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Teacher questions: A comparative analysis between English-medium and Basque-medium lessons at university

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Abstract

In this article we present a comparative study in which we analyzed teacher questions in two different languages of instruction, namely, English-medium instruction (EMI) and Basque-medium instruction (BMI) classes at university. For this purpose, we videotaped and analyzed two teachers who delivered 29 lessons forming a corpus of 39 h of recording. The tool used for classroom observations and for the analysis was the Communicative Orientation of Language Teaching observation scheme, which was then followed by statistical analyses. Results revealed that the language of instruction did not exert an influence on questioning practices, since there were no significant differences between EMI and BMI lessons. However, results revealed teachers and their teaching style as an influential variable when it came to questioning. In both languages the most utilized types of questions were Display Questions, followed by Convergent Referential Questions, which indicated that lower-order questions predominated over higher-order questions. As for pedagogical implications, we highlight the need for teacher training so that lecturers become aware of the importance of promoting interaction in the classroom through questions, as well as the positive impact of asking higher-order questions that entail a cognitive challenge for the students.

Resumen

En este artículo se presenta un estudio comparativo en el que se analizan las preguntas realizadas por parte de profesorado universitario en clases impartidas en inglés (EMI) y en clases impartidas en euskera (BMI). Para ello, grabamos y analizamos el discurso de dos docentes que impartieron 29 clases que conformaban un corpus total de 39 horas de grabación. La herramienta utilizada para las observaciones en el aula y para su posterior análisis fue el esquema de observación COLT, sustentado por los análisis estadísticos pertinentes. Los resultados revelaron que el idioma de instrucción no parece influir en las preguntas realizadas por el profesorado, ya que no se encontraron diferencias significativas entre las clases EMI y BMI. Sin embargo, los resultados mostraron que el docente, y más concretamente su estilo de enseñanza, resultó ser una variable influyente en relación con las preguntas que se plantean durante la clase. El tipo de preguntas más utilizadas, en ambas lenguas, fueron las llamadas preguntas "display", seguidas de las preguntas referenciales convergentes. Estos resultados indican que las preguntas de orden inferior predominaron sobre las de orden superior. En cuanto a las implicaciones pedagógicas, se observa la necesidad de formación docente para que el profesorado tome conciencia de la importancia de promover la interacción en el aula a través de preguntas, así como del impacto positivo que conlleva plantear preguntas de orden superior que supongan un reto cognitivo para el alumnado.

PALABRAS CLAVE
preguntas, interacción, instrucción en inglés, instrucción en euskera, educación superior

1 | INTRODUCTION

The importance of interaction for the learning process to happen has been widely analyzed and demonstrated in the literature over the last decades (An & Thomas, 2021; Lasagabaster & Doiz, 2022; Mercer & Littleton, 2007; Simpson

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et al., 2010; Slavin, 1996; Wegerif et al., 2019). For all the aforementioned authors, interaction plays a key role in the learning process, to the extent that they agree on the fact that the lack of interaction would make it very difficult for students to learn. As Wegerif et al. (2019, p. 1) point out, the international interest in the role of dialogue in education is on the increase because the effectiveness of teaching "depends to a great extent on how well teachers and students use talk to communicate."

Interaction may be hampered when an L2 is used as a means of instruction (MOI), a key issue at a time when English-medium instruction (EMI) courses are mushrooming in universities around the globe (Lasagabaster, 2022; Dafouz & Smit, 2020; Macaro, 2018). In EMI classes the teacher may help to scaffold students' learning by asking questions that foster interaction, as students may find it especially challenging to understand complex content delivered in English and teachers can contribute to decreasing the difficulty by posing the right questions. In this study we intend to focus not only on EMI but also on Basque-medium instruction (BMI, the minority language spoken in the Basque Autonomous Community in Spain), because the comparison of the use of both a foreign language (English as an L3 in the context under scrutiny) and an L2 (Basque as co-official language) to deliver content will enable us to conclude whether the language of instruction or the teachers' teaching style is the more influential factor when it comes to asking questions in classroom interaction. Since questions are one of the most effective linguistic devices to make students interact (Chang, 2012; Lllinares & Peña, 2015), the analysis of the impact of the language of instruction is thus well worth delving into. With this in mind, we will now focus on the roles to be played by questions.

One of the aspects in teachers' speech that most affects the interaction with students is the presence or lack of questions. Questioning in the classroom context has proved useful for different reasons (Mujis & Reynolds, 2001):

1. It is useful for the teacher to check students' understanding of the lesson and to see if they follow the explanation.
2. It helps students to practice and ensure that they understand a topic before starting with the next one, which also may help strengthen students' self-esteem.
3. Questions promote learning through, the previously mentioned, "scaffolding."
4. Questions also help students in verbalizing their thinking and, therefore, clarifying their minds.

An aspect that we should take into account about questioning is the cognitive level of questions, that is, the difficulty of the question, because it has a direct impact on classroom interaction: simple questions usually do not foster interaction as they require short and unchallenging answers, whereas more complex questions demand a higher cognitive effort on the part of students and tend to boost interaction to a much greater degree. If a question requires sophisticated thinking skills (Mujis & Reynolds, 2001; Wegerif et al., 2019) to provide an answer, we are talking about *higher-level*, *also called*, *higher-order questions*. On the contrary, if questions require more basic thinking, like remembering a name or the application of some rules, for example, these are *lower-level* or *lower-order questions*. Higher-order questions are more difficult to answer than lower-order questions, so they must be used to promote students' thinking and to challenge them: "Research has shown that effective teachers use more higher-level questions than less effective teachers, although the majority of questions used are still lower level" (Mujis & Reynolds, 2001, p. 20). Besides, it has also been shown by different research studies (Redfield & Rousseau, 1981) that higher-order questions are related to greater student achievement.

