean	S.D.	ΔM	p
Bilingual	80.12	3.53	0.02	0.95
English-only	80.10	3.55		

The teacher, contact hours, and assessments are identical for the two groups, except for the mode of instruction during the Week 7 to 12.

3.3 Measurement

3.3.1 Academic performance

The experimental subject consists of four assessments: the first and second test (Week 7 and 10 respectively), group assignment (Week 15), and final exam (Week 18). The experiment was not conducted until Week 7, so the first test acts as a pre-test while other assessments act as a post-test to evaluate the effectiveness of the two teaching methods.

3.3.2 English proficiency

The students take the English language course (EFL) as well as the disciplinary course. We use their English score from the previous semester as the pre-test, and the score of the experiment semester as the post-test to evaluate the impact on their English proficiency.

4. Empirical results and discussions

The pre-test shows no significant difference between the two groups (Table 3). The second test scores of the English-only group are slightly higher than those of the bilingual group, but not significantly. The group assignment and exam scores of the English-only group are significantly lower than those of bilingual group. We conclude that the usage of the L1 in EMI can effectively improve content learning, or prohibiting the L1 could harm EMI content learning.

Table 3 Comparison of academic performance

	Group	Mean	S.D.	ΔM	p
1st Test	Bilingual	76.31	15.66	0.37	0.43
	English-only	75.94	12.62		
2nd Test	Bilingual	82.20	13.36	0.07	0.48
	English-only	82.27	13.00		
Group Work	Bilingual	75.92	6.90	1.44	0.06
	English-only	74.48	6.25		
Exam	Bilingual	86.87	9.69	2.61	0.05
	English-only	84.26	12.38		

We used a difference-in-difference approach to measure the impact on English proficiency. The English proficiency of English-only group was improved slightly more than bilingual group, but it was not statistically significant (Table 4). We could not conclude that English-only instruction can improve students' English proficiency more than bilingual instruction. English-only instruction was intended to give students more opportunities to apply English in natural and academic settings as the tool of communication and interaction between teachers and students, however, students did not

take those opportunities, they rarely speak English in class according to the teacher's observations.

Table 4 Difference in difference of English scores

Group	Pre-test	Post-test	ΔM	S.D.	p
Bilingual	82.25	79.04	-3.21	4.81	0.36
English-only	80.78	78.19	-2.59	4.85	

Table 3 also shows the impacts are not static. Some practitioners expect that switching from bilingual to English-only instruction will initially harm content learning, but gradually students will adapt to English-only instruction and the detrimental effect would disappear, however, we found this is not our case.

In the early stage of the transition from bilingual to English-only instruction, the experimental group performed slightly better than the bilingual group, however, this trend inverted. The English-only group performance was getting poorer and the gap between groups widened, even though the experimental group switched back to bilingual instruction after the 12th week. Based on classroom observations and interviews, it is found that English-only instruction placed considerable intellectual challenges and pressures which made students pay more attention and devote more time to content learning, consequently their academic performance has not decreased and has improved somewhat at the beginning of the experiment. It is also found that the reduced understanding of the contents can only be compensated for by extra studying hours. Not all students can continuously afford extra study hours, therefore there was a decline in the overall level of academic performance in the later stages. More importantly, prohibiting L1 in the classroom not only weakens the effectiveness of teaching and learning, but also hinders the emotional connection between the teacher and students, interaction among students, and feedbacks from students. Emotions inevitably influence students' behaviours, just like the old saying "love me, love my dog". English-only instruction has undermined the confidence of some students and caused them to feel desperate and give up; on the other hand, the worse emotional relationship between the teacher and students weakens students' internal motivation for learning, although English-only instruction increases students' external motivation to a certain extent.

