
RESEARCH ARTICLE

Science through English in Morocco: Student Attitudes toward Code-Switching as a Multilingual Classroom Practice

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ABSTRACT

As English-medium instruction (EMI) expands within Moroccan secondary schools, questions arise concerning the role of code-switching in supporting students' content learning. However, students' attitudes toward this practice in Moroccan secondary EMI classrooms have not been investigated directly. This study examined the attitudes of 56 common core students enrolled in EMI science classrooms in two public high schools in Casablanca and Rabat and identified factors associated with those attitudes. Data were collected through a questionnaire and analyzed using descriptive statistics and chi-square tests of independence. The findings reveal divided and largely conditional attitudes: 44.6% of students ($n = 25$) preferred teachers to switch languages when content became difficult, 32.1% ($n = 18$) did not, and 23.2% ($n = 13$) were unsure. This preference was most strongly associated with students' belief that switching makes learning easier and with their perception that it had helped them understand, while preference for English-only instruction was associated with lower support for switching. Among students who preferred switching, Moroccan Arabic was favored over French, despite the latter's longstanding role in Moroccan science education. Overall, the findings suggest that students' attitudes toward code-switching are largely pragmatic and context-dependent, particularly in relation to its perceived usefulness for comprehension. The study highlights the relevance of strategic code-switching for teacher training and language-policy discussions surrounding EMI in Morocco.

KEYWORDS

English-medium instruction (EMI); code-switching; student attitudes; science education; multilingual practices; secondary education

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1. Introduction

The Moroccan sociolinguistic landscape stands as an exemplar of multilingualism, in that it is marked by the co-existence of different languages (Ennaji, 2005). These languages occupy different domains of Moroccan social life depending on the degree of prestige and power they possess (Ennaji, 2005). Of particular interest to this study is the domain of education. While Moroccan Arabic (MA) remains, *de jure*, excluded from Moroccan education, and Amazigh, despite constitutional recognition as an official language since 2011, remains only marginally implemented in practice, Standard Arabic (SA) and French have historically competed for prominence (Ennaji, 2005; Errihani, 2024). By the late 1980s, Arabization had reached full implementation, and SA became the exclusive language in which scientific subjects were taught in public secondary schools (El Kirat El Allame & Laaraj, 2016; Errihani, 2024). However, as of the school year 2019–2020, French started gradually replacing SA as a Medium of Instruction (MOI) in these subjects (Belhiah, 2022). By the 2021–2022 school year, SA had been discontinued as the designated MOI for science, while French had become predominant (Ben Hammou & Kesbi, 2023). Interestingly, as part of a larger policy reform aimed at promoting multilingualism in the teaching of scientific and technical subjects, English was also introduced as an MOI in select high schools in

different regions of Morocco (Ben Hammou & Kesbi, 2023; Strategic Vision, 2015; The Framework Law 51.17, 2019). This reform is known as the Language Alternation Policy (LAP).

English-medium instruction (EMI) begins at the common core level, the first year of public high school in the Moroccan education system (Strategic Vision, 2015). During the three years of middle school, science subjects are exclusively taught through French (Razkane et al., 2025). Upon entering high school, students who enroll in the English-medium stream therefore transition from studying science through French to studying it in English. This transition may pose challenges for students who lack the English proficiency required to engage effectively with scientific content (Ben Hammou, Bataoui, & Razzouki, 2025; Ben Hammou & Kesbi, 2021b; Elfaizi & El Aouri, 2025). Teachers report resorting to code-switching to students' home languages to help them better understand subject content in the foreign-medium streams (Ben Hammou & Kesbi, 2021a, 2021b, 2023; Razkane et al., 2025). This linguistic practice is not confined to Morocco, in that similar practices have been documented in EMI contexts internationally (Pun et al., 2024). In the Moroccan context, however, existing research has primarily examined perceptions and attitudes toward the implementation of the foreign-medium instruction policy (Ben Hammou, Bataoui, & Razzouki, 2025; Ben Hammou & Kesbi, 2023; Ben Hammou, Saissi, & Tritha, 2025; Elfaizi & El Aouri, 2025; Razkane et al., 2025). To date, no study has specifically investigated attitudes toward the use of code-switching in the teaching of scientific subjects within Moroccan secondary EMI classrooms.

This study addresses this gap by (1) examining the attitudes that common core students enrolled in the English-medium stream hold toward the use of code-switching in EMI science classrooms, and by (2) identifying which factors are most closely associated with these attitudes.

2. Literature review

2.1 Multilingual practices in international EMI contexts

In countries where English is not the majority's native tongue, EMI refers to the use of English as the language of instruction for academic subjects other than English itself (Macaro, 2018). Although English is intended to be the primary medium of instruction, the use of other languages, such as students' L1(s), is widely documented in EMI classrooms across diverse contexts. In Southeast Asian contexts, a scoping review on English-medium education reveals that students generally make strategic use of their L1 to better engage with content (Pham, Tran, & Barnett, 2026). Erling et al. (2017) report that in India, L1 is used to explain certain expressions pertaining to the curriculum with which students experience difficulty. Similarly, in China, Macaro, Tian, & Chu (2020) observe that L1 is used to explain discipline-related lexical items and technical terms to make course content more comprehensible.

Studies investigating multilingual practices in academic subjects in which English is the means of instruction have increasingly approached these practices from a translanguaging perspective. Otheguy et al. (2015) maintain that translanguaging is a practice in which speakers draw from their entire linguistic repertoire as a single system rather than switching between two or more bounded languages. The literature reveals that there is ambivalence as to the perceived usefulness of translanguaging as a classroom resource in EMI settings. Several studies reveal that participants hold a positive view of translanguaging, in the sense that the latter is perceived as being necessary for knowledge construction, scientific meaning-making, and comprehension (Aldaghri, 2024; Kirkgöz & Küçük, 2021; Muguruza et al., 2020; Rahman & Singh, 2022). By contrast, some studies reveal that teachers and students hold reluctant attitudes toward translanguaging, even while recognizing its value as a linguistic resource for content comprehension. They favor an approach in which English retains primacy to ensure maximum exposure to the language (Fang & Liu, 2020; Jia et al., 2023; Zhang & Ament, 2025). Similarly, Serna-Bermejo & Lasagabaster (2024) find that some teachers and students hold a predominantly negative attitude toward translanguaging, in that they fear it may undermine their English proficiency. Despite these divergent attitudes, the studies appear to converge on common ground insofar as EMI itself is not called into question. Translanguaging is instead deemed acceptable to the extent that it supports content learning in English, rather than undermining the policy's underlying commitment to the language.

Other studies, by contrast, have approached these practices through the lens of code-switching, which can be defined as the use, within a single speech exchange, of stretches of discourse drawn from two distinct grammatical systems or subsystems (Gumperz, 1982). That is, the use of two languages with different linguistic properties within the same exchange. Attitudes toward the use of code-switching in content classes are varied, though it is worth mentioning that the pattern is one of conditional acceptance rather than a straightforward dichotomy between supporters and opponents (Teklesellassie & Boersma, 2018; Susilowaty & Rosa, 2024). Interestingly, some studies show that resistance toward the use of code-switching emerges when it is deemed purposeless, in the sense that it does not facilitate the acquisition of new content knowledge, or when it excludes students who do not master one of the languages to which speakers switch (Zhang & Lütge, 2022; Nam & Gaipov, 2025). Furthermore, students' disciplinary background seems to have a bearing on the preference for switching, with humanities-oriented students reported as being more resistant to switching than their STEM counterparts (Nam & Gaipov, 2025). As is the case with translanguaging, code-switching is deemed useful insofar as it complements, rather than displaces, the use of English as the primary medium of instruction.