The need to boost interaction brings us to another distinction: *open questions* and *closed questions*. Open questions have indefinite answers (e.g., "What makes your city so special?"), while closed questions have one closed answer (e.g., "Who invented the lightbulb?"). In this case also "effective teachers have been found to ask more open questions than less effective teachers, although a large proportion of questions used by effective teachers are still closed questions" (Mujis & Reynolds, 2001, p. 20). This is the reason why authors such as Mercer and Howe (2012) and Doiz and Lasagabaster (2023) conclude that there is a need to find a balance between open and closed questions. Furthermore, in some cases not using higher-order questions and open questions at all can be detrimental for students' learning, as they are not required to make a cognitive effort (Lasagabaster & Doiz, 2022).

Moving on with classroom interaction and the importance of questioning as a strategy to promote students' participation, we must mention one of the greatest problems that may hinder interaction, namely, students' unwillingness to answer the questions posed by the teacher. An important aspect that must be taken into account is that if the general tone of a class is that the teacher interacts with the students asking questions and expecting answers, students will get used to it.

That is, when questioning becomes a habitual practice in class, students get used to participating and they understand that this is what is expected from them. The classroom atmosphere and the behavior of teachers and students also play a very important role in this matter: "A non-evaluative, positive atmosphere is important as well. Students are more likely to get involved if they feel that a wrong response will not elicit criticism or ridicule from the teacher (or fellow students)" (Mujis & Reynolds, 2001, p. 19). We refer to a non-evaluative atmosphere when teachers want to promote participation and interaction rather than only conduct an evaluation or an exam. Thus, teachers' performance becomes crucial when it comes to creating a good atmosphere where students feel confident to participate.

Another issue that must be taken into account when promoting interaction is to guarantee the participation of all the students. In the classroom context, we could find students with very different personalities, so there will be some extroverted students which may be more willing to participate, and there will be shyer students who probably will not be that willing. Students' personalities are not likely to change, as it is very unlikely that shy students will start raising their hands to ask questions or volunteer to answer them. However, there are some strategies that help to ensure all the students' participation. It seems very helpful to ask the question to a specific student each time, instead of throwing the question in the air, even though this is also recommended in other situations (e.g., to foster voluntary participation).

Teachers should not only seek interaction but they should look for quality interaction. Macaro (2018, pp. 196–197), in his definition of the five main aspects that constitute *quality interaction*, also takes into account the question types used by teachers, among other issues:

1. Extended Initiation, Response, Feedback (I-R-F) sequences instead of rigid ones.
2. A wide variety of teacher language functions instead of limited language functions.
3. Teacher question types that require high-level cognitive responses, rather than low-level demonstrations of knowledge already shared.
4. Long student turns instead of short ones to allow the student to express higher-level concepts.
5. Sufficient wait time to allow the thinking processes to occur prior to, during, and after the student turn.

These would be the five aspects to be borne in mind by teachers if they want to ensure a quality interaction and also by researchers who want to analyze classroom interaction. Therefore, apart from other aspects, Macaro (2018) considers the use of questions that require high-level cognitive responses from students and long student turns crucial in classroom interaction. The fifth point refers to wait time, which is, indeed, another aspect we will take into account in this study.

Last but not least, Macaro (2018) specifies that in EMI lessons there exists the peculiarity that English is the MOI, which is not students' and in most of the cases teachers' first language (L1). Thus, in EMI interaction the language chosen by teachers and students must also be taken into account, as well as the amount and kind of translanguaging. Hence, we strongly believe that a sixth point should be added to the list mentioned above regarding language choice and translanguaging in EMI lessons.

1.1 | Types of questions analysed in this study

Within the dichotomies between *higher-order questions* and *lower-order questions*, and *open questions* and *closed questions*, we also find more detailed classifications of questions. There can be found myriad classifications of questions in the literature, but for this study, we have designed our own classification taking as reference some previous

studies (Athanasiadou, 1991; Dafouz & Sánchez-García, 2013; Maíz-Arévalo, 2017; Sánchez-García, 2010). The question classification used in this study consists of the following categories:

a. *Rhetorical Questions* (Sánchez-García, 2010) are those questions to which no answer is expected. Sometimes the objective of these questions is to make the audience reflect on some topic (e.g., "Yes, we are going to do it like this, why not?").
b. *Self-answered Questions* (Sánchez-García, 2010) are those questions that are answered by the speakers themselves (e.g., "And what happens when we heat the ice? That it melts.").
c. *Display Questions*, whose answer is already known by the teacher and it is used to see how much the students actually know. These type of questions usually follow the I–R–F (Initiation-Response-Feedback) structure (Maíz-Arévalo, 2017), which is very common in classrooms (Sinclair & Coulthard, 1975) and it consists of a question launched by the teacher, or a communicative act started by the teacher, which demands student response or participation and ends with teachert's feedback:

> T:…this happened in the capital of Turkey, which is…?
> S: Ankara.
> T: Right, Ankara. It happened in Ankara in the year 1980.

When the interaction happens more extensively it can take place following the I–R–F–R–F structure:

> T:…this happened in the capital of Turkey, which is…?
> S: Ankara.
> T:Right, Ankara. It happened in Ankara in the year…?
> S: 1980.
> T: 1980 very well.

Or it can follow an I + R (I + R) + F structure (Varonis & Gass, 1985) where the (I + R) would correspond to negotiation of meaning:

> T:…this happened in the capital of Turkey, which is…?
> S:Turkey is the country next to Syria, right?
> T: Yes it is.
> S: Ok, Ankara then.
> T: Ankara, that's right.

