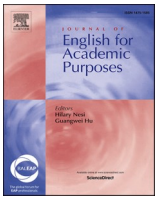
Journal of English for Academic Purposes 61 (2023) 101207

Contents lists available at ScienceDirect

Journal of English for Academic Purposes

journal homepage: www.elsevier.com/locate/jeap



Multimodal interaction in English-medium instruction: How does a lecturer promote and enhance students' participation in a live online lecture?

Mercedes Querol-Julián

Universidad Internacional de La Rioja (Spain), Avenida de la Paz, 137, 26006, Logroño, Spain

ARTICLE INFO

Keywords:
English-medium instruction
Live online lectures
Multimodal discourse
Interaction
Engagement

ABSTRACT

This study analysed the multimodal interactive discourse of one English-medium instruction (EMI) lecturer to engage students in a digital environment. It examined the first live online class given to a group of international students living in different countries. A methodology based on the multimodal (inter)action analysis approach was followed to study how interaction unfolded and was promoted and managed. Results showed the complexity of classroom interaction in this digital environment, the importance of lecturer waiting time, the high modal density and functional diversity of the follow-up/feedback stage and the most frequent discourse functions expressed during the interaction. The results will be of interest to designers of EMI training courses concerned with student engagement in virtual settings. Some suggestions are given regarding the need to know how to foster EMI lecturers' awareness of multimodal interactive discourse.

1. Introduction

The internationalization of higher education is linked to EMI and teaching technology (Helm, 2020). Many universities worldwide offer EMI courses online to attract international students increasingly. Implementing EMI programmes requires successfully adapting contents and teaching practices to work in L2 contexts. The upsurge of EMI has resulted in an urgent need to support EMI lecturers' professional development (Sánchez-Pérez, 2020). Furthermore, there is generally a limited or complete lack of formal training, also to support the transition from face-to-face to online teaching (Jones, 2020). Teaching online is not the same as teaching on-campus. For example, some non-EMI faculty who moved a face-to-face course to online instruction reported that "the face-to-face environment still felt more 'natural' because discussion was generated more abundantly (and) students were not able to 'hide behind the technology.' Additionally, they could better 'feel the pulse of the class' for understanding" (Terras, 2017, p. 44). EMI lecturers new to teaching online are likely to have the same experience. Thus, they must be familiar with the affordances and constraints of their technology-mediated environments and adapt their pedagogies for effective teaching and learning. For example, online settings can affect participation in class for three main reasons. First, productive skills seem challenging in EMI classes (Kamaşak et al., 2021), and speaking appears to be more challenging than writing (Jones et al., 2022). This could explain the low participation observed in EMI classes (Macaro, 2018) and the students' preference for written communication in online lectures (Querol-Julián, 2021b). Nonetheless, when students communicate through a written chat in an L2, more time is needed to process information, produce ideas, and write (and sometimes edit) responses before sharing them. Second, in EMI international courses, students connect from all over the world,

E-mail address: mercedes.querol@unir.net.

https://doi.org/10.1016/j.jeap.2022.101207
Received 2 April 2021; Received in revised form 28 November 2022; Accepted 12 December 2022
Available online 23 December 2022

sometimes from places where the Internet connection can cause some latency. Third, some students are multitaskers (Lepp et al., 2019), i.e., they are involved in personal or professional activities while being in class. They do not turn on their cameras, and the lecturer must get their attention and wait for their contributions without being sure they are following the lesson. Hence, having students engaged during the whole online class is one of the main challenges lecturers face, a goal that could be achieved through an emotional connection with them (Hodgson, 2005). This connection can be established by teaching with emotional intelligence (Mortiboys, 2012), when lecturers recognise and respond to their own and their students' feelings and encourage an emotional state in their students that is conducive to learning. Therefore, to support lecturers' professional development, EMI teacher trainers need to know the ins and outs of the class.

One of the aspects that is considered central to understanding the reality of the EMI classroom is interaction (Smit, 2019). Interaction refers to interpersonal communication and student engagement. In this respect, interpersonal communication can enhance engagement which involves reflection, analysis and discussion (Weimer, 2002). It is linked to critical thinking and impacts on intellectual and personal growth (Pascarella, 2006). Although engagement and interaction are closely related, interaction is only one aspect of engagement that could be considered the first interpersonal step towards its development. Interaction in face-to-face lectures has proven to benefit not only students' comprehension (Suviniitty, 2010), but also their linguistic and communicative competence in the language of instruction (Hall & Verplaetse, 2000). Nonetheless, classroom observation has shown that EMI face-to-face lectures are commonly lecturer-centred with minimal student-lecturer interaction (Doiz & Lasagabaster, 2021).

Recently, EMI settings have been seen as spaces for multilingual and multimodal meaning-making (Blair et al., 2018; Gu et al., 2021). Multimodality recognises that people construct meaning or communicate in different ways. These forms of meaning construction are called 'communicative modes' or 'semiotic resources'. However, communicative modes do not make meaning independently; instead, more than one mode is commonly used: spoken language, gestures, gaze, visual texts, etc. Therefore, multimodality appears when we recognise the need to study how different modes interplay to construct a whole. As important as recognising this interplay is to accept that the realization of each mode has its affordances and limitations to construct meaning. In this sense, the EMI research agenda for further investigation includes the lecturer's multimodal interactive discourse (Morell, 2018) and "the analysis of how EMI teachers implement multimodal practices and how effective they are" (Lasagabaster, 2022, p. 60). The scarce research on lecturers' multimodal discourse has focused, hitherto, on face-to-face EMI training programmes and highlighted the relevance of multimodal interactional competence for effective teaching (Costa & Mair, 2022; Morell, 2020). In the virtual context, the lecturers' ability to interact interpersonally with students has also been claimed to be crucial (Thomas & Thorpe, 2019). Nonetheless, research on e-classroom interaction in EMI settings is also limited (Querol-Julián, 2021a,b).

Taking into account the relevant role of EMI classroom interaction and lecturers' multimodal interactional competence, in this study I address the following research questions.

RQ1. How does interaction unfold in online EMI lectures?
RQ2. How does the lecturer promote and manage interaction in online EMI lectures?

In order to answer these questions, I propose and apply a methodology to analyse interaction in one EMI live online lecture. I investigate how interaction develops in this context and how interaction is promoted and managed to engage students in class effectively. Studies such as this may support the design of training courses to develop lecturer multimodal pedagogic discourse (Lim, 2021).

2. Methodology

2.1. Context and sample

The study was conducted on an EMI live online lecture given in a Master's in Business Administration programme. It was the first class after the introduction to the course. The lecturer had previous experience in online and face-to-face teaching at university and substantial digital competence. She was Spanish and had the C2 proficiency certificate in English, according to the Common European Framework of Reference for Languages (CEFR). The students were from different countries, but most also had Spanish as their L1. They were required to have an English language proficiency level of B2 or higher (C1/C2).

The lecture was attended by 15 students and delivered with Adobe® Connect™, a web conferencing system that enabled participants to be online simultaneously during the lecture. All the lessons were recorded and uploaded to Canvas, the web-based learning management system used in the course. The lecture lasted around 45 min, albeit the study focused on the 20 episodes of interaction developed during the class (about 56% of the lesson). An episode of interaction here is defined as a fragment of discourse where interaction between the lecturer and the students occurs or is prompted. The average duration of the episodes was 62 s, the maximum 306 s, and the minimum 6 s.

2.2. Analytical framework and method

An adaptation of the multimodal (inter)action analysis (MIA) framework (Norris, 2004, 2020) was used to explore how one EMI lecturer fostered and managed interaction during an online class. MIA is grounded in social semiotics, social interaction studies, and mediated discourse. Its unit of analysis is the mediated action that a social actor (in this case, the lecturer) performs with or through mediational means (Scollon, 1998; Wertsch, 1998), i.e., communicative modes/semiotic resources. In this regard, MIA avoids using the expressions 'verbal and non-verbal' communicative modes because they convey the idea that non-verbal modes would always be subordinated to language. The terms 'embodied and disembodied' modes are used instead. Embodied modes refer to language and gestures and other communicative modes expressed with the body when interacting. Disembodied modes relate to 'the material' world in which the interaction occurs and that the social actors employ, e.g., objects and technology.