2.2 The Moroccan context: current views and classroom reality

Before turning to the Moroccan EMI science classrooms, it is worth reviewing how code-switching has been approached in Moroccan research more broadly. Afkir and El Habib (2015) show that MA–French code-switching is an established practice among young Moroccans, while Slimani and Igueder (2024) document the growing use of MA–English code-switching, particularly in interactions with peers. In Moroccan high-school language classrooms, Bouchouk (2023) finds that teachers switch primarily to facilitate understanding and explain difficult vocabulary, whereas Dahman and El Idrissi (2026) report that Arabic, particularly MA, is used only occasionally and chiefly for vocabulary explanation. Attitudes toward code-switching in EFL settings are generally favorable but qualified. Khalid et al. (2024) show that students value English–Darija code-switching, whereas teachers favor its limited and strategic use in order to preserve opportunities for interaction in English. Similarly, Ramila and Benmhamed (2024) find that teachers recognize the pedagogical value of code-switching but express concerns that excessive use may reduce exposure to English and opportunities for language practice.

With the broader context established, the discussion turns to the policy environment under which EMI was introduced. Morocco's LAP is arguably aligned with a traditional view of languages as being separate and distinct in their linguistic properties. To this effect, the policy creates parallel streams to which a specific MOI is assigned rather than a classroom in which the flexible but structured use of language other than the MOI is legitimate in order to better explain and understand the content of scientific subjects. Researchers note that, while the aspiration of this language-in-education policy is to diversify the MOIs in some subjects and thereby promote a balanced multilingualism (Chakrani et al., 2025), its implementation reflects a monolingual approach in which languages are kept separate (Sayeh & Razkane, 2022). Similarly, R'boul et al. (2024) suggest that the introduction of EMI may reproduce monolingual ideologies and render classrooms monolingual environments.

Existing research relevant to EMI in secondary classrooms has focused predominantly on attitudes toward its implementation and the broader language-in-education policy, rather than on direct investigation of classroom language practices. Studies generally reveal favorable attitudes toward EMI, but these are tempered by concerns about its implementation. Ben Hammou and Kesbi (2021b) found that physics teachers viewed a transition to EMI positively but considered Moroccan schools insufficiently prepared because of teachers' and students' limited English proficiency. Similarly, Ben Hammou and Kesbi (2023) identified students' language proficiency and inadequate teacher training as major challenges, with teachers resorting to Moroccan Arabic to facilitate content learning. Ben Hammou, Bataoui, & Razzouki (2025) likewise report strong support for EMI among school management teams, although limited English proficiency and institutional constraints were seen as barriers to wider implementation. More directly, R'boul et al. (2024) found that students already enrolled in secondary EMI generally favored multilingualism and the complementary use of different languages rather than an English-only approach.

To date, however, no study has directly investigated attitudes toward the use of code-switching, as distinct from translanguaging, in Moroccan EMI science classrooms. Against this background, the present study addresses the following research questions:

RQ1: What attitudes do Moroccan common core students hold toward the use of code-switching in EMI science classrooms?

RQ2: Which factors are most strongly associated with students' attitudes toward code-switching?

3. Methodology

3.1 Research design

This study uses a quantitative, questionnaire-based design to investigate students' attitudes toward the use of code-switching in science classrooms in two EMI high schools. This approach was chosen because it allows the same set of questions to be asked to all students in the same way, making it possible to describe their attitudes (RQ1) and to identify which factors are most closely linked to these attitudes (RQ2).

3.2 Participants

The study sample comprised 56 common core students enrolled in the English-medium stream across two public high schools: Prince Moulay Abdellah High School in Casablanca (n=32, 57.1%) and Abi Dar Al-Ghafari High School in Rabat (n=24, 42.9%). Participants studied mathematics, physics, and life and earth sciences through English. The sample included 38 female students (67.9%) and 18 male students (32.1%). The majority reported MA as their native language (94.6%, n=53). Regarding initial English proficiency upon entering the program, students self-identified as beginners (n=6, 10.7%), intermediate learners (n=31, 55.4%), or advanced learners (n=19, 33.9%). Most participants (n= 51, 91.1%) had studied in the English-medium stream for more than one semester.

3.3 Research instrument

Data were collected using a structured questionnaire developed via Google Forms. The questionnaire was administered in both English and Arabic versions to ensure comprehension across varying levels of English proficiency. The questionnaire consisted of 24 items organized into six sections. Section I collected demographic information such as gender, school location, and period of enrollment in the English-medium stream. Section II gathered information on students' linguistic background such as native language, home language use, initial English proficiency, years of English study, and sources of English learning. Section III addressed students' early experience with studying scientific content in English, including perceived difficulty, the subjects found most challenging, and the strategies used when content was not understood.

Section IV focused on teachers' code-switching practices as observed by students, including whether and to which languages teachers switched, the perceived effect of switching, and students' general preference for English-only instruction, along with an open-ended item asking students to explain their preference. Section V examined students' overall experience with the English-medium program, including their comfort with learning science in English, whether they would recommend the program to others, and an open-ended item on what could improve their understanding.

Section VI addressed the study's central variable: students' attitudes toward code-switching specifically in situations of content difficulty. Students were asked whether they would prefer the teacher to switch languages when content becomes too difficult to understand (coded as *Content_too_difficult*), followed by an item asking which language they would prefer, shown only to students who answered affirmatively. This section also included an item on the circumstances under which switching should occur and two five-point Likert-scale items measuring agreement with the statements that switching makes learning easier and that excessive switching causes confusion.

Most items were closed-ended, using single-select, multiple-select, or Likert-scale formats. Two items were open-ended, allowing students to elaborate on their reasoning in their own words.

3.4 Data collection procedure and analysis

Data collection took place during the 2024-2025 school year through a Google Forms link, accessed by students via a QR code distributed at each of the two participating schools. Teachers administered the questionnaire in their classes, on the recommendation of school administrators, who determined the best approach.

Data were analyzed using SPSS version 27. To address RQ1, descriptive statistics were used to describe students' attitudes toward code-switching, based mainly on the item *Content_too_difficult*. Regarding RQ2, chi-square tests were run to see which variables were significantly related to the variable in question *Content_too_difficult*.

3.5 Ethical considerations

Permission to carry out the study was obtained separately at each site. In Casablanca, the school director granted authorization, while in Rabat, authorization was issued by Rabat-Salé-Kénitra Regional Academy of Education. Participation in the study was voluntary, and student responses were collected anonymously.

4. Results

4.1 Descriptive statistics

Figure 1 illustrates students' early experience with scientific content in English. A minority (n=11, 19.6%) reported that it was never difficult to understand, while others reported rarely (n=22, 39.3%), frequently (n=14, 25.0%), very frequently (n=8, 14.3%), and one student (1.8%) all the time. Biology was the subject most frequently reported as difficult (n=26, 46.4%), followed by mathematics and physics (each n=23, 41.1%).