The I–R–F sequence is an interaction scheme that is usually found in the classroom context. These I–R–F sequences promote, in some way, interaction as they create a micro-dialogue, but these are very structured and usually short interactions. However, as reported by some researchers (Nikula, 2007) comparing English as a foreign language (EFL) and content and language integrated learning (CLIL) lessons, it can be concluded that in CLIL I–R–F sequences promote longer interventions being these ones less tight than in EFL lessons. In any case, an overuse of I–R–F sequences could be detrimental for classroom interaction, but as Llinares et al. (2012) explain, the cause is not that much the model, but the roles participants acquire, as in this kind of interactions a hierarchical view of the class is reinforced, where the teacher maintains the role of the highest authority. This conception can lead to a teacher-centered dynamic, where the teacher exposes the subject and the students acquire the role of listeners, participating briefly when asked. However, when the dynamics change, for example, when students work in groups, the roles also change; in that case, students would be the only participants in those I–R–F sequences generating their own questions and ideas (Llinares & Morton, 2012).

d. *Referential Questions* are those whose answer (Sánchez-García, 2010) is not known by the teacher, thus, these are genuine questions. These questions promote, especially, the interaction between teachers and students (Maíz-Arévalo, 2017) as they require more "real" answers because the questioner does not really know the answer and she or he is not just pretending it.

Within Referential Questions, another distinction between *Divergent Referential Questions and Convergent Referential Questions* is usually established.

– In *Divergent Referential Questions*, the questioner, the teacher in this case, does not know the answer for the question and thus asks students an open question providing the opportunity to give a creative answer while developing their critical thinking (e.g., "What do you think about the new attendance rules?").

– In *Convergent Referential Questions*, the answer is also unknown for the teachers, but in this case, they ask students a closed question which does not give them the opportunity to develop a creative answer (e.g., "Which days do you have literature lectures?").

e. *Confirmation Checks* (Sánchez-García, 2010), are the questions made by teachers to verify that students are understanding the explanation (e.g., "Did you understand?", "Understood?", "Any doubt?"). They are also used when the speaker looks for the confirmation of a previous statement ("The Industrial Revolution started in 1760, right?"). These types of questions can be easily recognized as they correspond to formulaic expressions in each language ("(…), OK?", "(…), Right?").

f. *Clarification Requests* (Maíz-Arévalo, 2017) are used, as the name itself suggests, to clarify something that has not been understood by the listener due to external circumstances like a noise, being far from the speaker, etc. (e.g., "What? I didn't hear what you said, could you repeat it please?").

g. *Indirect Questions* (Dafouz & Sánchez-García, 2013) are those questions that are part of the discourse and do not expect a response, but rather aim to exemplify a situation. These types of questions are common when the teacher "pretends", for example, to be another person (e.g., the teacher pretends to be the owner of a business and talks in her or his name: "Should I close the business? Should I hire more employees?").

h. *Repetition Questions* (Dafouz & Sánchez-García, 2013) repeat the last word, utterance, or idea expressed by the last speaker (e.g., Student: Increase. Teacher: Increase?).

i. *Retrospective Questions* (Dafouz & Sánchez-García, 2013), are those which go back in time to make the listeners revise something already seen in previous lessons (e.g., "Remember when we saw the Industrial Revolution?")

j. *Indirect Requests* (Athanasiadou, 1991) imply the request of some action from the interlocutor(s) (e.g., "Can you open the window please?"). In these kinds of questions what really matters is not the answer, but the execution of the action.

1.2 | The study of questions in EMI settings

We have seen that some kinds of questions are stronger promoters of interaction due to their nature. Referential Questions, for example, constitute a more real communicative act and, therefore, promote greater interaction than the Display Questions, which seek more closed answers.

However, in a qualitative study conducted by Dalton-Puffer (2007), the results concluded that students prefer short and single noun-phrase answers regardless of the type of questions asked by the teacher. In any case, although students have their preferences, some types of questions make it easier for them to give short answers than others. For example, the question "What day is it today?" (Convergent Referential Question) does not require an extensive answer. However, the question "What do you think about the latest measures taken by the government to prevent the spread of coronavirus?" (Divergent Referential Question) makes it harder for students to provide a short answer, even though this is their preference.

This is related to another factor defined by Dalton-Puffer (2006), which is the information the teacher wants to obtain by asking the question; facts, explanations, opinions, etc., as her research results, coinciding with Peñas' (2010) findings, showed that the majority of the questions (63%–88%) asked by teachers look for facts. Thus, this would reinforce students' tendency for short answers.

In Peñas' (2010) study, two CLIL subjects were compared. In the first one, the teacher was both the EFL and CLIL teacher, whereas in the second one the teacher was just a CLIL teacher. Against the hypothesis put forward by the researcher, the teacher who taught CLIL exclusively showed more awareness about the importance of looking for a complex output from the students by asking a greater variety of question types than the teacher who was both EFL and CLIL teacher.

In Spain, Dafouz and Sánchez-García (2013) compared three EMI lecturers' use of questions in three different universities and disciplines. Results revealed that in the three cases the most used types of questions were Confirmation Checks, followed by Self-Answered Questions and Display Questions. The authors explain that more similarities than differences were found regarding teacher questions when comparing all the three teachers and their disciplines, implying that "lectures in an educational setting seem to transcend the academic disciplinary culture and exhibit certain uniformity or what we have called a common macro-structure" (p. 144). In a similar context, Maíz-Arévalo (2017) analyzed whether the frequency and type of questions are affected by the language of instruction, English and Spanish. The participants were university students from the Economics and Finance degree in Spain, and their Financial Accounting teacher who taught both in the EMI and the Spanish-medium instruction (SMI) group. Results showed that, against what was previously hypothesized, the frequency of questions depending on the language of instruction did not vary significantly, although it was slightly higher in English. However, the type of questions did vary from one language to the other, Rhetorical Questions and Comprehension Checks being more frequent in SMI lessons, while Display Questions, Referential Questions, and Clarification Requests were more frequent in EMI lessons. Nevertheless, the study did not end with a clear conclusion regarding interaction, since the frequency of students' participation was not measured. Nevertheless, it could be concluded that in the lessons where more questions were asked, the interaction turned out to be more intense. However, this would not be precise, since not all the question types promoted interaction in the same way, apart from other variables that could also impinge on the degree of interaction, like students' involvement or the duration or length of the students' interventions.