The objective of MIA is "to explore how a variety of semiotic resources are brought into and are constitutive of social interaction, identities and relations" (Jewitt et al., 2016, p. 132). Thus, one of its concerns is the examination of social interaction, which is the purpose of this research. MIA outlines a framework for the multimodal microanalysis of selected short fragments of discourse. In what follows, I explain the most important analytical tools and their use in the study.

The first analytical tool is lower-level mediated action (LLA). It refers to the smallest interactional meaning unit that a social actor employs and that is mediated by a communicative mode. For example, utterances and silence are LLAs mediated by the communicative mode: spoken language. LLAs are described as the actions that are fluidly performed by an individual in interaction. Each LLA "is mediated by a system of representation (which includes body parts, such as the lips, etc. for spoken language; or hand, arms, and fingers for manual gestures)" (Norris, 2004, p. 14).

The analysis of the lecturer's multimodal interactive discourse was conducted on ten of the LLAs mediated by six embodied modes (Table 1).

Another important tool is higher-level mediated actions (HLAs). These are made up of multiple chained LLAs and bracketed by an opening/closing (Norris, 2004). For example, the lecture, the episodes of interactions and the lecturer's monologue are HLAs. Each HLA is linked to other HLAs and is also a part of larger scale HLA (Norris & Pirini, 2017). Thus, the episodes of interaction and the lecturer's monologue are part of the lecture. Regarding the nature of the HLAs, for example, all the utterances a lecturer produces during the interaction form a chain of LLAs, as they perform other types of LLAs. The interplay of multiple chains of LLAs creates the HLAs analysed in the study: the episodes of interaction and the interaction stages.

Finally, modal chains build various types of modal density, or LLA density, when a social actor performs a particular HLA. According to Norris (2004, p. 79), "modal density refers to the modal intensity and/or the modal complexity through which a higher-level action is constructed". The MIA framework proposes a qualitative analysis of modal density, which involves a visual representation based on the researcher's perception. The present study followed a quantitative approach to reduce subjectivity in data interpretation. Thus, the modal density of the interaction stages was quantified and represented through three variables: modal complexity, modal intensity and modal unit (Beltrán-Palanques & Querol-Julián, 2018; Querol-Julián, 2021a). 'Modal complexity' relates to the different LLAs produced in each stage, and 'modal intensity' to the frequency and duration of the LLAs that create them. One stage is denser than the other when a wider range of LLAs is used (complexity) and the number or duration of those LLAs is higher (intensity). 'Modal unit' is a global value of multimodality that, in this study, served to compare the interaction stages.

After this introduction to the multimodal analytical tools, the method is presented. ELAN[1] software supported the multilayer annotation of the episodes of interaction (Fig. 1). This software facilitates the systematic analysis of video and audio data. It allows qualitative and quantitative examination since the number of occurrences, and the beginning time, the end time and the duration of the annotations can be retrieved and processed. Only one researcher annotated the data. However, ambiguous cases were discussed with another scholar. The major difficulty was the manual annotation of the ten LLAs. It involved watching each episode several times in slow motion and going forwards and backwards repeatedly.

The first level of annotation was the episodes of interaction. These comprised the sample of the study. The criteria to identify them were as follows: 1) the episodes open when the lecturer's full attention to a subject content during monologic discourse refocuses to students to trigger a response, and 2) they close when full attention is paid again to subject content. To understand how e-classroom interaction unfolded (RQ1) and how the lecturer promoted and managed interaction (RQ2), the focus was on the macrostructure and microstructure of the episodes of interaction.

I studied the macrostructure of the episodes to shed some light on the interaction development. This was done by exploring the interaction stages, the participants' agency and the flow of the interaction. The interaction stages were annotated following Sinclair and Coulthard's (1975) classroom interaction pattern (initiation – response – follow-up/feedback). However, given the important role that the lecturer's waiting time seems to play in digital environments (Querol-Julián & Amondarain-Garrido, Forthcoming), I also annotated when the lecturer was waiting for the students' response. As the lecturer initiated all the episodes, the examination of the lecturer's waiting time and of the participants' agency focused on the students and the only stage they performed, the response. Thus, the students' actions (being still/silent, writing in the chat and speaking) and when their talk appeared in the chat were annotated. An

[1] EUDICO Linguistic Annotator (http:/www.lat-mpi.eu/tools/elan/), developed at the Max Planck Institute for Psycholinguistics (MIP) (Nijmegen, The Netherlands).

Table 1
Modes and lower-level mediated actions.

Modes	Lower-level mediated actions (LLAs)
Spoken language	Utterance
	Silence and other paralinguistic actions (syllabic prominence, laughter, and speech rate)
Gesture	Hand and arm movements
Facial expression	Facial expressions
Head movement	Head movements
Body posture	Torso movements
Gaze	Gaze shifts

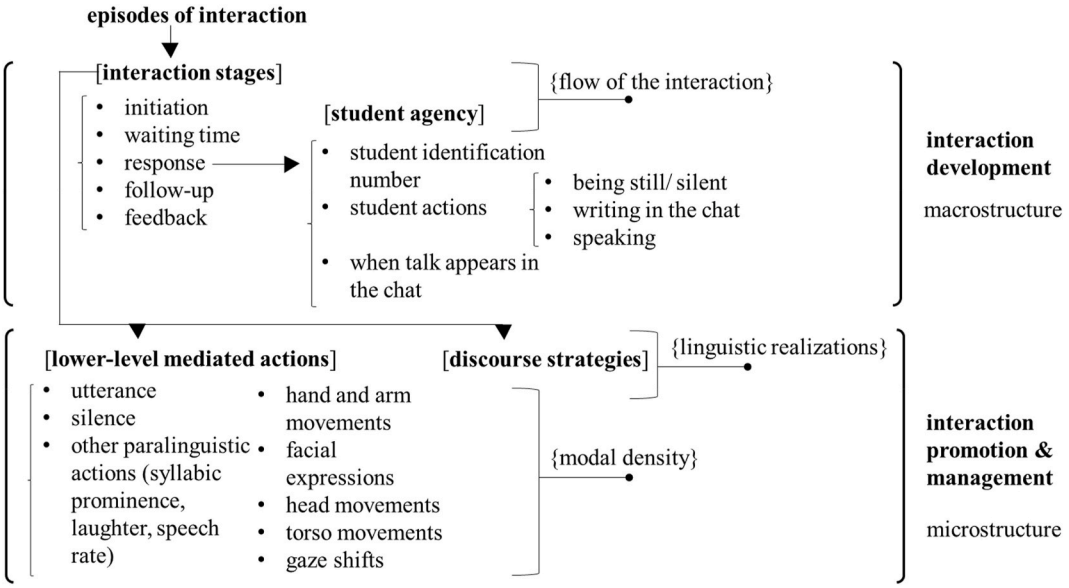


Fig. 1. Annotation of the episodes of interaction.

identification number to preserve privacy was assigned. Then, I calculated and analysed the percentage of the duration and frequency of the lecturer's stages (initiation-response-follow-up/feedback) and the students' actions. As the students mainly participated in the chat, only the frequency of the response stage was studied. Finally, the flow of the interaction was described by the order and frequency of the stages and the students' actions.

I explored the microstructure of the interaction stages to understand how the lecturer fostered and managed interaction. The analysis focused on two levels of annotation: the LLAs and the discourse strategies the lecturer employed to express her communicative intentions. The study of the LLAs set the grounds for analysing the modal density (complexity, intensity and modal unit). The frequency and the duration of the LLAs employed during each stage were represented in radar chats. As several LLAs interplayed to express meaning, absolute numbers were used to study the modal complexity and intensity. The modal unit of the stages was given by the value of the areas formed in the radar chats by the intersection of the frequency and the duration of each LLA. The software Geogrebra[2] was used to measure the areas. On the other hand, the annotation of the discourse strategies was based on previous research in EMI live online lectures (Querol-Julián, 2021b) and completed with the new instances found in the data. I calculated and analysed percentages of frequency and time. Finally, the discourse strategies were manually transcribed in ELAN to reveal the linguistic realizations of the interaction. This methodology has provided a comprehensive understanding of multimodal interaction in this online EMI lecture. However, it has the limitation that findings cannot be generalised. They are only an example of how interaction unfolded and was promoted and managed by this lecturer.

[2] https://www.geogebra.org/.