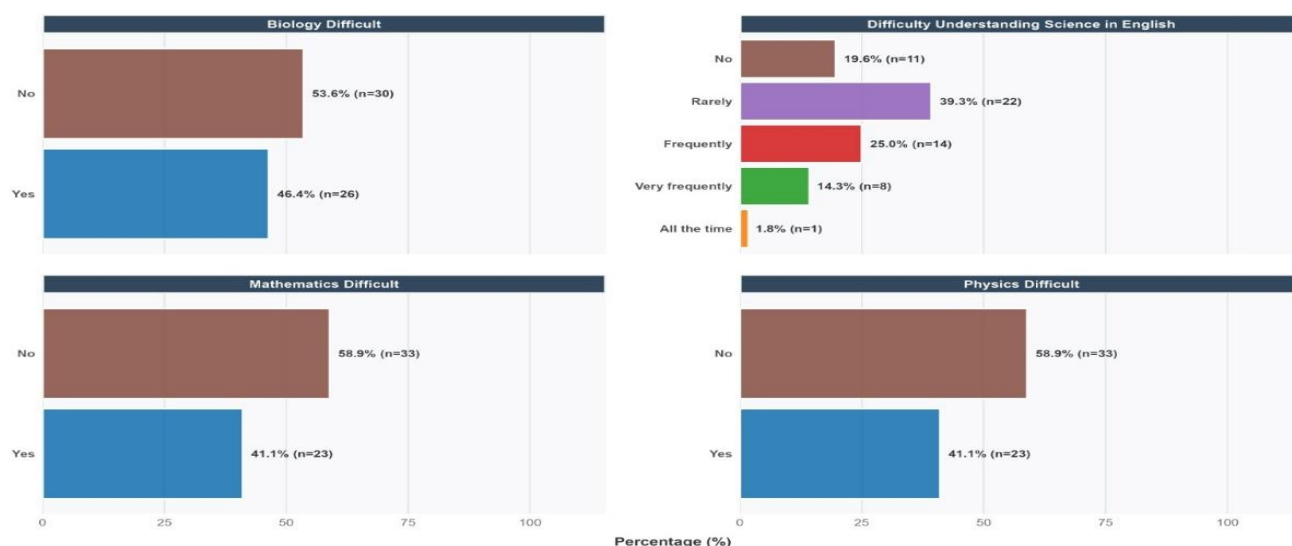


Figure 1. Subject difficulties and difficulty understanding science in English

Figure 2 illustrates students' current language use at home. Most students reported using MA (n=50, 89.3%), followed by English (n=22, 39.3%), French (n=9, 16.1%), and Amazigh or another language (n=1 each, 1.8%).

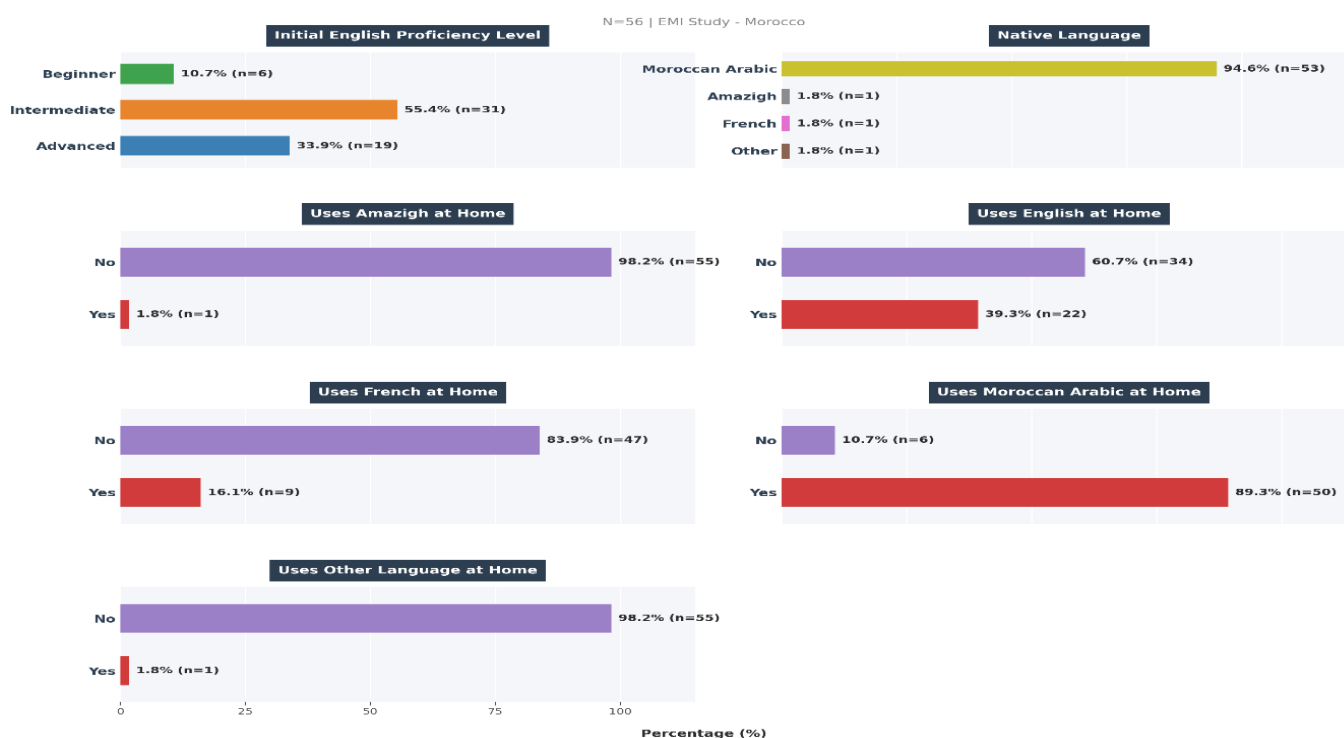


Figure 2: Home language use

Figure 3 illustrates the strategies students reported using when they do not understand content. The most frequently reported strategy was looking up content online (n=43, 76.8%), followed by asking a classmate (n=29, 51.8%), asking the teacher (n=17, 30.4%), translating into Arabic or French (n=9, 16.1%), ignoring the difficulty (n=7, 12.5%), and using another method (n=5, 8.9%).