These results differ from the ones obtained by Sánchez-García (2018) who carried out a contrastive study analyzing the use of Spanish lecturers' questions in EMI and SMI in the Business Administration degree. The author concluded that there was no direct correlation between teacher questioning and interaction because several times these went unanswered. The factors proposed to explain that lack of interaction varies from students not knowing the answer to teachers (unconsciously) making it difficult for students to give an answer by not providing enough wait time or making close-ended questions instead of open-ended questions, which would allow students to extend their discourse. Furthermore, findings revealed no significant differences when comparing EMI and SMI courses regarding the interaction derived from lecturers' questions. Therefore, in this case, it seemed that lecturers' teaching style and idiosyncrasy were more influential factors than the language of instruction.

Hu and Duan (2019) carried out a cross-disciplinary study at a Chinese university to see the effects instructional medium and disciplinary background may have on teacher questions and student responses. Results showed that most teacher questions and student answers were cognitively simple, or lower-order questions. Concretely, the majority were Display and Comprehension Questions. Besides, the researchers found that the MOI did not have a significant influence on the questioning incidence, or on the cognitive complexity of teachers' questions. These results coincide with the ones obtained by Hu and Li (2017) who conducted similar research at two Chinese universities. The statistical analysis also revealed that the majority of the questions used by the teachers were lower-order questions, also predominated by Display and Comprehension Questions. In Turkey, Genc and Yuksel (2021) also found that EMI lecturers predominantly used text-based, Display and Convergent Questions, which ended in limited classroom interaction and participation. All the aforementioned studies compared EMI and majority language MI (Spanish or Chinese) classes,

whereas we intend to make the comparison between English and a minority language, Basque, which was the L2 for many of the participants in our study, while English represented the L3 for all of them. To our knowledge, no previous study has carried out such a comparison between L2MI and L3MI and our study will allow us to analyze whether questioning practices differ when an L2 or an L3 is used as MOI. In other words, this study will allow us to examine whether the language of instruction affects teachers' questions or whether teaching style is more influential than the language used to deliver content.

1.3 | Wait time

Another aspect related to teacher–student interaction and also with the kinds of questions asked by teachers is what is known as *wait time*. Wait time refers to the amount of time teachers give to students to answer a question. Giving enough time for students to answer a question seems crucial to promote interaction (Lasagabaster & Doiz, 2022). There could be a lack of wait time when teachers do not leave any time (or not enough) for students to answer and instead they start talking right after asking a question. Nevertheless, leaving enough time does not ensure obtaining an answer from students.

There are studies analyzing the effects of wait time, like the one conducted by Tobin (1980), whose results showed that giving more than 3 s of wait time reduced teacher talk, increased students' responses and questions, and reduced teachers' interjections on students' talking. In the studies conducted by Gooding and Swift (1982) and Trussell et al. (2016), results also showed that an appropriate wait time had direct positive results on students' interaction and participation. Other benefits that have been attributed to an adequate wait time are, for example, longer participations by students or a decrease in incorrect answers (Bysen & Bysen, 2010) and the reduction of problem behaviors for attention (Trussell et al., 2016).

Although this may seem a simple matter at first sight, it is not and the teacher must find the balance between leaving enough wait time for students to think and answer, but also avoiding creating an uncomfortable silence. Mujis and Reynolds (2001) propose specific amounts of wait time depending on the type of question. When it is a *low-order* and *closed* question, they believe 3 s to be the optimal wait time. For *higher-order* and *open* questions, they suggest providing a longer wait time, up to 15 s.

Therefore, the wait time can influence directly the students' interaction and it is an aspect teachers should be aware of to improve it if necessary or, at least, to remind of its importance. Farrell (2015), for example, asked teachers (among other aspects) for their wait time to make them reflect on it.

The wait time can vary depending on many different aspects like the academic subject, teacher's personality, context, and many other circumstances, but in this study we want to examine if it is equal in BMI and EMI and whether the MOI has any impact on teachers' classroom practices concerning wait time.

2 | AIMS OF THE STUDY

Our objective was to analyze and compare questioning in BMI (a co-official L2 in the context under scrutiny) and EMI (an L3 that is the hegemonic foreign language) subjects at university level. In this section we want to specify the concrete aspects we will pay attention to: (i) First of all, we will analyze questioning from a quantitative perspective. That is, how many questions are asked by the teacher during the lesson, (ii) followed by what kinds of questions, and (iii) the ratio of each kind of question. Then, (iv) we will also pay attention to *who* the receiver of the question is, since the question can be addressed to the whole class (in this case any student can answer it) or to a specific student or a specific group of students.

Last, (v) another aspect we will pay attention to is wait time. In this respect, we will calculate how much time is left by the teacher for the students to answer a question. This simple action of leaving more or less time to answer a

question can influence in a significant way the dynamic of the lesson, creating an atmosphere where interactions are promoted or quite the opposite. The consideration of the five aforementioned aspects will allow us to carry out an in-depth analysis of teachers' questioning practices and will therefore pave the way to reach more robust conclusions.

Our main research question is therefore the following: Does the language of instruction (Basque or English) affect the questions asked by the teacher?

This main research question led us to three sub-research questions:

RQ1 How many questions are asked by teachers in BMI and EMI?
RQ2 What kinds of questions are asked in BMI and EMI?
RQ3 How much wait time is provided in BMI and EMI?