To analyse the impact of L1 on individual students in EMI, we ranked the academic scores from lowest to highest to compare the distribution of performance for the two groups using line chart. For other subjects in the same and previous semesters, the lines of the two groups are nearly identical or overlap, however, the experimental subject is not the case. For the upper half of students, the lines of distribution overlapped, but for the lower half of students, the English-only group performs significantly poorer (Figure 1). These findings are consistent with our classroom observation and questionnaire survey, students with good academic performance are less affected by switching to English-only environment which is not just because of the higher English proficiency but also because the higher academic abilities and motivations provide them with effective coping measures [8]. The survey about students' perceptions and attitudes towards English-only instruction confirms the assertion, 8% of

correspondence states “English-only instruction is as good as bilingual instruction”, 35% of students state “English-only instruction slightly harder than bilingual instruction, but acceptable”, the rest 57% consider English-only instruction is significantly detrimental to content learning. Referring to attitude, 50% of students indicate that they are confident to adapt to English, while the rest of them lose their confidence.

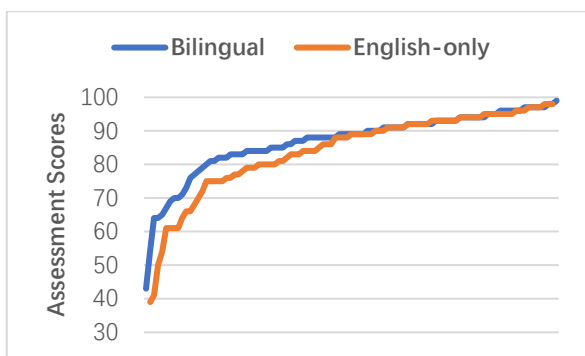


Figure 1 Comparison of the score distribution

Regarding the factors that determine the success of EMI, literature has shown that English proficiency is an important factor. We regressed the academic performance to English proficiency of the two groups (Figure 4), and find that English proficiency can explain about one-third of the variations in academic scores according to the R^2 of the equations. For the English-only group, English proficiency has a greater impact, 1 mark higher in English score correspond 1.44 marks higher in academic score on average, while that coefficient for the bilingual group is only 1.00.

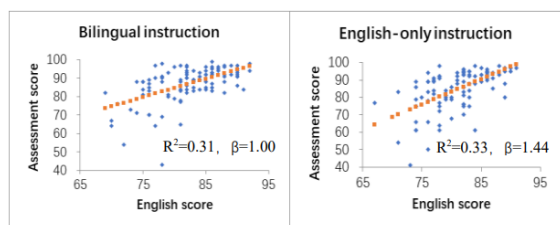


Figure 2 Regression of academic and English scores

5. Conclusion

We analysed the impacts of switching from bilingual to English-only instruction in an EMI course through a controlled experiment and found that the usage of the L1 in class significantly improved students' content learning. English-only instruction will harm the content learning of low performers particular, and there is no evidence that English-only instruction can significantly improve students' English proficiency no matter their academic performance level. The impacts of switching instruction modes are not equal for everyone. Students with strong English proficiency and learning motivation can quickly adapt to English-only instruction through various coping measures, and their content learning is not affected. However, students with weak English proficiency and less motivation face significant challenges and are negatively affected. This may be the reason why there is no consensus on the effectiveness of EMI till today. The

effect of switching teaching methods is dynamic. The use of L1 in EMI not only affects the efficiency of communicating hence teaching and learning, but also affects the feelings of students, hence changing interests and motivation, and thus affecting learning outcomes.

Student-centred and individualisation teaching methods should be adopted. There is no single pedagogy that suits all students. Human growth and progress occur at the edge of the comfort zone, it may backfire and cause a loss of interest and motivation if English-only instruction is too difficult for a student. Set the appropriate difficulty and give students appropriate challenges, but not excessive pressure. Furthermore, EMI classes should be as small as possible to apply the most effective teaching method according to the characteristics of students. Last but not least, feelings should be emphasized, which is also the merits of face-to-face teaching and learning, which will never be replaced by online learning or AI tutors.

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