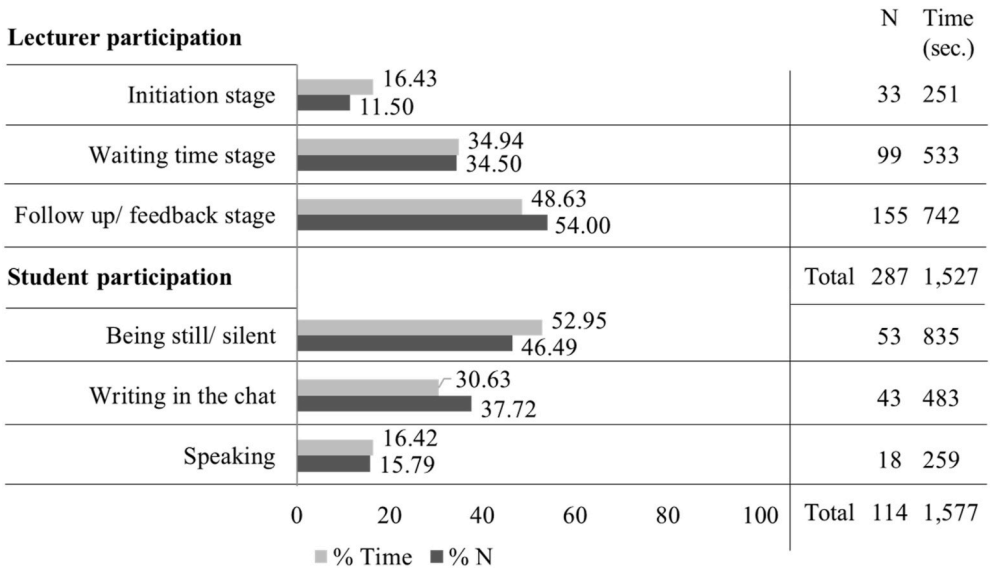


Fig. 2. Participation in the episodes of interaction.

3. Results and discussion

3.1. Interaction development

A four-stage interaction pattern is proposed: initiation – waiting time – response – follow-up/feedback. Unlike Sinclair and Coulthard's (1975) classroom interaction pattern (initiation – response – follow-up/feedback), I considered *waiting time* an interaction stage in its own right. Our findings reveal the important strategic role of the lecturer's waiting time in promoting participation in a digital environment where the students did not turn on their cameras. Sinclair and Coulthard's pattern fits in classes where educators can see students' facial and postural expressions. In these settings, virtual L2 learning environments included (Sathik & Jonathan, 2013), research has shown the effect of facial expressions on students' comprehension recognition and engagement. We could say that reading students' faces can help lecturers identify their lack of (content or language) understanding, perceive their intention to participate, and accommodate their actions accordingly. Consequently, waiting time may be managed more effectively than in virtual classes where lecturers cannot see students. This could be why waiting time has hitherto been largely underestimated in the long-established three-stage interaction pattern. The quantitative analysis of the participation in the episodes of interaction (Fig. 2) supported the importance given to the *waiting time stage* in this study.

Regarding the lecturer's participation, she initiated all the episodes. The waiting time represented around 35% of the number of stages and the time the lecturer interacted with the students. This was a significant percentage compared with the initiation (around 17% and 12%, respectively) and the follow-up/feedback stages (around 49% and 54%).

Although a detailed analysis of the students' participation was beyond the scope of this study, some points are worth noting regarding their agency in interaction. Results showed a high degree of engagement during this first session. This is an interesting finding since what happens during the first lessons of a course regarding social interaction is crucial to determine the dynamics of the following lessons and motivate students to attend and participate. Although the 20 interactive episodes were initiated with a lecturer's question, the students responded to all except two. Different reasons can explain their lack of agency to initiate discussion. It could be because they were at the beginning of the course, and the lecturer and the students were getting to know each other. The students also had not yet had the opportunity to interact through other channels outside class, such as forums or WhatsApp groups, or to participate in group work. They had not submitted any assignments nor received the lecturer's feedback on their work yet. This interaction outside the e-classroom is essential in creating bonds among the students and between the lecturer and the students. These relationships may contribute to constructing a positive emotional learning environment, and increase self-confidence and motivation to participate more actively in class (Mortiboys, 2012). This will even be more important in online lessons where students' participation may be affected by their multitasking skills or the language of communication, such as in EMI. Concerning the response stage, 47% of the students participated. They were writing in the chat about 55% of the time, speaking about 13% and quiet about 32%. Besides, 40 contributions were posted, one student participated orally and two orally and in the chat. Those who contributed orally did it once and the participation in the chat ranged from 1 to 10 times.

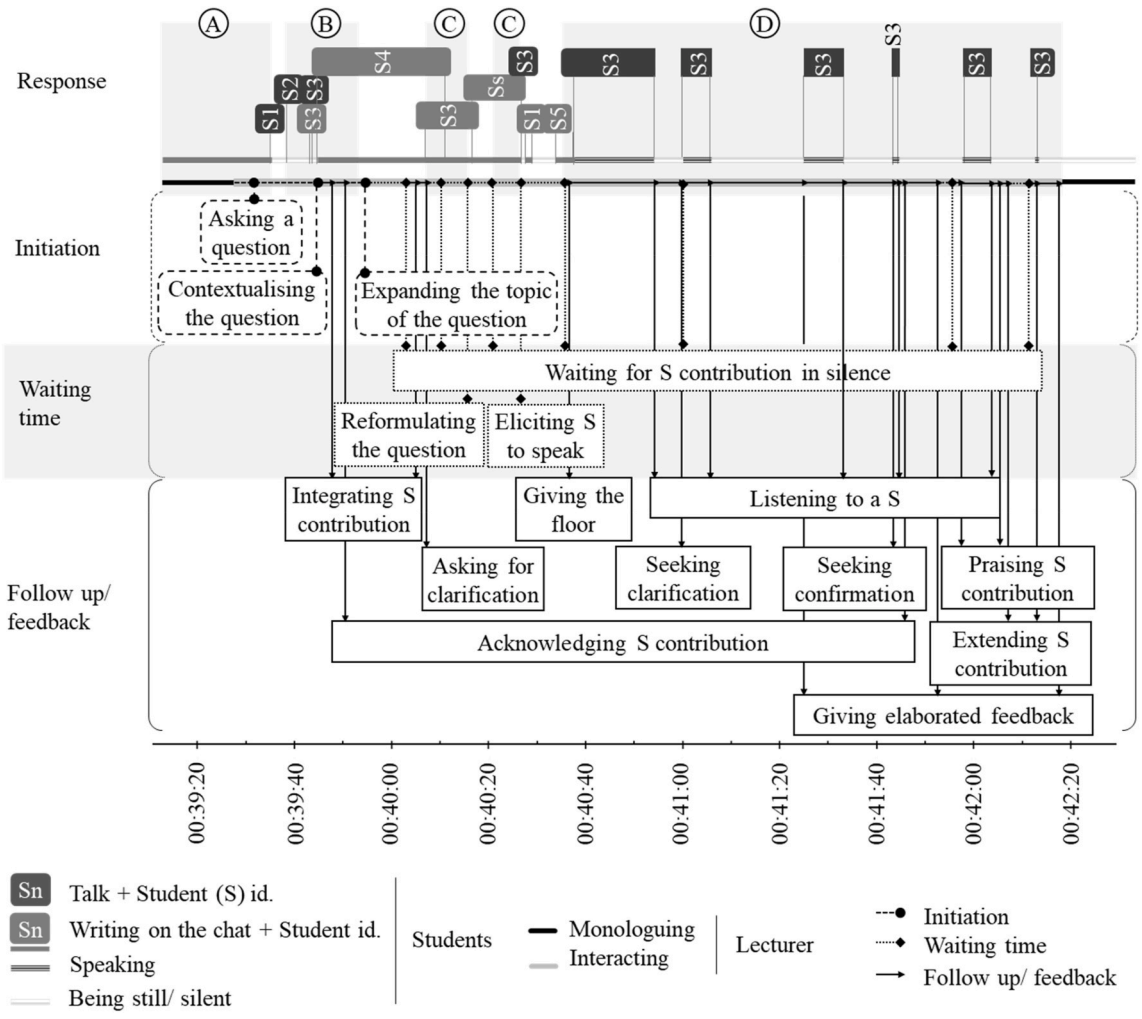


Fig. 3. Visual representation of an episode of interaction.