3 | PARTICIPANTS

Two teachers from the Faculty of Economics and Business participated in this study. Both teachers taught their subjects in a BMI group and an EMI group. These two teachers were selected because it is very unusual to have the same teacher delivering the same subject in both languages, and both teachers met this condition. Teacher A taught Economic History and had been teaching at the university for 10 years, two of them as an EMI teacher. Teacher B taught Business Economics: Organization and Management and had been a university teacher for 14 years and this was his first year in EMI. In relation to languages, Teacher A was accredited to teach in Basque, Spanish, English, and French, while Teacher B was certified to teach in Basque, Spanish, and English. Both lecturers' L1 differed as Teacher A's L1 was Basque, although he was also proficient in Spanish, and Teacher B's mother tongue was Spanish even though he was very fluent in Basque. Thus, in BMI lessons, Teacher A lectured in his L1 and Teacher B in his L2, and in EMI, both lecturers taught in their FL (English), which was their L3.

4 | PROCEDURE AND DATA COLLECTION INSTRUMENTS

We attended and recorded 29 lessons, which made a total of 39 h. Then, we used a tool based on the Communicative Orientation of Language Teaching (COLT) observation scheme (Spada & Fröhlich, 1995) to analyze the videotapes. The tool COLT was created for observing and analyzing the L2 teaching and learning.

This scheme serves as a guide to describe the general events that occur during the lessons and classify them as activities "typically marked by a change in the overall theme or content" and episodes "characterized by any teaching/learning behavior that is approximately a minute or longer" (Spada & Fröhlich, 1995, p. 30). This tool also helps register the oral interactions that take place during the lesson. In this study, we used an adapted version of the observation scheme COLT since we altered some categories, added new categories, and dismissed some sections from the original one. Nevertheless, the bulk of the original instrument remained in the final version. One of the modifications we made in our scheme was the incorporation of the sections "Question Types" and "Wait Time," since they were not in the original scheme as it was not the aim of the authors to delve into questioning. However, it was very helpful for us to include the observation and classification of questioning in this scheme, because, this way, we did not have to work with different schemes at the same time, and because it facilitated looking at a variety of aspects at the same time.

The coding process consisted in identifying all questions, that is, those instances in which the syntactic pattern and/or the utterance's intonation was that of a question. Once this was done, each question was categorized into one of the categories under scrutiny. The same process was used in English and Basque. The main difficulty was found when determining whether some questions were Display Questions (when the teacher knows the answer) or

TABLE 1 Percentages of the types of questions asked by Teacher A and Teacher B both in Basque-medium instruction and English-medium instruction.

Question type	%
Display Questions	55
Convergent Referential Questions	13
Self-Answered Questions	8
Confirmation Checks	9
Divergent Referential Questions	4
Clarification Request	4
Rhetorical Questions	4
Indirect Questions	3
Repetitions	1
Indirect Requests	0
Retrospective Questions	0

Self-Answered Questions (those immediately answered by the teacher). We decided to focus on whether students were given a chance to reply or not, that is, whether teachers gave students enough wait time. If the teacher answered his own question immediately after he asked it without allowing any wait time, the question was categorized as Self-Answered.

Once we had all the data classified, our next step was to calculate the data per hour, to create a homogeneous sample. Then, the Kolmogorov–Smirnov test showed that our data did not follow a normal distribution, and therefore, Mann–Whitney nonparametric tests were carried out.

5 | RESULTS

In the analysis of the discourse of 29 lectures involving 39 h of teaching practice, a total number of 1451 questions were identified. In Table 1 we can see the distribution of the different kinds of questions asked by the teachers.

The most habitual question types were Display Questions (55%), followed by Convergent Referential Questions (13%). The remaining types of questions had a lower incidence: Self-Answered Questions (8%), Confirmation Checks (9%), Divergent Referential Questions (4%), Clarification Request (4%), Rhetorical Questions (4%), Indirect Questions (3%), Repetitions (1%), Indirect Requests (0%), and, Retrospective Questions (0%).

5.1 | Questioning: Teacher A versus Teacher B

Table 2 reveals that Teacher A asked significantly ($p = 0.000^{**}$) more questions (50.96 per hour) than teacher B (11.12). These results were a clear reflection of the difference in these teachers' teaching styles. The difference between pedagogic styles was also very clear when we looked into the amount of questions asked by each of them, and directly related not only to the promotion of interaction but also to the kind of questions more recurrently used by each teacher.

Teacher A's most used type of questions were Display Questions (61%), which are promoters of interaction, whilst Teacher B's most recurrent type of questions were Self-Answered Questions (52%), which do not involve any kind of interaction.

TABLE 2 Questioning: Number of questions per hour and significant differences.

Number of questions per hour												
	Rhet	Self-Answ	Disp	Conv	Diver	Clari	Confir	Indi R	Indi Q	Repe	Retros	Total
Teacher A (BMI + EMI)	1.94	1.15	31.24	6.94	2.44	2.35	3.73	0.28	0.41	0.35	0.09	50.96
Teacher B (BMI + EMI)	0.12	5.18	0.06	0.36	0.00	0.12	2.21	0.00	1.79	0.06	0.00	11.12
Significance	0.002**	0.004**	0.000**	0.000**	0.007**	0.000**	0.205	0.036*	0.060	0.076	0.261	0.000**

Abbreviations: Clari, Clarification Request; Confir, Confirmation Checks; Conv, Convergent Referential Questions; Disp, Display Questions; Diver, Divergent Referential Questions; Indi Q, Indirect Questions; Indi R, Indirect Requests; Repe, Repetitions; Retros, Retrospective Questions; Rhet, Rhetorical Questions; Self-Answ, Self-Answered Questions.
*$p < 0.05$; **$p < 0.01$.