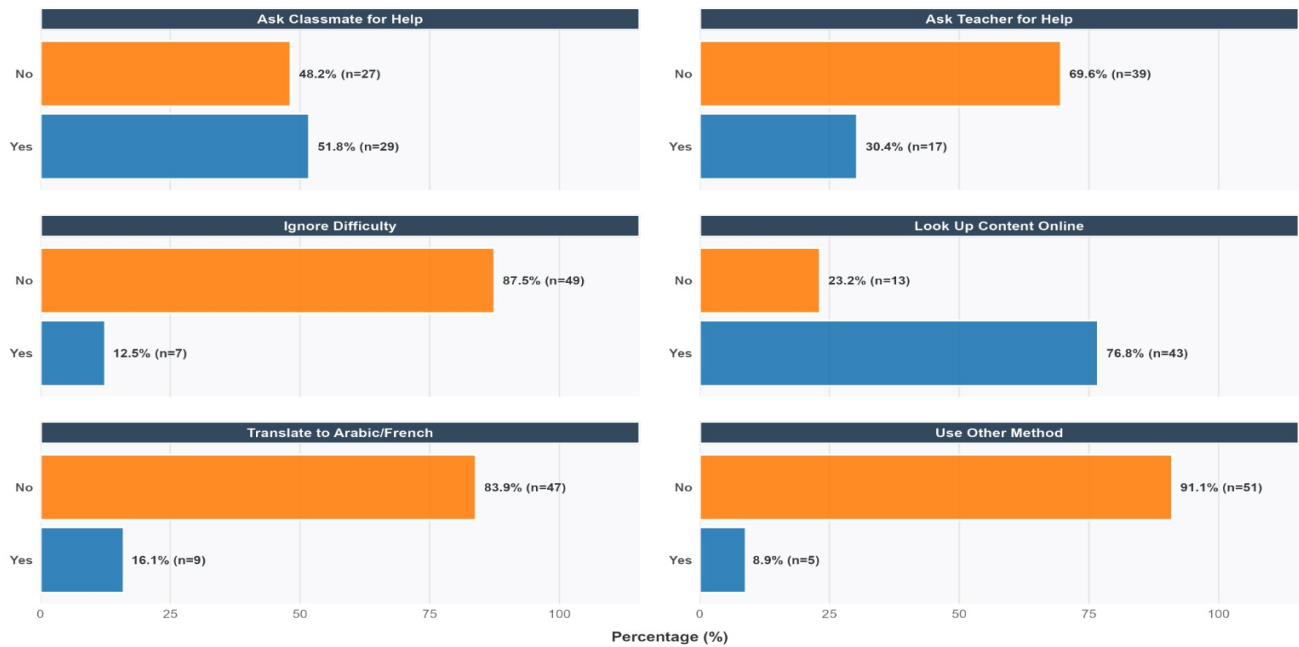


Figure 3: Learning strategies

Figure 4 illustrates students' English learning sources and years of study. Close to half of students reported having learned English at home (n=25, 44.6%), and years of English study varied, in that most had studied for 1-5 years (n=33, 58.9%), followed by 5-10 years (n=14, 25.0%) and more than 10 years (n=9, 16.1%).

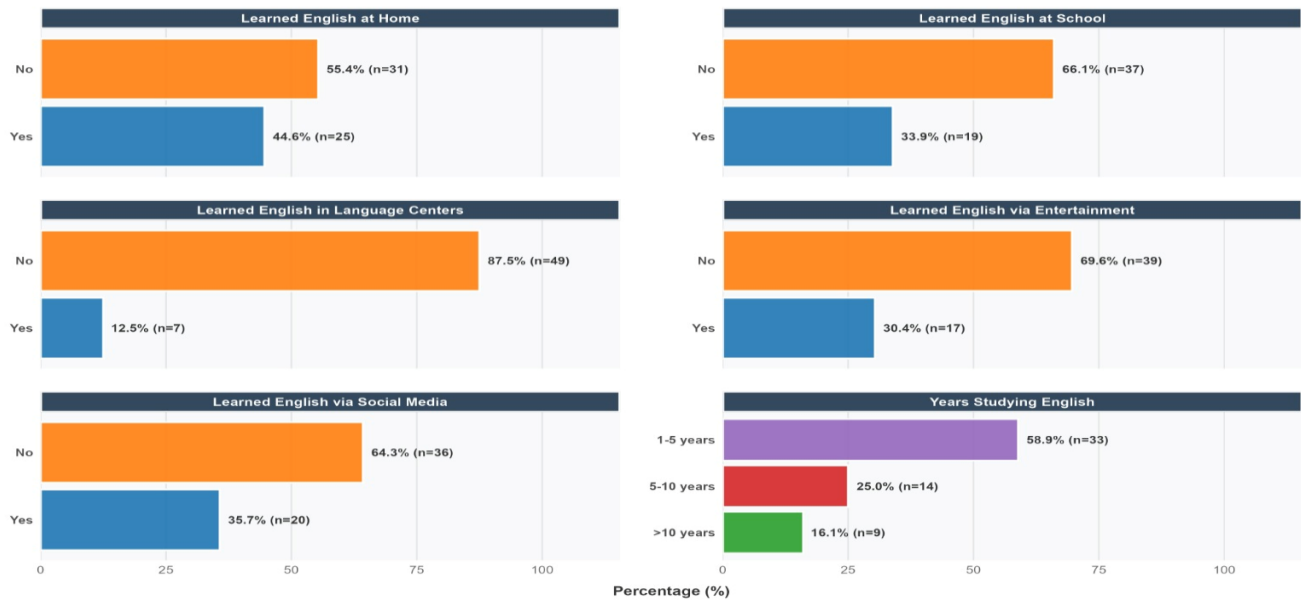


Figure 4: English learning sources and years of study

Figure 5 illustrates teachers' code-switching practices as observed by students. Most (n= 30, 53.6%) reported that their teachers switch to Arabic or French during lessons, while the remainder (n=26, 46.4%) reported that they do not. Among the languages teachers switch to, French was reported most often (n=33, 58.9%), followed by MA (n=28, 50.0%) and SA (n=7, 12.5%); one further student (1.8%) reported another language.

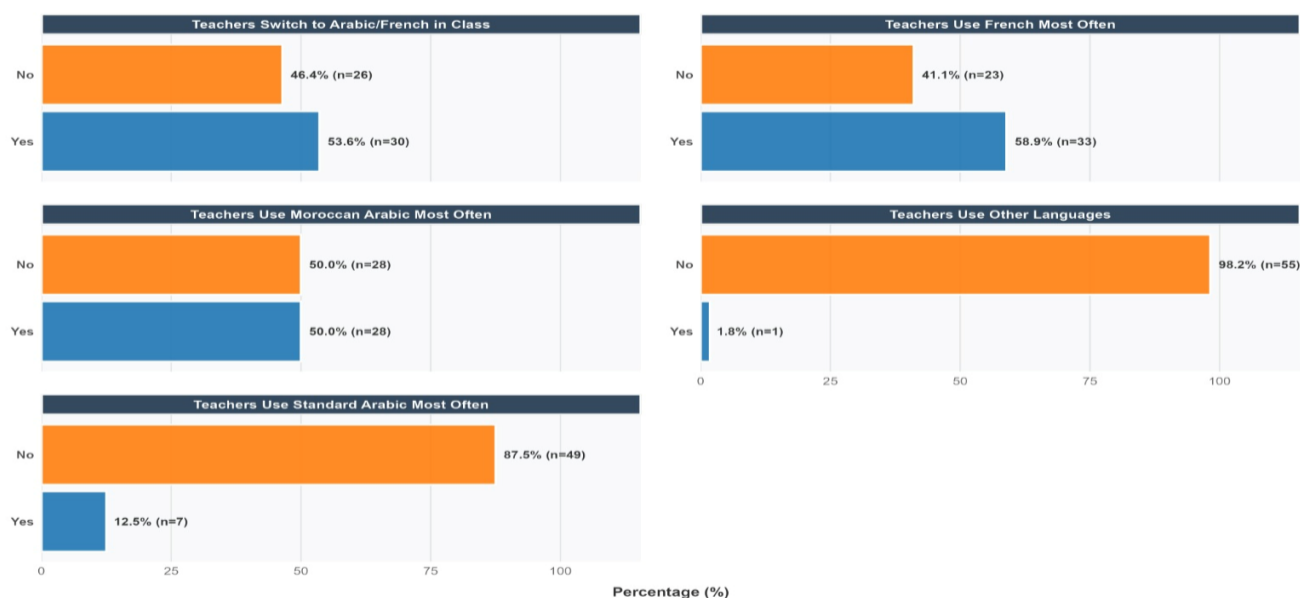


Figure 5: Teacher code-switching practices

Figure 6 illustrates students' perceptions of code-switching and their preference for English-only instruction. Students most frequently reported that code-switching helps them understand better ($n=23$, 41.1%), followed closely by those who reported that it makes no difference ($n=24$, 42.9%); a smaller proportion ($n=9$, 16.1%) reported that it confuses them. When asked whether they prefer teachers to explain content only in English, close to half responded yes ($n=26$, 46.4%), a similar proportion responded sometimes ($n=23$, 41.1%), and the remainder responded no ($n=7$, 12.5%). Among students who explained their preference, the most frequently cited reason was comprehension ($n=28$, 50.0%), followed by language learning ($n=13$, 23.2%), personal factors ($n=6$, 10.7%), a neutral stance ($n=5$, 8.9%), and assessment-related concerns ($n=3$, 5.4%).