Notwithstanding the exchange pattern, I have found that interaction followed complex dynamics. To illustrate this, Fig. 3 represents one episode lasting 159 s (see the verbatim transcription of the lecturer's talk in the Supplementary material).

The figure presents interaction at different levels and organises around the four stages. From top to bottom, the information is displayed in two timelines. The first shows the students' actions: being still/silent, writing in the chat or speaking. I have also marked when their talk appears in the chat, and the student's identification number. The second timeline shows the lecturer's actions (interacting or monologuing) and the discourse strategies. The strategies are included to understand better the different communicative moves that construct the stages. The results of their analysis are presented in the next section.

Unlike face-to-face lectures, the students' participation did not typically unfold sequentially. Thus, online lecturers have to deal with the complexity of simultaneous interaction, i.e., several contributions coming up almost simultaneously in the chat (Querol-Julián, 2021b). Additionally, the order of the 4-stage sequence was not always followed. I identified three situations:

i) Stages overlapped; for example, the students answered a question when the lecturer had already initiated a new episode (see situation A in Fig. 3) or when she was still producing the initiation stage (B).
ii) Stages extended; for example, extensive waiting time stages that included several repair strategies to the students' silence, such as reformulating the question or eliciting them to speak (C).
iii) Stages repeated in sequences; for example, waiting time – follow-up/feedback – waiting time – follow-up/feedback (D).

I found that this complex interaction dynamic resulted in a lack of one-to-one correspondence between the number of stages and the episodes. For example, the lecturer performed the episode illustrated in Fig. 3 through 13 stages rather than three, one per type of stage (initiation – waiting time – follow-up/feedback). She employed two initiation stages, five waiting time stages and six follow-up/feedback stages.

3.2. Promotion and management of interaction

3.2.1. Modal density of lecturer interaction stages

Results showed the follow-up/feedback was the stage with higher modal density and the initiation the one with lower. The radar charts in Fig. 4 represent the modal density expressed in frequency (Fig. 4a) −the total number of times each LLA was employed− and in time (Fig. 4b) −the total seconds each LLA was utilised− during the three stages that the lecturer performed.

Regarding modal complexity, the waiting time and follow-up/feedback stages showed similar values as they developed through all the LLAs considered in the study. However, as expected, silence was not employed in the initiation stage since the lecturer opened the episodes with questions that elicited a response; thus, it was in the waiting time stage that silence occurred.

Regarding modal intensity, the lecturer performed 1,810 LLAs: 271 during the initiation stage, 633 during the waiting time, and 906 during the follow-up/feedback (Fig. 4a). Results revealed three main findings. First, gaze shifts played a predominant role in interaction, being the most frequent action in all stages. Gaze direction marked the objective of the lecturer's attention. When looking at the camera or the chat, the lecturer paid full attention to the students. Furthermore, looking at the camera when asking a question and during the waiting time may have had a persuasive function. Second, hand and arm movements and facial expressions interplayed with utterances in the waiting time stage to produce repair strategies, such as reformulating the question to elicit responses. Third, the follow-up/feedback stage showed the highest modal intensity presenting the highest number of gaze shifts, facial expressions, utterances and head movements. Facial expressions and head movements showed two common functions in this stage: expression of the lecturer's stance and evaluation of the students' contributions.

Another finding of the study of modal intensity was that the analysis of LLAs' frequency and time was necessary and complementary. Considering only frequencies would have led to a wrong conclusion about the relevance of utterances in the initiation stage and silence in the waiting-time stage. In the initiation stage, although the number of utterances did not differ much from those of facial expressions and hand and arm movements, the lecturer was speaking most of the time (Fig. 4b). Gaze shifts and facial expressions mainly accompanied this talk. In the waiting time stage, gaze was the prevailing LLA. Interestingly in this stage, although the frequency of silence was much higher than talk (N = 75 and N = 45, respectively), the differences regarding time were not so significant (274 s and 218 s, respectively). This means that while the periods of silence were more frequent, those of talk were longer. This possibly reveals a low tolerance to silence and justifies using strategies to repair the students' silence in this setting (Kozar, 2016). Finally, in the follow-up/feedback stage, the lecturer was speaking and looking at the chat and the camera most of the time.

In addition to the modal complexity and intensity, the study of the modal unit also showed the predominant role of the follow-up/feedback stage (Table 2). The modal unit was measured as the area formed in the radar charts (Fig. 4a and b) by the intersection of the frequency and the duration of each LLA.

The multimodality of the follow-up/feedback was 2.6[4] and 2.8 areas higher than the multimodality of the waiting time regarding frequency and time, and 14.5 and 6.9 areas higher than the multimodality of the initiation. On the other hand, the multimodality of the waiting time was 5.5 and 2.4 areas higher than the initiation. These results show that differences between the multimodality of the initiation and the other two stages were more frequent: fewer chains of LLAs were used to open the interaction. Instead, the lecturer focused more on creating the waiting time and the follow-up/feedback. The reason could be that the initiation was the first attempt to elicit a response. Thus, it was not until the lecturer saw the students' reaction that she had to put more effort into this endeavour during the waiting time. Concerning the follow-up/feedback, as explained later in detail, the dominant discourse strategies of this stage (integrating student contributions and giving extensive feedback) required the lecturer's full attention. All in all, findings about modal density revealed the lecturer's communicative effort to meet the objectives of these interpersonal stages.

3.2.2. Lecturer discourse strategies

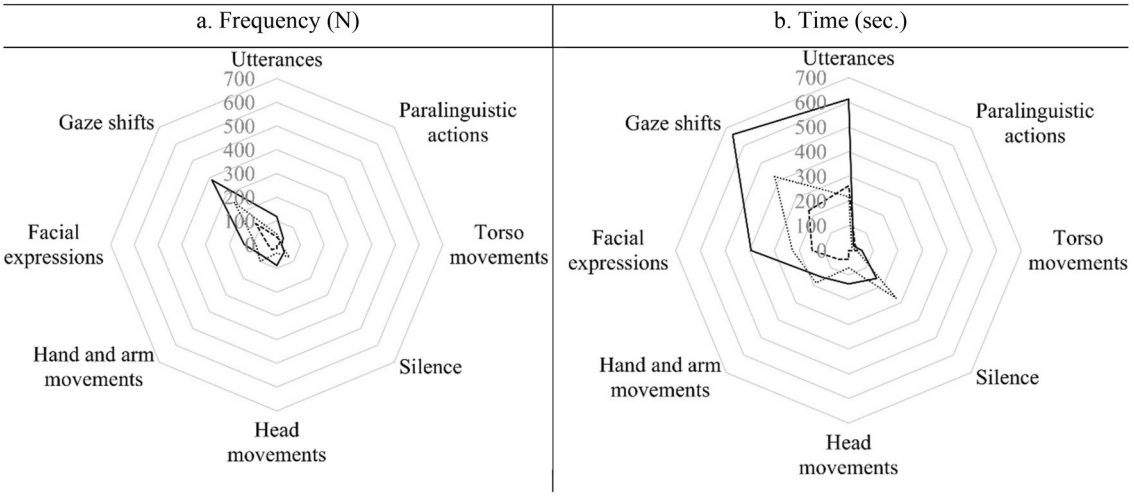
The different levels of complexity of the three stages were exhibited in their modal density and in how they unfolded regarding the discourse strategies the lecturer employed. In the following paragraphs I will present the results of the analysis of the strategies in the three stages.

3.2.2.1. Initiation stage. In the initiation stage, three discourse strategies revolved around the 'question': asking a question, contextualising the question, and expanding the topic of the question (Fig. 5).

Asking a question was by far the most frequent. The personal pronoun "you" was recurrent in the questions and mostly it referred to the students, as in EMI face-to-face lectures (Dafouz et al., 2007). They were audience-oriented questions that elicited a response that the lecturer did not know. These referential questions were crucial to extending responses in bilingual classes (Dalton-Puffer, 2007). For example, she used closed questions starting with "how many of you (…)?", or questions that referred to the content of one slide ("do you recognise this?" and "can you answer all these questions?"). These questions triggered extensive episodes which were extended in the follow-up/feedback stage. The lecturer also used open questions ("what do you think (…)?", "(…) now tell how would you (…)?). These questions can foster students' creative and critical thinking, require more extensive responses and need more waiting time.