5.2 | Questioning: BMI versus EMI

As mentioned above, our main research question was the following: Does the language of instruction (Basque or English) affect the questions asked by the teacher?

The language of instruction (Basque or English) did not affect the questions asked by the teacher. Table 3 shows that there was no statistically significant difference between BMI and EMI regarding the questions asked in these lessons. When we compared BMI and EMI lessons, taking into account both Teacher At's and Teacher Bt's lessons, none of the question types showed a significant difference.

In this part of the results section, we will answer both RQ1 (How many questions are asked by teachers in BMI and EMI?) and RQ2 (What kinds of questions are asked in BMI and EMI?).

Let us examine these results more in detail. The majority of Teacher At's questions were Display Questions both in BMI (68%) and EMI (54%), followed by Convergent Referential Questions (12% BMI and 16% EMI). The majority of Teacher Bt's questions were Self-Answered Questions both in BMI (57%) and EMI (45%), followed by Indirect Questions (19%) in BMI and Confirmation Checks (32%) in EMI. Table 4 shows that the difference in the use of Confirmation Checks ($p = 0.229$) and Indirect Questions ($p = 1.000$) by Teacher B in BMI and EMI was not statistically significant.

We will now focus on RQ3 (How much wait time is provided in BMI and EMI?).

Finally, regarding wait time, that is, the time teachers wait for the students to answer a question before starting their speech again, both teachers provided a wait time that was in line with the optimal one. Some scholars (Mujis & Reynolds, 2001; Tobin, 1980) establish an ideal wait time of around 3 s or more. We found a mean time of 3.55 s in Teacher At's BMI lessons and a mean time of 3.38 s in EMI. In the case of Teacher B, a mean time of 4.5 s was found in BMI lessons and a mean time of 3.22 s in EMI lessons.

6 | DISCUSSION

The language of instruction did not seem to be a significant factor regarding questioning. Results showed no differences regarding the type of questions used, or the number of questions asked in BMI and EMI. These findings are significant because they allow us to assert that the language of instruction (whether it be a co-official L2 or an international L3) is less influential in teachers' questioning practices than their teaching style. Thus, teachers constituted a more influential factor than the MOI. Teacher A asked significantly more questions than Teacher B, and the type of questions asked by each teacher also differed. The types of questions most used by Teacher A were Display Questions which are considered great promoters of interaction. On the contrary, Self-Answered questions were the type of

TABLE 3 Percentages of the types of questions asked by Teachers A and B in Basque-medium instruction and English-medium instruction.

	Rhet (%)	Self-Answ (%)	Disp (%)	Conv (%)	Diver (%)	Clari (%)	Confir (%)	Indi R (%)	Indi Q (%)	Repe (%)	Retros (%)
Teacher A BMI	4	1	68	12	2	4	7	0	0	1	0
Teacher A EMI	3	3	54	16	8	8	5	1	1	1	0
Teacher B BMI	0	57	1	5	0	2	17	0	19	0	0
Teacher B EMI	3	45	0	2	0	0	32	0	17	2	0

Abbreviations: Clari, Clarification Request; Confir, Confirmation Checks; Conv, Convergent Referential Questions; Disp, Display Questions; Diver, Divergent Referential Questions; Indi Q, Indirect Questions; Indi R, Indirect Requests; Repe, Repetitions; Retros, Retrospective Questions; Rhet, Rhetorical questions; Self-Answ, Self-Answered questions.

TABLE 4 Questioning: Teacher A versus Teacher B and Basque-medium instruction versus English-medium instruction (questions per hour and significance).

Number of questions per hour

						Question types					
	Rhet	Self-Answ	Disp	Conv	Diver	Clari	Confir	Indi R	Indi Q	Repe	Retros	Total
Teacher A in BMI	3.14	0.95	47.81	8.29	1.43	3.05	5.04	0.19	0.19	0.48	0.10	70.67
Teacher A in EMI	1.18	1.27	20.70	6.09	3.09	1.90	2.88	0.33	0.55	0.27	0.09	38.36
Teacher B in BMI	0.00	6.50	0.11	0.56	0.00	0.22	1.94	0.00	2.17	0.00	0.00	13.72
Teacher B in EMI	0.27	3.60	0.00	0.13	0.00	0.00	2.53	0.00	1.33	0.13	0.00	8.00
Significance (*p < 0.05; **p < 0.01) (no statistically significant difference was found)											
Teacher A in BMI vs. Teacher A in EMI	0.128	0.627	0.063	0.171	0.498	0.645	0.254	0.587	0.494	0.324	0.804	0.094
Teacher B in BMI vs. Teacher B in EMI	0.273	0.583	0.361	0.560	1.000	0.361	0.229	1.000	1.000	0.273	1.000	0.269

Abbreviations: Clari, Clarification Request; Confir, Confirmation Checks; Conv, Convergent Referential Questions; Disp, Display Questions; Diver, Divergent Referential Questions; Indi Q, Indirect Questions; Indi R, Indirect Requests; Repe, Repetitions; Retros, Retrospective Questions; Rhet, Rhetorical Questions; Self-Answ, Self-Answered Questions.

questions most used by Teacher B, and they did not entail any kind of interaction. Hence, teachers' teaching style seemed to be of higher influence rather than the language of instruction.

These results differ from the ones presented by Sánchez-García (2016), where questions were more frequently deployed in EMI than in SMI. The researcher concluded that teachers felt a greater need to carry out Confirmation Checks to verify that students were following the lesson in EMI since it was not their L1, and therefore, they might have more difficulties than in SMI. That is, teachers could use more questions in EMI as a "compensatory strategy" to cope with the difficulties students may encounter due to their lack of competence in the language (Dafouz & Sánchez-García, 2013). This was not the case in our research, where we delved into subjects taught in English, which was students' FL, and subjects taught in Basque, which was in some cases students' L1 and in others their L2. This last situation might have caused that, unlike in the research mentioned above, teachers considered it necessary to verify students understanding in both BMI and EMI classes, the former being an L2 for many students. This may be the reason why we did not find differences regarding questions when we compared BMI and EMI.