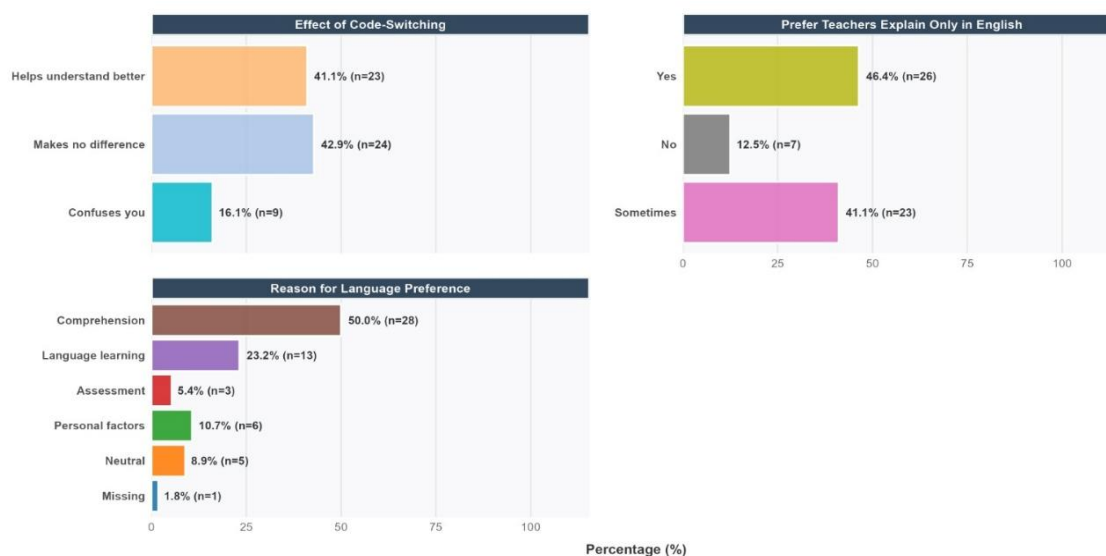


Figure 6: Student perceptions of code-switching

Figure 7 illustrates students' code-switching preferences. Turning to the study's central variable (*Content_too_difficult*), close to half reported that they would prefer the teacher to switch to another language when content becomes too difficult to understand ($n=25$, 44.6%), just under a third reported that they would not ($n=18$, 32.1%), and the remainder were not sure ($n=13$, 23.2%). Among students who indicated this preference, MA was the most preferred language for switching ($n=19$, 33.9%), followed by French ($n=11$, 19.6%), with SA and another language each selected by three students (5.4%). Regarding the circumstances under which students believe teachers should switch languages, the most frequently selected reasons were that the content is too difficult

to understand (n=19, 33.9 %) and that students ask for clarification (n=18, 32.1%), followed by emphasizing a key point (n=13, 23.2%); a smaller group (n=5, 8.9%) reported that teachers should never switch languages.

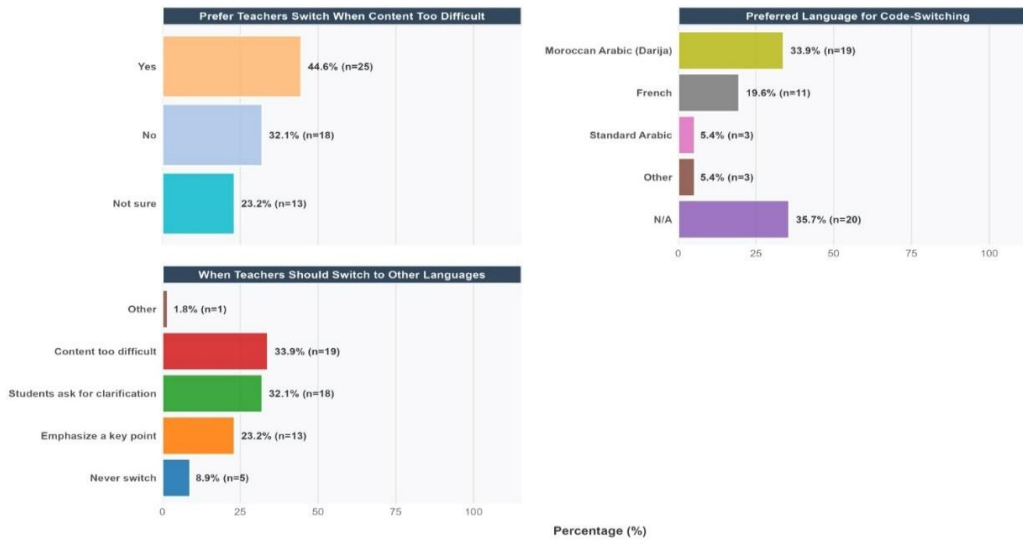


Figure 7: Switching preferences

Figure 8 illustrates the two Likert-scale items measuring students' general perceptions of code-switching. 44.6% of students (n=25) agreed or strongly agreed that too much code-switching creates confusion in their learning (n=11, 19.6% strongly agree; n=14, 25.0% agree), while just over a quarter were neutral (n=15, 26.8%). Regarding whether using another language makes it easier to learn science, 35.7% of science students (n= 20) agreed or strongly agreed (n=4, 7.1% strongly agree; n=16, 28.6% agree), while the largest group was neutral (n=24, 42.9%).

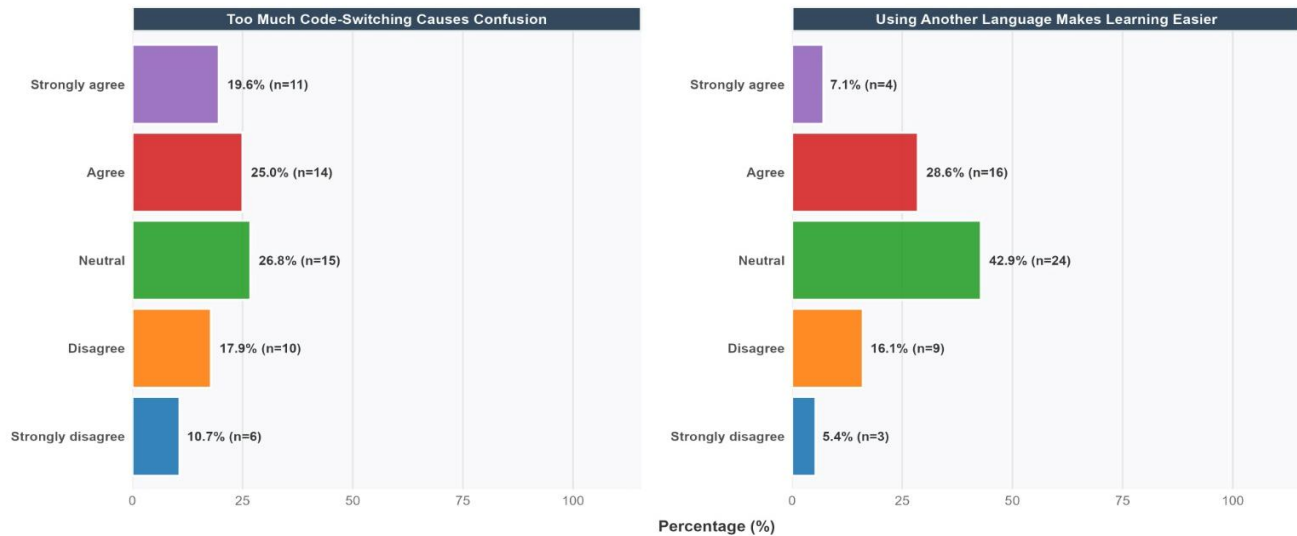


Figure 8: Perceptions of code-switching (Likert-items)

Figure 9 illustrates students' comfort and overall attitudes. Most students (n=45, 80.4%) reported feeling more comfortable studying science in English compared to the beginning of the program, with the remainder (n=11, 19.6%) reporting feeling only a little more comfortable. A majority (n=36, 64.3%) reported that they would recommend the English option to other students, while a smaller group would not (n=5, 8.9%) and the rest were not sure (n=15, 26.8%). When asked what would help them better

understand science in English, the most frequently cited factor was student effort ($n=17$, 30.4%), followed by teacher quality ($n=11$, 19.6%), pedagogical strategies ($n=10$, 17.9%), and learning materials ($n=8$, 14.3%).