In example 1, the lecturer asks a question and writes the acronym "kiss" in the chat while she is speaking. Gaze shift could indicate

[4] This means that the multimodality of the waiting time regarding frequency (1.1 areas) multiplied by 2.6 is the multimodality of the follow-up/feedback (2.9 areas). Follow the same interpretation with the rest values.



	Initiation		Waiting time		Follow-up/ feedback	
Lower-level mediated actions (LLAs)	N	Time (sec.)	N	Time (sec.)	N	Time (sec.)
Utterances	33	262	45	218	119	613
Paralinguistic actions[3]	20	36	21	19	39	27
Torso movements	9	35	18	33	21	54
Silence	0	0	75	274	44	160
Head movements	17	36	36	71	87	136
Hand and arm movements	29	53	99	186	73	153
Facial expressions	37	148	88	227	137	395
Gaze shifts	126	228	251	423	386	663
Total	271		633		906	

Fig. 4. Modal density in the lecturer's interaction stages.[31]

Table 2
Modal unit of the interaction stages.

	Modal unit	
	Frequency (area value)	Time (area value)
Initiation stage	0.2	2.9
Waiting time stage	1.1	7.1
Follow-up/feedback	2.9	19.9

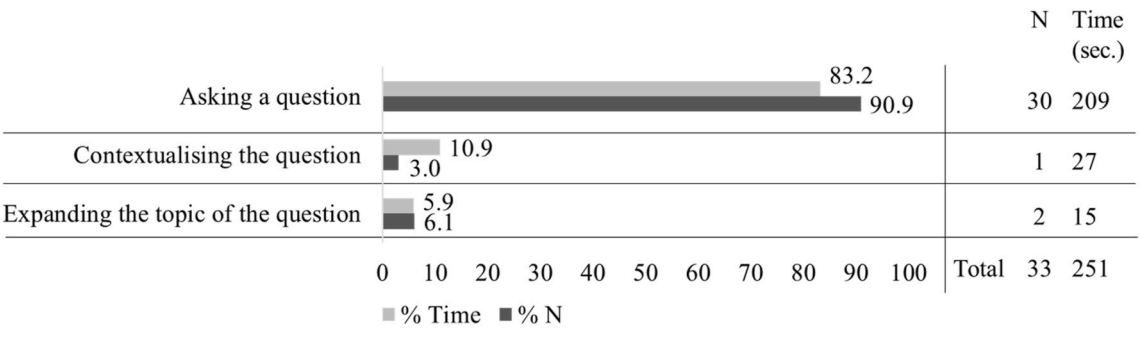


Fig. 5. Discourse strategies to initiate interaction.

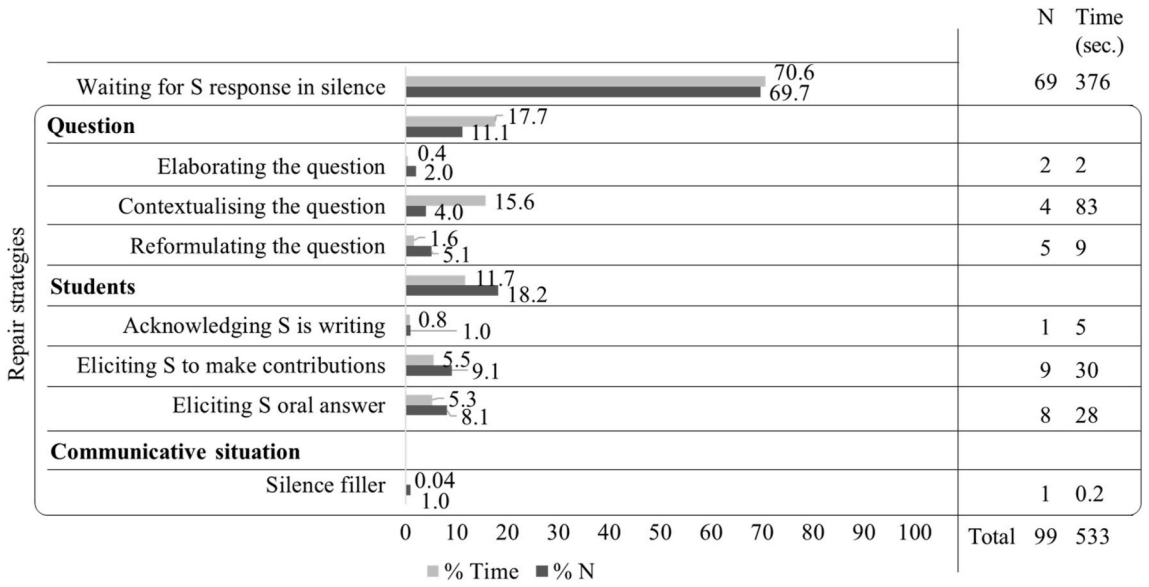


Fig. 6. Discourse strategies to wait for student contributions.

she refocuses from speaking to writing and back to speaking, i.e., she looks at the chat, then at the keyboard (while writing) and back at the chat. This is an instance of how the interplay of different LLAs (utterances, facial expressions and gaze) expresses questions.

(1)



Utterance	*you know about that? the*	<writing in the chat> *famous eh* </writing in the chat>	*acronym kiss*
Gaze shifts	looking at the chat	looking at the keyboard	looking at the chat
Facial expressions	wrinkling the forehead	-	-

The lecturer also employed another type of audience-oriented question, requesting confirmation, to initiate the shortest episodes of interaction, for example "is it okay" or "I suppose anyone here knows what is (…), do you?".

3.2.2.2. Waiting time stage. Waiting time seems to be an expected stage when lecturers seek students' participation. If lecturers ask for more contributions, they need to give students enough time to make them. It has been proven in face-to-face contexts that "the average length of student utterances and the proportion of student-reacting moves tended to increase in extended wait time classes" (Tobin, 1986, p. 199). Results showed the effective management of this stage as the students were engaged in writing in the chat or speaking for about 70% of the session. The stage was built up through eight discourse strategies (Fig. 6).

Waiting for student response in silence was the most frequent strategy and the one the lecturer invested more time in (70%). The rest were strategies used to repair the students' silence. All except one, which was oriented to the *communicative situation*, focused on the *question* and the *students*. No significant differences were identified between question- and student-oriented repair strategies. Nonetheless, student-oriented strategies were slightly more frequent than question-oriented ones. These findings show the attention paid to the students, not only giving them space during the class with audience-oriented questions and waiting for their responses in silence, but also when trying to repair their silence. Question-oriented strategies were less frequent, but occupied more time of the stage possibly because these strategies implied more extensive discourse.

In the repair strategies focused on the *question*, the lecturer elaborated, contextualised, or reformulated it. *Contextualising the question* was the strategy in which more time was invested despite not being the most frequent. The reason could be that it implied formulating descriptions or explanations that required extensive speech. Example 2 below illustrates three repair strategies related to

[3] syllabic prominence, laughter, and speech rate.

the question that interwove with waiting for student response in silence.

(2)	Asking a question [initiation stage]	*how do managers behave?*
	Elaborating the question	*what do you think is I mean how do you think the general managers behave as strategic leaders?*
	Waiting for S response in silence	
	Contextualising the question	*so managers is not about just taking eh more rational economic decisions okay but eh rather (xx) we can how the hard things the companies and the soft aspects of this eh in in a you know in a single annalistic process you know so*
	Waiting for S response in silence	
	Reformulating the question	*how are general managers in your company?*

On the other hand, those repair strategies focused on the *students* showed how important students were to her. The lecturer *acknowledged that the students were writing in the chat* (e.g., "[student's name] is also writing here"), and she *elicited student(s) to make their contributions* as in examples 3 and 4. In example 3, the lecturer prompts students to participate in the discussion. The students had already made some contributions but while the lecturer keeps an eye on the chat, she prompts students to participate saying "any other idea or thought?" and moves her head down showing full attention to the chat. Then, she is silent for a short period of time, but no more ideas are shared.

(3)



Utterance	*any other idea*	-	*or thought?*	-
Silence	-	<silence>	-	<silence>
Gaze shifts	looking at the chat			
Head movements	moving head downward			

In example 4, after making different attempts to repair the students' silence, she makes a final one by stating the situation while she looks at the camera and frowns ("you are so quiet now"). "Now" also shows the acknowledgment that they had participated before. Then, she asks "why?", gives them more time to answer and keeps an eye on the chat, smiling, and waiting for their contributions. However, it seems this repair strategy also fails, and she decides to play down the situation, putting herself on their side and showing empathy by giving a possible explanation, "you are thinking".