However, having examined our results, it is worth mentioning that the outstanding lack of questions (except for Rhetorical Questions, Indirect Requests, or Self-Answered Questions—all of which do not promote interaction), as was the case for example with Teacher B in our study, seemed to be a determining factor when it came to the little amount of interaction found in the lectures studied (Dafouz & Sánchez-García, 2013; Sánchez-García, 2010).

Moreover, lower-order questions predominated in the case of Teacher B's lessons both in BMI and EMI. As we have mentioned, the most used questions were Self-Answered Questions, so these do not require any type of cognitive effort from the students since no response is expected from them. In the case of Teacher A, the most habitual questions were Display Questions, in which a response is expected from the students and, therefore, interaction is promoted. This is in line with the results found in other studies (Genc & Yuksel, 2021; Hu & Duan, 2019; Hu & Li, 2017), but this type of questions does not usually require sophisticated thinking skills (Mujis & Reynolds, 2001; Wegerif et al., 2019). All in all, Display Questions look for a restricted response which is already known by the teacher and the cognitive effort required by students is less than in a Referential (especially Divergent) Question, for example. This pattern is consistent with previous research like the one conducted by Hu and Li (2017) and, Hu and Duan (2019) where lower-order constituted the majority of the questions asked by the teacher. These findings are worrying since, as researchers in the field point out, lower-order questions usually prompt very restricted answers (Dalton-Puffer, 2007; Hu & Li, 2017; Lasagabaster & Doiz, 2022; Llinares & Peña, 2015; Wegerif et al., 2019).

7 | CONCLUSIONS

We would like to highlight the reasons that make this an innovative study: (i) to our knowledge, no previous research has examined questioning in EMI and minority language-medium instruction (BMI, in this case) in a multilingual university context; (ii) previous studies tend to analyze the use of questions in the classroom context from an exclusively qualitative perspective; (iii) the fact that wait time is brought to the fore; (iv) finally, the use of the COLT observation scheme to analyze questioning practices is also original, since the majority of the studies have implemented this tool in EFL school contexts.

In conclusion, we advocate for teacher training to make lecturers reflect upon the impact questions may have on students' participation and interaction, and therefore, on their learning process. This training should be aimed at both EMI and minority language practitioners, because our results reveal that both types of teachers would benefit from such reflection. In fact, in the particular case of the University of the Basque Country UPV/EHU teachers are not trained in this important aspect irrespective of the language of instruction (be it Basque, Spanish, or English).

Whereas the language of instruction (Basque or English) was not an influential factor regarding questioning, the teacher variable appeared to be very significant. Since teachers play a paramount role in the promotion of participation and interaction, it seems crucial that they receive proper training in this matter, so that both they and their students can benefit from such training. In particular, our data suggests that the teaching staff should receive training about the

benefits of asking students higher-order questions more often than is usually the case. This change in their teaching practices would contribute to making students develop more sophisticated cognitive skills by presenting them more challenging questions, which, as research has proved (Llinares & Peña, 2015; Redfield & Rousseau, 1981; Wegerif et al., 2019), may lead to greater student achievement.

Concerning future lines of research, we believe that the following issues should be considered. It would be interesting to replicate this study but conducting a comparison between teachers who have received specific training in relation to the promotion of interaction through questioning and those who have not. That way, we could see the influence teacher training has on this concrete matter.

On the other hand, in this research we faced the difficulty of finding lectures taught by the same teachers in two parallel groups (BMI and EMI) at the UPV/EHU. Moreover, not all the contacted teachers agreed to participate in the study. Therefore, in future research, a larger sample size would be recommended to obtain more generalizable results, although we do believe that the data obtained in this study shed light on the importance of teachers' teaching style.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Research data are not shared.

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REFERENCES

An, J., & Thomas, N. (2021). Students' beliefs about the role of interaction for science learning and language learning in EMI science classes: Evidence from high schools in China. *Linguistics and Education*, *65*, 100972. https://doi.org/10.1016/j.linged.2021.100972

Athanasiadou, A. (1991). The discourse function of questions. *Pragmatics*, *1*(1), 107–122.

Bysen, E., & Bysen, F. (2010). Prospective teachers' with-times. *Procedia – Social and Behavioral Sciences*, *2*(2), 5172–5176.

Chang, Y. Y. (2012). The use of questions by professors in lectures given in English: Influences of disciplinary cultures. *English for Specific Purposes*, *31*, 103–116. https://doi.org/10.1016/j.esp.2011.08.002

Dafouz, E., & Sánchez-García, D. (2013). 'Does everybody understand?' Teacher questions across disciplines in English-medium university lectures: An exploratory study. *Language Value*, *5*(1), 129–151. https://doi.org/10.6035/LanguageV.2012.5.7

Dafouz, E., & Smit, U. (2020). *Road-mapping English medium education in the internationalised university*. Palgrave Pivot.

Dalton-Puffer, C. (2006). Questions in CLIL classrooms: Strategic questioning to encourage speaking. In A. M. Flor & E. Usó (Eds.), *Current trends in the development and teaching of the four language skills* (pp. 187–213). Studies in language acquisition 29 Mouton de Gruyter.

Dalton-Puffer, C. (2007). *Discourse in content and language integrated learning (CLIL) classrooms.* John Benjamins.