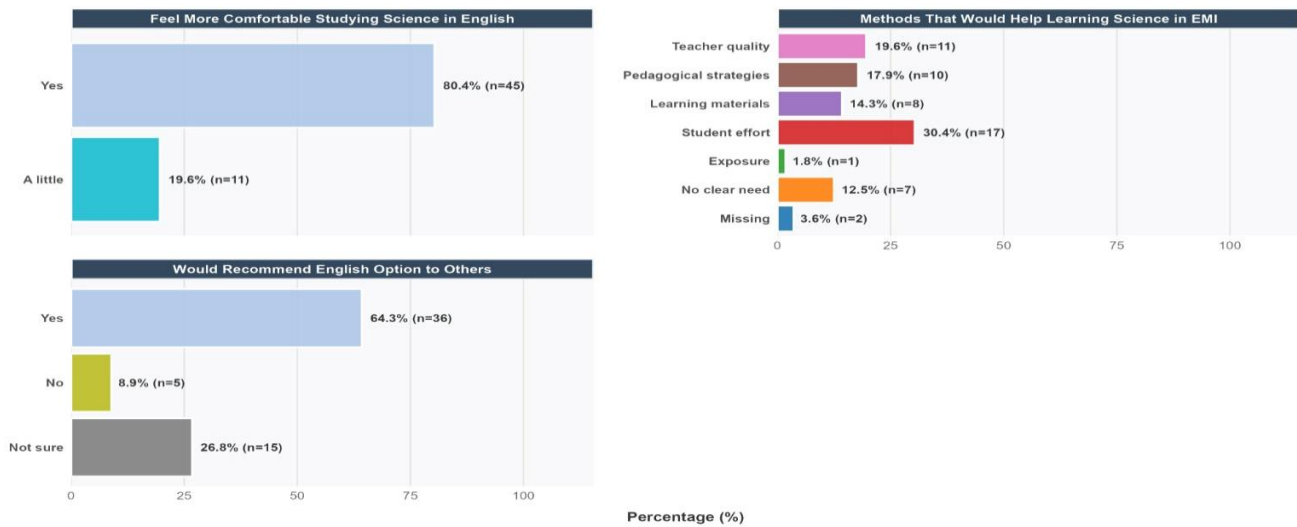


Figure 9: Comfort and attitudes

4.2 Cross-tabulation analysis

Chi-square tests of independence were conducted to identify variables significantly associated with students' preference for code-switching when content becomes difficult (*Content_too_difficult*). Figure 10 illustrates all variables yielding statistically significant associations.

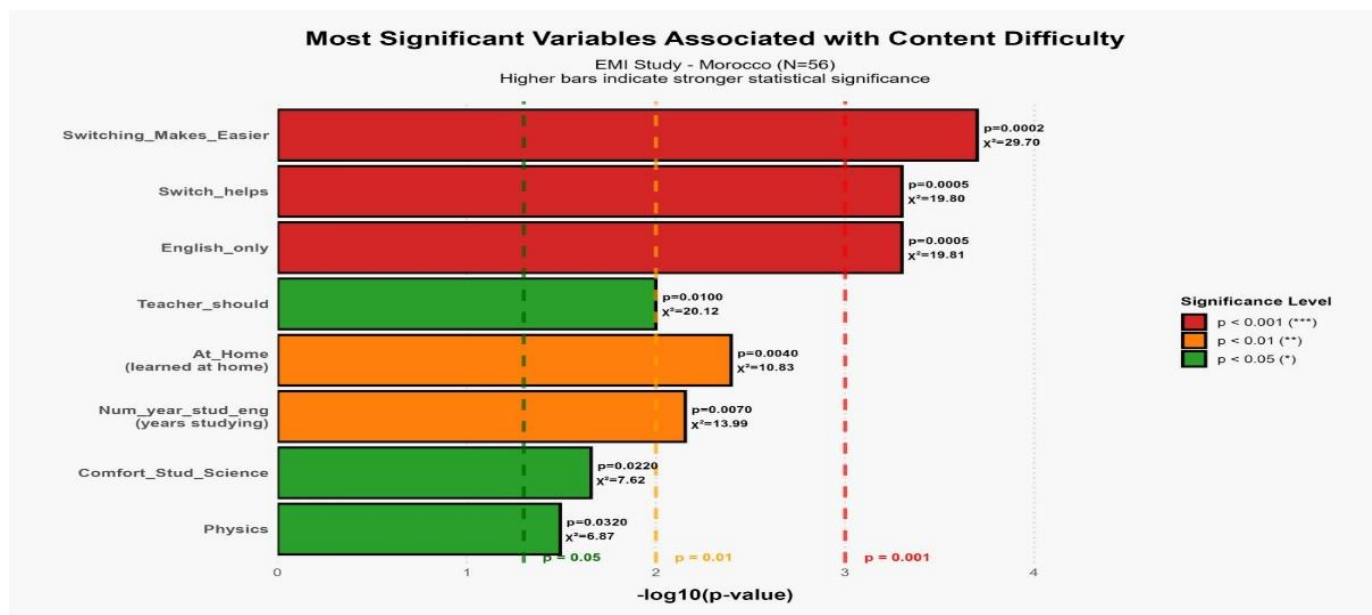


Figure 10: Most significant variables associated with content difficulty

Three variables showed a very highly significant association ($p < .001$): *Switching_Makes_Easier* ($\chi^2=29.70$, $p=0.0002$), *Switch_helps* ($\chi^2=19.80$, $p=0.0005$), and *English_only* ($\chi^2=19.81$, $p=0.0005$). Among students who often found content difficult, 88% agreed or were neutral that switching makes learning easier (52% agreed, 36% neutral), compared with 56% who disagreed or strongly disagreed among students who rarely found content difficult. Similarly, 68% of students who often found content difficult reported

that code-switching helps them understand better, compared with 78% of students who rarely found content difficult reporting that it confuses them or makes no difference. For English-only preference, only 20% of students who often found content difficult preferred English-only instruction, compared with 56% of those who rarely found content difficult.

Two further variables were significant at $p < .01$: *At_Home* ($\chi^2=10.83$, $p=0.004$) and *Num_year_stud_eng* ($\chi^2=13.99$, $p=0.007$). Students who had learned English at home were more likely to rarely find content difficult (48%) than to often find it difficult (4%), with the reverse pattern among students who had not learned English at home. Students with 1–5 years of English study were more likely to often find content difficult (58%), while students with 5–10 years of study were more likely to rarely find it difficult (78%).