(4)




Utterance	*you*	*are so quiet now why?*	-	*you are thinking*
Silence	-	-	<silence>	-
Gaze shifts	looking at the chat	looking at the camera	looking at the chat	
Facial expressions	-	frowning	smiling	-
Head movements	tilting head to one side			
Hand movements	playing with her pendant			

The lecturer also *elicited an oral answer*, as in examples (5) and (6). She invites students to communicate orally, since most are using the chat. In example 5, the lecturer prompts a student who is writing in the chat to speak. She addresses the student by her name and keeps one eye on the chat to see her response. Nonetheless, the student says she cannot use her microphone and responds in the chat. Being unable to respond orally could be real, because of technical or contextual reasons, or an excuse.

(5)	L: [student's name] *can you talk?* S: *my mic is not working*

When the lecturer talked to just one student, as in Example 5, she used their name. In so doing, the students may feel they are important to the lecturer and their contributions are also important for the class. They may feel part of the group. This lecturer's action is easier to develop in the virtual class from the first lesson, even if it is a large group, because in general videoconferencing systems display the participants' names.

In example 6, the lecturer makes a general request. She is looking at the chat and waiting for responses. Suddenly, she uses the discourse marker "okay", which is stressed to attract the students' attention while she is smiling. Then, she looks at the camera frowning and makes a pause so that they can experience her 'eye contact' and notice that what she is about to say is important. This LLA shows she refocuses from the action of being silent waiting for responses, to asking students who are writing to use their microphones. She looks at the chat again, possibly to check their reactions, while she smiles and frowns. The lecturer stresses the request "please take the mike" by slowing down her speech and moving her head forward beating each word. She smiles at the onset of the utterance, possibly showing a positive attitude. This is followed by silence. Then, she looks at the camera to justify why they should speak rather than write: "it's gonna be so boring reading all the time". This justification calls for a more dynamic session for all of them. The first part, "it's gonna be", is co-expressed with a lateral head movement with an emphatic meaning (McClave, 2000) preceding the negative consequence of not doing it, "so boring reading all the time", and is also stressed by a facial gesture of frowning. This repair strategy is effective, and one student turns on her microphone and makes her contribution orally.

(6)

Utterance	*okay*	-	*those who are*	*writing*
Silence	-	<silence>	-	-
Paralinguistic actions	word stress			
Gaze shifts	looking at the chat	looking at the camera	looking at the chat	looking at the camera
Facial expressions	smiling	-	frowning	

Utterance	*please*	*take the mike*	
Silence	-	-	<silence>
Paralinguistic actions	slowing down speech		-
Gaze shifts	looking at the chat		
Head movements	moving head forward		-
Facial expressions	smiling	frowning	

Utterance	*it's gonna*	*be so boring reading all the time*
Gaze shifts	looking at the camera	
Head movements	lateral head movement	-
Facial expressions	frowning	

Finally, the third focus of the repair strategies was the *communicative situation*. This strategy was the less frequent and occurred when the lecturer tried to fill silence with the discourse marker "okay".

3.2.2.3. Follow-up/feedback stage. The follow-up/feedback stage is the most complex one because of the diversity of discourse strategies, namely twelve (Fig. 7). Traditionally this stage has been called "follow-up" or "feedback". However, this study differentiates the two concepts and depicts the stage as formed by two optional complementary moves. Follow-up is defined as information which aims to promote change through a clear interpersonal strategy, and feedback as information regarding students' understanding.

As presented in Fig. 7, the frequency of the follow-up move was almost two times higher than the feedback move; however, both had a similar duration. Two discourse functions prevailed in this stage, each one belonging to one move: integrating student contributions (around 44% Time and N) and giving extensive feedback (about 39% Time and 28% N). Moreover, discourse functions in the two moves can be organised in different categories regarding their dominant objectives.

The follow-up move had two main functions: *managing interaction* and *building up relationships*. The lecturer managed interaction by *giving the floor* (example 7) or *asking student identification* when speaking (example 8). In example 7, the student has possibly 'raised his hand' (this is one of the 'actions' the software allows) to ask permission to talk. The lecturer looks at the screen and gets closer to it moving her torso forward while she interacts with the software and accepts the request saying, "okay" and the student's name. Gaze shift towards the chat may indicate she is attentive to any technical support the student may need. She gives him the floor by just saying

"talk" and remains silent waiting for the oral contribution. She smiles all the time. This welcoming facial expression may encourage interaction and a student-friendly environment.

(7)

Utterance	-	*okay*	*[student's name]*	*talk*
Silence	<silence>	-	-	-
Gaze shifts	looking at the screen			looking at te chat
Torso movements	-	moving torso forward		
Facial expressions	smiling			-

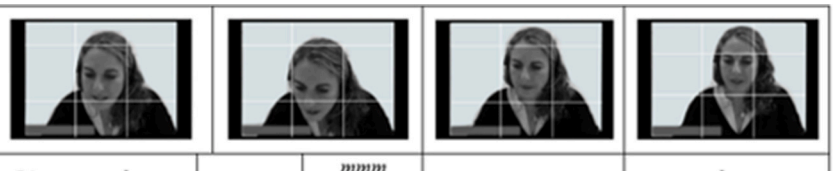
In example 8, one student starts talking immediately after the lecturer asks a question. She is interrupted by the lecturer who requests her to identify herself. She asks it in two different ways ("who are you?" and "who is talking?"), and then waits for the response. The student says her name and the lecturer acknowledges this saying "okay", repeating it and producing the LLA of a gaze shift from the chat to the camera. In so doing, the lecturer reinforces the acknowledgment and shows full attention to the student.

(8)

Utterance	*who are you? who is talking?*	-	*okay [student's name]*
Silence	-	<silence>	-
Gaze shifts	looking at the chat		looking at the camera

As part of the follow-up, the lecturer built up relationships in four ways (Querol-Julián, 2021b): acknowledging student presence, acknowledging their contributions, integrating and praising them. She *acknowledged student presence* generally with the utterance "[student's name] welcome" (Example 9). In example 9, the lecturer gives a student access to class and sets up permissions to use his microphone. The lecturer is focused on the HLA of monologuing and refocuses upon the HLA of interacting. She produces an LLA to mark it, a gaze shift. The lecturer was looking at the camera when monologuing and suddenly she looks at the screen, possibly because she realises a student has asked permission to enter. She finishes her sentence and acknowledges the student's presence by welcoming him and saying his name. This is followed by a short period of silence which she tries to repair saying "mmm mmm" while checking the microphone settings. We know she is engaged in this action because after finishing it the icon of a microphone is displayed besides the student's name. She is completely focused on doing this, as is indicated by the production of another LLA: she moves her torso down to be close to the screen. Before focusing again on the HLA of monologuing, she marks the end of the action by saying "okay" and taking a quick look at the chat, possibly to check the student's reaction. This interruption shows that probably the lecturer tries to create a welcoming and comfortable environment during the first class. She could have tried to interact with the software while monologuing, but she decided to refocus her actions upon the student.

(9)



Utterance	*L's name welcome*	-	*mmm mmm*	-	*okay*
Silence	-	<silence>	-	<silence>	-
Gaze shifts	looking at the screen				looking at the chat
Torso movements	moving torso forward			-	-

The lecturer *acknowledged student written contributions* uttering "[student's name] says" or just saying the student's name. This was immediately followed by the *integration of their contributions*. The contributions were integrated in her speech to highlight their importance in the construction of knowledge in class. This was done in three ways: reading the contribution in silence (example 10), paraphrasing or reading it aloud (example 11), or referring to a previous response (example 12). In example 10, the lecturer is reading from the chat in silence. We know that she is reading because of her reaction, she laughs and acknowledges the student's response

saying "okay".

(10)

Utterance	-	-	-	*okay*
Silence	<silence>	-	-	-
Paralinguistic actions		<laughing>		
Gaze shift	looking at the chat			
Facial expressions	smiling	-	-	smiling

In example 11, the lecturer reads aloud the student's comment. She emphasises the utterance "making important decisions" by slowing down her speech and making a beat gesture with each word (Kendon, 2004). She also looks at the camera when uttering "important decisions". Afterwards, during a short period of silence she moves her head to one side and makes facial gestures: she raises her left eyebrow and shows tight lips. It seems she is evaluating the comment. Eventually she expresses a positive stance with "good", which is also stressed.