Doiz, A., & Lasagabaster, D. (2023). Analysing classroom discourse and the role of productive thinking in teacher–student exchanges. In F. Costa, & C. Mariotti (Eds.), *Input in English–medium instruction* (pp. 13–25). Routledge.

Farrell, T. S. (2015). *Reflective language teaching: From research to practice*. Bloomsbury Publishing.

Genc, E., & Yuksel, D. (2021). Teacher questions in English medium instruction classrooms in a Turkish higher education setting. *Linguistics and Education*, *66*, 100992.

Gooding, C. T., & Swift, J. N. (1982). Modifying teacher questioning behavior in classroom interaction. Paper presented in Annual Meeting of the Eastern Educational Research Association. *ERIC*, 214–7.

Hu, G., & Duan, Y. (2019). Questioning and responding in the classroom: A cross–disciplinary study of the effects of instructional mediums in academic subjects at a Chinese university. *International Journal of Bilingual Education and Bilingualism*, *22*(3), 303–321.

Hu, G., & Li, X. (2017). Asking and answering questions in English-medium instruction classrooms: What is the cognitive and syntactic complexity level? In X. Qiu & H. Cheng (Eds.), *English-medium instruction in Chinese universities* (pp. 184–203). Routledge.

Lasagabaster, D. (2022). *English medium instruction in higher education.* Cambridge University Press.

Lasagabaster, D., & Doiz, A. (2022). Classroom interaction in English–medium instruction: Are there differences between disciplines? *Language, Culture and Curriculum*, 1–17. https://doi.org/10.1080/07908318.2022.2151615

Llinares, A., & Morton, T. (2012). Social perspectives on interaction and language learning in CLIL classrooms. In E. Alcón-Soler & M. P. Safont-Jordá (Eds.), *Discourse and learning across L2 instructional contexts* (pp. 105–131). Brill.

Llinares, A., Morton, T., & Whittaker, R. (2012). *The roles of language in CLIL.* Cambridge University Press.

Llinares, A., & Pascual, I. P. (2015). A genre approach to the effect of academic questions on CLIL students' language production. *Language and Education*, *29*(1), 15–30.

Macaro, E. (2018). *English medium instruction content and language in policy and practice.* Oxford University Press.

Maíz-Arévalo, C. (2017). Questions in English as a medium of instruction versus non-English as a medium of instruction lectures. *Gist: Education and Learning Research Journal*, *14*, 6–31.

Mercer, N., & Howe, C. (2012). Explaining the dialogic processes of teaching and learning: The value and potential of sociocultural theory. *Learning, Culture and Social Interaction*, *1*, 12–21.

Mercer, N., & Littleton, K. (2007). *Dialogue and the development of children's thinking: A sociocultural approach.* Routledge.

Muijs, D., & Reynolds, D. (2001). *Effective teaching: Evidence and practice.* Sage.

Nikula, T. (2007). The IRF pattern and space for interaction: Observations on EFL and CLIL classrooms. In C. Dalton-Puffer & U. Smit (Eds.), *Empirical perspectives on CLIL classroom discourse* (pp. 179–204). Peter Lang.

Peña, I. P. (2010). Teachers' questions in CLIL contexts. *VIEWZ: Vienna English Working Papers*, *19*(3), 65–71.

Redfield, D. L., & Rousseau, E. W. (1981). A meta-analysis of experimental research on teacher questioning behavior. *Review of Educational Research*, *51*(2), 237–245. https://doi.org/10.3102/00346543051002237

Sánchez-García, D. (2010). *Classroom interaction in university settings: The case of questions in three disciplines* (M. A. Thesis). Universidad Complutense de Madrid. http://eprints.ucm.es/12793/1/Davinia_Sanchez.pdf

Sánchez-García, D. (2016). *A contrastive analysis of Spanish-and English-medium instruction in tertiary education: Teacher discourse strategies in a spoken corpus.* [Unpublished doctoral thesis]. Universidad Complutense de Madrid.

Sánchez-García, D. (2018). Teacher questioning: Exploring student interaction and cognitive engagement in Spanish and EMI university lectures. *Porta Linguarum*, *Monográfico*, *3*(3), 103–120. https://doi.org/10.30827/digibug.54304

Simpson, A., Mercer, N., & Majors, Y. (2010). Editorial: Douglas Barnes revisited: If learning floats on a sea of talk, what kind of talk? And what kind of learning. *English Teaching: Practice and Critique*, *9*(2), 1–6.

Sinclair, J., & Coulthard, M. (1975). *Toward an analysis of discourse: The English used by teachers and pupils.* Oxford University Press.

Slavin, R. E. (1996). *Salas de clase efectivas, escuelas efectivas: Plataforma de investigación para una reforma educativa en América Latina.* PREAL.

Spada, N., & Fröhlich, M. (1995). *Communicative orientation of language teaching observation scheme (COLT): Coding conventions and applications.* National Centre for English Language Teaching and Research.

Tobin, K. G. (1980). The effect of an extended teacher wait-time science achievement. *Journal of Research in Science Teaching*, *17*, 469–475. https://doi.org/10.1002/tea.3660170514

Trussell, R. P., Lewis, T. J., & Raynor, C. (2016). The impact of universal teacher practices and function-based behavior interventions on the rates of problem behaviors among at-risk students. *Education and Treatment of Children*, *39*(3), 261–282. www.jstor.org/stable/44684109

Varonis, E. M., & Gass, S. (1985). Non-native/non-native conversations: A model for negotiation of meaning. *Applied Linguistics*, *6*(1), 71–90. https://doi.org/10.1093/applin/6.1.71

Wegerif, R., Mercer, N., & Major, L. (2019). Introduction to the Routledge international handbook of research on dialogic education. In N. Mercer, R. Wegerif, & L. Major (Eds.), *The Routledge international handbook of research on dialogic education* (pp. 1–8). Routledge.

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