Three variables were significant at $p < .05$: *Teacher_should* ($\chi^2=20.12$, $p=0.010$), *Comfort_Stud_Science* ($\chi^2=7.62$, $p=0.022$), and *Physics* ($\chi^2=6.87$, $p=0.032$). Among students who often found content difficult, 52% believed teachers should switch languages specifically when content is too difficult, compared with 28% of students who rarely found content difficult. All students (100%) who rarely found content difficult reported feeling more comfortable studying science in English, compared with 76% of students who often found content difficult. Students who often found content difficult were also more likely to report physics as a difficult subject (56%) than students who rarely found content difficult (15%).

No significant association was found between *Content_too_difficult* and gender, city of school, native language, or teachers' reported code-switching practices, among other variables.

5. Discussion

5.1 Student attitudes code-switching (RQ1)

Students were divided on whether they wanted teachers to switch languages when content becomes too difficult for them to understand in English. 44.6% said yes, 32.1% said no, and 23.2% were unsure. This matches earlier research showing that students accept code-switching depending on the situation they face, rather than simply supporting or opposing it (Teklesellase, 2018; Susilowaty et al., 2024). In other words, students seem to judge switching case by case, depending on whether they believe it will actually help them.

When students did want switching to another language, they preferred MA over French (33.9% versus 19.6%). This matches earlier findings on code-switching in Morocco (Slimani & Igueder, 2024; Khalid et al., 2024), and shows the same pattern holds in EMI science classrooms specifically. Even though French has traditionally been associated with science in Morocco, students seem to want help in the language they master best.

5.2 Factors explaining attitudes (RQ2)

Students' belief that switching languages makes learning easier (*Switching_makes_easier*; $\chi^2=29.70$, $p=0.0002$) showed the strongest association with their preference for code-switching when content became difficult. Their perception that code-switching had actually helped them understand content better (*Switch_helps*; $\chi^2 = 19.80$, $p = 0.0005$) showed a similarly significant association. These findings suggest that students' attitudes toward code-switching are closely related to whether they perceive it as useful for comprehension. This is broadly consistent with earlier research showing that students' acceptance of code-switching tends to be conditional on its purpose and perceived usefulness (Nam & Gaipov, 2025).

Students who preferred English-only instruction (*English_only*; $\chi^2 = 19.81$, $p = 0.0005$) were less likely to prefer code-switching when content became difficult. This association suggests that students' broader beliefs about the appropriate place of English in EMI also relate to their attitudes toward code-switching. This is relevant to the LAP policy, insofar as it tends to keep languages separate rather than explicitly recognize their strategic use in EMI science classrooms.

Whether students had learned English at home (*At_home*; $\chi^2=10.83$, $p=0.004$) and the number of years they had studied English (*Num_year_stud_eng*; $\chi^2=13.99$, $p=0.007$) were also significantly associated with content difficulty. Students with greater exposure to English at home or more years of English study tended to report less difficulty with scientific content in English. This is consistent with earlier research identifying English proficiency as a major challenge in Moroccan secondary EMI classrooms (Ben Hammou, Bataoui, & Razzouki, 2025).

5.3 Pedagogical and policy implications

Three practical points follow from these findings. First, since students' belief that switching makes learning easier and their perception that it has helped them understand were among the variables most strongly associated with their preference for code-switching, teachers may benefit from using code-switching strategically to support students' content comprehension rather than treating it as a routine practice or something to be avoided altogether. Second, the significant association with English-only

preference suggests that policy should also consider students' beliefs about the appropriate role of English and other languages in EMI, alongside the teacher-training and institutional constraints already documented in research relevant to LAP (Ben Hammou & Kesbi, 2021b, 2023; Ben Hammou, Bataoui, & Razzouki, 2025). Third, the preference for MA over French (33.9% versus 19.6%) is relevant to teacher training, since French may not necessarily be the language students find most helpful when they do want language support.

6. Conclusion

This study examined Moroccan common core students' attitudes toward teacher code-switching in EMI science classrooms in two public high schools, as well as the factors associated with those attitudes. This is a question that previous research in Morocco had not investigated directly. The findings reveal a divided but largely conditional picture, in that fewer than half of the students preferred teachers to switch languages when content became difficult, and this preference was most strongly associated with whether students believed that switching made learning easier and had actually helped them understand. When students did prefer switching, MA was favored over French, despite the latter's longstanding association with science education and linguistic prestige in Morocco. Taken together, these findings suggest that students' attitudes toward code-switching are largely pragmatic and context-dependent rather than reducible to simple support for or opposition to multilingual language use. For teacher training and language policy, this means that code-switching may be better understood as a strategic pedagogical resource whose value depends on whether and how it supports comprehension, rather than as a practice to be either categorically encouraged or excluded. Given that the study draws on a relatively small sample of 56 students from two schools, further research across a broader range of EMI settings would be valuable in assessing the extent to which these patterns are also observed in other contexts. Complementing questionnaire data with interviews could also provide a more nuanced understanding of the reasoning underlying students' attitudes.

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References

- [1] Afkir, M., & El Habib, A. (2015). Code-switching in Morocco: Acceptances or refusals? In E. Al-Wer, C. Hadjidemetriou, B. Herin, & U. Horesh (Eds.), *Proceedings of the 8th Conference of Association Internationale de Dialectologie Arabe (AIDA), Colchester, UK, 2008* (pp. 88–94). University of Essex.
- [2] Aldaghri, A. A. (2024). Translanguaging in the Saudi EMI classroom: When university instructors talk. *English Language Teaching*, 17(1), 1–17. <https://doi.org/10.5539/elt.v17n1p1>
- [3] Belhiah, H. (2022). EMI in Morocco: Attitudes, merits, challenges, strategies, and implementation. In S. Curle, H. I. H. Ali, A. Alhassan, & S. S. Scatolini (Eds.), *English-medium instruction in higher education in the Middle East and North Africa: Policy, research and pedagogy* (pp. 147–166). Bloomsbury Academic. <https://doi.org/10.5040/9781350238572.0015>
- [4] Ben Hammou, S., Bataoui, N., & Razzouki, M. (2025). Moroccan secondary school teachers' perceptions of French-medium instruction and the potential transition to English-medium instruction. *International Journal of Multilingualism*, 22(1), 45–62.
- [5] Ben Hammou, S., & Kesbi, A. (2021a). The teaching of science subjects through foreign languages in Moroccan secondary schools: Science teachers' perceptions and experiences. *RELC Journal*, 54(3), 757–772. <https://doi.org/10.1177/00336882211035832>
- [6] Ben Hammou, S., & Kesbi, A. (2021b). Physics teachers' attitudes towards content and language integrated learning: Morocco's multilingual context. *Issues in Educational Research*, 31(4), 1029–1048.
- [7] Ben Hammou, S., & Kesbi, A. (2023). English medium instruction (EMI) in Moroccan secondary schools: Science teachers' perception. *Studies in Second Language Learning and Teaching*, 13(2), 271–292. <https://doi.org/10.14746/ssllt.38275>
- [8] Ben Hammou, S., Saissi, M., & Triha, A. (2025). University students' readiness for English-medium instruction in Morocco: Self-perceived language proficiency and attitudes. *SN Social Sciences*, 5(1), Article 83. <https://doi.org/10.1007/s43545-025-01159-w>
- [9] Bouchouk, A. (2023). Code switching in Moroccan high school classrooms. *International Journal for Multidisciplinary Research*, 5(5), 1–7.
- [10] Chakrani, B., Ziad, A., & Lachkar, A. (2025). Paradoxes of language policy in Morocco: Deconstructing the ideology of language alternation and the resurgence of French in STEM instruction. *Languages*, 10(1), 13–29. <https://doi.org/10.3390/languages10010013>
- [11] Dahman, A., & El Idrissi, Z. (2026). Arabic use in Moroccan English language classrooms: A mixed-methods study. *European Journal of English Language Teaching*, 11(3), 227–247. <https://doi.org/10.46827/ejel.v11i3.6804>
- [12] El Kirat El Allame, Y., & Laaraj, Y. (2016). Reframing language roles in Moroccan higher education: Context and implications of the advent of English. *Arab World English Journal, ASELS Annual Conference Proceedings*, 43–56.
- [13] Elfaizi, Y., & El Aouri, Z. (2025). Exploring attitudes and readiness for EMI among Moroccan upper secondary school science teachers and students: Rehamna Directorate as a case study. *Journal of English Language Teaching and Linguistics*, 10(3), 405–422. <https://doi.org/10.21462/jeltl.v10i3.1742>
- [14] Ennaji, M. (2005). *Multilingualism, cultural identity, and education in Morocco*. Springer. <https://doi.org/10.1007/0-387-23980-4>