(11)

Utterance	*they are involved in*	*making*	*important*	*decisions*
Gaze shifts	looking at the chat		looking at the camera	
Hand movements	-	beats		

Utterance	-		*good*
Silence	<silence>		-
Paralinguistic actions	-		word stress
Gaze shifts	looking at the chat		
Head movements	-	moving head to one side	-
Facial expressions	showing tight lips		
	-	raising eyebrow	-

In example 12, she is referring to a previous response that she has not acknowledged yet. She gives importance to the idea the student shared and to the student. Indeed, the class is interrupted to look for the post in the chat and say the student's name.

(12)	*someone said here who was the one that said [student's name]*

She *praised student contributions* by making an evaluative comment of the responses immediately after having read them in silence (example 13) or making a general comment of all contributions (examples 14). She also paraphrased (example 15) or read (example 16) them aloud and frequently mentioned the students' names. Praising was expressed by the interplay of different chains of LLAs: utterances, facial expressions and/or head movements.

(13)	*good* <nodding>
(14)	*very interesting good people* <smiling>
(15)	*and [student's name] thinks the second* <nodding> *great* </nodding>
(16)	<reading> *bossy* </reading> <smiling> *bossy yes* [student's name] </smiling>

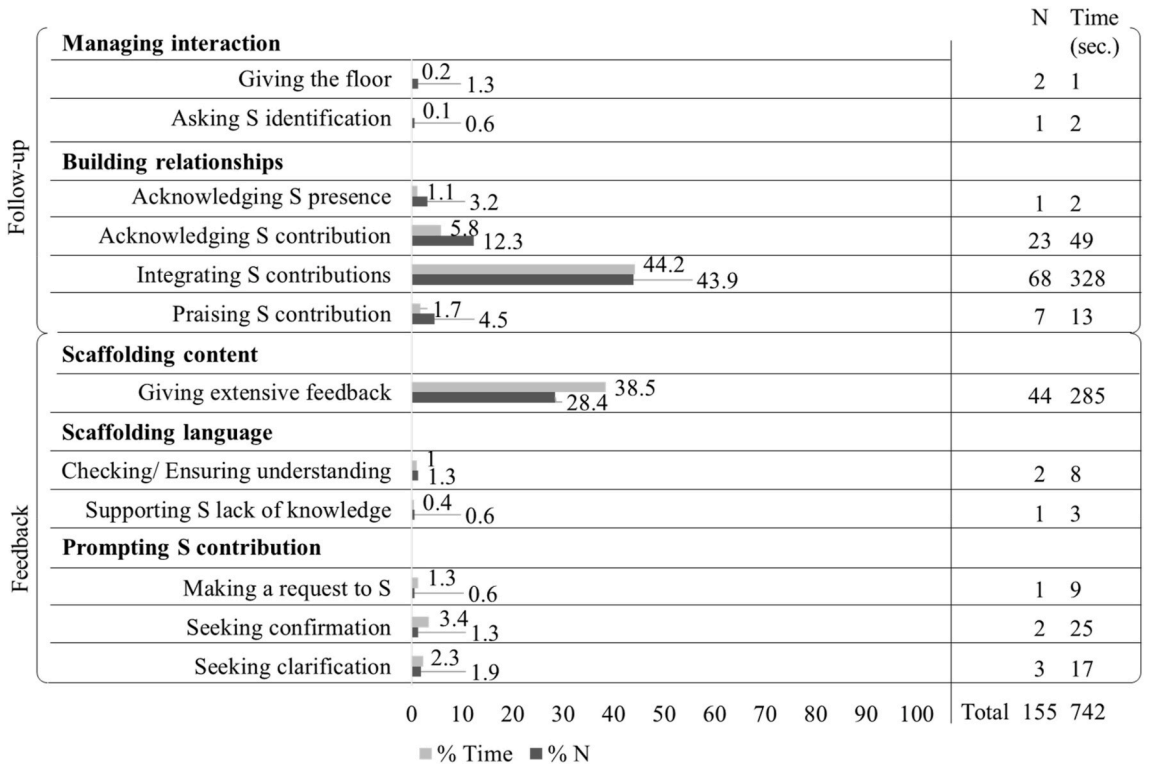


Fig. 7. Lecturer discourse strategies to follow-up/feedback.

When contributions were oral (only three), the lecturer showed active listening, looking at the camera, and smiling at the beginning to welcome the contribution. In so doing, it seems she tried to make the student feel comfortable. She also nodded to show agreement.

Regarding feedback, Butler and Winne (1995) pointed out that contextual conditions and environmental factors can substantially affect the quality and impact of feedback. However, there is little research on feedback in the EMI class and none, to my knowledge, in the EMI virtual context. One of the few studies of lecturer feedback in the EMI onsite class has attested the use of corrective feedback when a student's grammar mistake changed meaning (Jiang et al., 2019). The analysis of feedback in my sample showed three main functions: *scaffolding content*, *scaffolding language* and *prompting student contribution*. Due to the use of English as a *lingua franca*, scaffolding in this EMI classroom focused not only on content but also on language. For example, she produced extensive feedback to *scaffold the understanding of content* in Example 17.

(17) *so ah stakeholder anyone that is com affected with the (xx) and result of the interest of the company okay?*

She *scaffolded language* to support student lack of knowledge (example 18), and to check/ensure understanding (example 19). In example 18, the student is responding orally. She states she does not remember how to express an idea in English and the lecturer interrupted what seems to be an attempt to code switch to provide what she thought was the expression the student was looking for.

(18) *I think that is the thing about being er I forgot how can I say <silence> mm <laughter> I can's I don't know the word now* < Lecturer: overlapping > very close </overlapping> *pero* [Spanish "but"] <Lecturer: overlapping > or very </overlapping> *yeah yeah very very close to the employees*

In example 19, the lecturer uses the abbreviation "NGO" (non-governmental organizations) in English and checks if the students know its meaning. After a period of silence in which students remain quiet, she chooses to ensure they know the meaning. She provides the full name and says the abbreviation in what she thinks is the students' L1.

(19) *NGOs? It's okay that term?* <silence> *so NGO is non-governmental organizations meaning ONGs in Spanish*

Finally, the lecturer *prompted contributions* by making a request (Example 20) and seeking confirmation (Example 21) or clarification (Example 22). The three examples occurred during the oral participation of one student.

(20)	*could you write down in the chat here in class about this company so that we could check out what is going on the website?*
(21)	*you are in in sorry in Ecuador?*
(22)	*directors or general managers?*

4. Conclusions

In this paper, I sought to analyse the development of interaction in EMI live online lectures and describe how EMI lecturers promote and manage interaction in class. An adaptation of the multimodal (inter)action analysis framework was employed to explore the macrostructure and microstructure of the interaction. This multimodal analysis involved the detailed exploration of how language and other semiotic resources interplayed to construct meaning in one EMI online lecture. Therefore, the results of this research cannot be generalised but offer vital insight into lecturer-student interaction in the EMI e-classroom. The study's main findings and their contributions to the field are provided next.

It has been identified that the lecturer's waiting time plays a key role in online interaction when most students participate through a written chat. It seems that the digital environment strongly influences students' participation, particularly the question response time. Thus, waiting time is crucial in enhancing and fostering interaction to the point of considering it a stage of the interaction pattern: initiation – *waiting time* – response – follow-up/feedback. Findings show waiting time was built by periods of lecturer's silence and different strategies to repair students' silence. Hence, the results reveal a possible connection between effective management of the waiting time stage and student engagement in interaction. Lecturers should be aware of the constraints of the e-classroom and that extending waiting time and using strategies to repair silence may facilitate digital-mediated interaction.

The second conclusion of the paper is that lecturer-student interaction is developed online through complex dynamics. That is, the four stages of the interaction frequently overlapped, were extended, and repeated, and the lecturer had to manage simultaneous interaction (i.e., several students writing in the chat at the same time and their contributions appearing almost simultaneously). This level of complexity is not found in on-campus classes where interaction commonly occurs sequentially. Additionally, lecturers in virtual environments cannot see all students' facial expressions and recognise their degree of comprehension and engagement. Therefore, e-classroom interaction dynamics may cause some difficulty for virtual lecturers if they are not trained to manage them.