- [15] Erling, E. J., Adinolfi, L., Hultgren, A. K., Safford, K., Tugli, F. M., Shah, S., Mukherjee, S. J., Ashour, S., Mukorera, M., & Buckler, A. (2017). *Multilingual classrooms: Opportunities and challenges for English medium instruction in low and middle income contexts*. Education Development Trust, British Council, & The Open University.
- [16] Errihani, M. (2024). *Language, power, and the economics of education in Morocco*. Springer. <https://doi.org/10.1007/978-3-031-51594-1>
- [17] Fang, F., & Liu, Y. (2020). "Using all English is not always meaningful": Stakeholders' perspectives on the use of and attitudes towards translanguaging at a Chinese university. *Lingua*, 247, 102959. <https://doi.org/10.1016/j.lingua.2020.102959>
- [18] Framework Law No. 51.17. (2019). *Loi-cadre n° 51.17 relative au système d'éducation, de formation et de recherche scientifique*. Royaume du Maroc.
- [19] Gumperz, J. J. (1982). *Discourse strategies*. Cambridge University Press.
- [20] Jia, W., Fu, X., & Pun, J. (2023). How do EMI lecturers' translanguaging perceptions translate into their practice? A multi-case study of three Chinese tertiary EMI classes. *Sustainability*, 15(6), 4895. <https://doi.org/10.3390/su15064895>
- [21] Khalid, H., El Harch, O., Boulanouar, A., & El Ouardi, N. (2024). Investigating the use of the first language in Moroccan EFL classes. *British Journal of Applied Linguistics*, 4(1), 27–35. <https://doi.org/10.32996/bjal.2024.4.1.4>
- [22] Kırkgöz, Y., & Küçük, C. (2021). Investigating translanguaging practices in an English medium higher education context in Turkey: A case of two lecturers. In B. Di Sabato & B. Hughes (Eds.), *Multilingual perspectives from Europe and beyond on language policy and practice* (pp. 135–155). Routledge.
- [23] Macaro, E. (2018). *English medium instruction: Language and content in policy and practice*. Oxford University Press.
- [24] Macaro, E., Tian, L., & Chu, L. (2020). First and second language use in English medium instruction contexts. *Language Teaching Research*, 24(3), 382–402. <https://doi.org/10.1177/1362168818783231>
- [25] Muguruza, B., Cenoz, J., & Gorter, D. (2020). Implementing translanguaging pedagogies in an English medium instruction course. *International Journal of Multilingualism*, 20(2), 540–555. <https://doi.org/10.1080/14790718.2020.1822848>
- [26] Nam, E., & Gaipov, D. (2025). Студенттердің English Medium Instructions контекстінде мұғалімдердің кодтарын ауыстыруды қабылдауы [Students' perception of teachers' code-switching in the English Medium Instruction context]. *SDU Bulletin: Pedagogy and Teaching Methods*, 2025(2), 96–98.
- [27] Otheguy, R., García, O., & Reid, W. (2015). Clarifying translanguaging and deconstructing named languages: A perspective from linguistics. *Applied Linguistics Review*, 6(3), 281–307. <https://doi.org/10.1515/applirev-2015-0014>
- [28] Pham, M., Tran, K., & Barnett, J. (2026). L1 use in EMI in Southeast Asia: A scoping review. *Higher Education*, 91(6), 1681–1698. <https://doi.org/10.1007/s10734-025-01159-z>
- [29] Pun, J. K. H., Fu, X., & Cheung, K. K. C. (2024). Language challenges and coping strategies in English medium instruction (EMI) science classrooms: A critical review of literature. *Studies in Science Education*, 60(1), 121–152. <https://doi.org/10.1080/03057267.2023.2188704>
- [30] R'boul, H., Belhiah, H., & Elhaffari, A. (2024). EMI in Moroccan high schools: Multilingualism or multiple monolingualisms, ambivalent linguistic identities, and language use. *Language and Education*, 38(1), 23–41. <https://doi.org/10.1080/09500782.2023.2244910>
- [31] Rahman, M. M., & Singh, M. K. M. (2022). English medium university STEM teachers' and students' ideologies in constructing content knowledge through translanguaging. *International Journal of Bilingual Education and Bilingualism*, 25(7), 2435–2453. <https://doi.org/10.1080/13670050.2021.1915950>
- [32] Ramila, A., & Benmhamed, M. (2024). The impact of code switching on Moroccan EFL teachers' language proficiency. *International Journal of Linguistics, Literature and Translation*, 7(7), 101–115.
- [33] Razkane, H., Benzehaf, B., & Ben Hammou, S. (2025). Translanguaging in Moroccan secondary school science classrooms. *Linguistics and Education*, 86, 101395. <https://doi.org/10.1016/j.linged.2025.101395>
- [34] Sayeh, A. Y., & Razkane, H. (2022). Historical accounts of the development of the multilingual situation in Morocco: Contrasting monolingual to translanguaging approaches to education. *SN Social Sciences*, 2, Article 65. <https://doi.org/10.1007/s43545-022-00362-3>
- [35] Serna-Bermejo, I., & Lasagabaster, D. (2024). Translanguaging in Basque and English: Practices and attitudes of university teachers and students. *International Journal of Multilingualism*, 21(2), 763–782. <https://doi.org/10.1080/14790718.2022.2086984>
- [36] Slimani, N., & Iguider, J. (2024). An investigation of Moroccan youth's code-switching to English: High school students as a case study. *International Journal of Social Science and Human Research*, 7(7), 5413–5421. <https://doi.org/10.47191/ijsshr/v7-i07-90>
- [37] Strategic Vision. (2015). *Vision stratégique de la réforme 2015–2030: Pour une école de l'équité, de la qualité et de la promotion*. Conseil Supérieur de l'Éducation, de la Formation et de la Recherche Scientifique.
- [38] Susilowaty, A., & Rosa, P. S. (2024). Code-switching in a university EMI classroom: Patterns and implications. *EEJ (English Education Journal)*, 12(2), 162–166.
- [39] Teklesellassie, Y., & Boersma, E. (2018). Attitudes towards code-switching in an English-medium content classroom. *PASAA*, 55, 57–78.
- [40] Zhang, M., & Ament, J. R. (2025). Students' perspectives and attitudes toward EMI: A comparative study of Spanish and Chinese undergraduates. *AILA Review*, 38(2), 161–187. <https://doi.org/10.1075/ailar.24047.ame>
- [41] Zhang, X., Lütge, C., & Zou, L. (2021). Investigating international students' attitudes toward local teachers' L1 use and learning practices in English-medium instruction in Germany: A Chinese case study. *Journal of Multilingual and Multicultural Development*, 1–15. <https://doi.org/10.1080/01434632.2021.1986053>