The third conclusion of the study is that teaching with emotional intelligence proved useful in promoting and managing online interaction in the e-classroom. I observed that the lecturer was concerned about creating a good rapport with the students. She tried to build relationships with them by showing features of teaching with emotional intelligence. For example, the lecturer was attentive to the students' responses, gave them time to respond, used their names, acknowledged their responses, integrated their answers into the e-classroom discourse, and scaffolded learning. Moreover, the lecturer constructed meaning through the interplay of welcoming facial expressions, gaze shifts from the chat to the camera, hand and arm movements, silence, and utterances. This performance arguably helps create a positive emotional learning environment that may lead to engagement through interaction in the e-classroom. Therefore, lecturers should be conscious of the positive implications of teaching with emotional intelligence.

The fourth conclusion is that scaffolding mainly focused on content in the EMI e-classroom. It has been observed that the lecturer rarely scaffolded language. However, scaffolding language is a feature of the EMI classroom where the content subject is taught in English as a *lingua franca*. Therefore, lecturers should integrate it as a strategy to ensure students' comprehension of key terms and support interaction when communication breaks down due to students' lack of language knowledge.

As for limitations, the main shortcoming of the study is that a single EMI live online lecture was analysed. For future research, a representative sample of classes given by the same and different lecturers should be examined. In addition, many other related issues could be researched. For example, it would be very interesting to consider a detailed analysis of student participation. There is also a need to understand how engagement and the relationships between lecturer-students and students-students evolve throughout a whole course. This could shed some light on the influence of interpersonal relations in e-classroom engagement. Both lines of research could be done through the analysis of the episodes of interaction, as proposed in this study. Furthermore, there is a need to conduct comparative research on face-to-face and online EMI lectures, and on online EMI and non-EMI lectures. The former will unearth the influence of the context, for example, in silence and waiting time stage management. The latter will reveal, among others, the influence of the language of communication on students' participation.

5. Pedagogical implications

The findings of this study could be used to train online EMI lecturers in how to engage students through interaction. Teachers' multimodal awareness (Morell et al., 2020) and the pedagogical application of multimodal discourse analysis for academic and professional genre awareness (Ruiz-Madrid & Valeiras-Jurado, 2020) have been considered in face-to-face contexts. Online EMI lecturers will also benefit from a pedagogy that adopts a multimodal communicative perspective.

I present the following recommendations for the designers of training courses for online EMI lecturers to enhance classroom interaction and engagement:

- Focus on how to manage complex dynamics of episodes of interaction in EMI online lessons. Present the 4-stage pattern of interaction. Give examples of simultaneous student participation in the chat, and how stages overlap, extend and repeat. Fig. 3 could be useful to explain and illustrate it.
- Stress the importance of enhancing student engagement in class through interaction. Open discussion on how the online context can hinder participation and the lack of eye contact to monitor understanding and learning in the additional language.
- Present the different discourse strategies that can be used to perform the initiation, waiting time and follow-up/feedback stages. Information and examples presented in Section 3.3.2 can serve this purpose.
- Focus on how to manage students' silence. Stress the importance of waiting for their response in silence and using different repair strategies.
- Foster an awareness of multimodal interactive discourse. Genre-based pedagogy could be a useful methodological tool (Siczek, 2022).
- Pay special attention to the persuasive function of gaze shifts, facial expressions and hand and arm movements. Stress the importance of looking at the camera and constantly keeping an eye on the chat.
- Focus on how to teach with emotional intelligence (Mortiboys, 2012).

The development of this pedagogical approach should foster lecturers' multimodal interactional competence in EMI online synchronous lectures. It could follow previous proposals in the EMI field (Ruiz-Madrid & Fortanet-Gómez, 2019), but adopt a multimodal analysis for critical thinking (O'Halloran et al., 2017) to increase lecturer awareness of their multimodal interactional competence through the observations of the video recording of their lessons (Santamaría-Urbieta & Querol-Julián, 2020).

Acknowledgements

The author would like to thank the EMI lecturer who agreed to the analysis of her lesson. I am also grateful to the two reviewers and specially to Katrien Deroey, the editor of this special issue, for their careful reading of the manuscript and their insightful comments. This work has been funded by the project PID1920_COMPETENCIA INTERACCIONAL (Universidad Internacional de La Rioja, Spain).

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jeap.2022.101207.

References

Beltrán-Palanques, V., & Querol-Julián, M. (2018). English language learners' spoken interaction: What a multimodal perspective reveals about pragmatic competence. *System, 77*, 70–80. https://doi.org/10.1016/j.system.2018.01.008

Blair, A., Haneda, M., & Bose, F. N. (2018). Reimagining English-medium instructional settings as sites of multilingual and multimodal meaning making. *Tesol Quarterly, 52*(3), 516–539. https://doi.org/10.1002/tesq.449

Butler, D. L., & Winne, P. H. (1995). Feedback and self-regulated learning: A theoretical synthesis. *Review of Educational Research, 65*(3), 245–281. https://doi.org/10.3102/00346543065003245

Costa, F., & Mair, O. (2022). Multimodality and pronunciation in ICLHE (integration of content and language in higher education) training. *Innovation in Language Learning and Teaching*, 1–17. https://doi.org/10.1080/17501229.2022.2053130

Dafouz, E., Nuñez, B., & Sancho, C. (2007). Analysing stance in a CLIL university context: Non-native speaker use of personal pronouns and modal verbs. *International Journal of Bilingual Education and Bilingualism, 10*(5), 647–662. https://doi.org/10.2167/beb464.0

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

Doiz, A., & Lasagabaster, D. (2021). Analysing EMI teachers' and students' talk about language and language use. In D. Lasagabaster, & A. Doiz (Eds.), *Language use in English-medium instruction at university: International perspectives on teacher practice* (pp. 34–55). Routledge. https://doi.org/10.4324/9781003134534-3.

Gu, M. M., Li, Z. J., & Jiang, L. (2021). Navigating the instructional settings of EMI: A spatial perspective on university teachers' experiences. *Journal of Multilingual and Multicultural Development*, 1–15. https://doi.org/10.1080/01434632.2021.1914064

Hall, J. K., & Verplaetse, L. S. (2000). *Second and foreign language learning through classroom interaction*. Lawrence Erlbaum.

Helm, F. (2020). EMI, internationalisation, and the digital. *International Journal of Bilingual Education and Bilingualism, 23*(3), 314–325. https://doi.org/10.1080/13670050.2019.1643823

Hodgson, V. E. (2005). Lectures and the experience of relevance. In F. Marton, D. Hounsell, & N. Entwistle (Eds.), *The experience of learning: Implications for teaching and studying in higher education* (3rd ed., pp. 159–171). University of Edinburgh, Centre for Teaching, Learning and Assessment.

Jewitt, C., Bezemer, J., & O'Halloran, K. (2016). *Introducing multimodality*. Routledge.

Jiang, L., Zhang, L. J., & May, S. (2019). Implementing English-medium instruction (EMI) in China: Lecturers' practices and perceptions, and students' learning motivation and needs. *International Journal of Bilingual Education and Bilingualism, 22*(2), 107–119. https://doi.org/10.1080/13670050.2016.1231166

Jones, T. A. (2020). *Higher education faculty training for the online environment. (Doctoral Dissertation)*. Minneapolis: Walden University. https://scholarworks.waldenu.edu/dissertations/8464/.

Jones, W., McKeown, K., & Littlewood, S. (2022). The challenges of EMI for art and design students in the UAE. *ELT Journal, 76*(2), 238–249. https://doi.org/10.1093/elt/ccab094

Kamaşak, R., Sahan, K., & Rose, H. (2021). Academic language-related challenges at an English-medium university. *Journal of English for Academic Purposes, 49*, 1–16. https://doi.org/10.1016/j.jeap.2020.100945

Kendon, A. (2004). *Gesture: Visible action as utterance*. Cambridge University Press.

Kozar, O. (2016). Lecturers' reaction to silence and lecturers' wait time in video and audioconferencing English lessons: Do webcams make a difference? *System, 62*, 53–62. https://doi.org/10.1016/j.system.2016.07.002

Lasagabaster, D. (2022). Teacher preparedness for English-medium instruction. *Journal of English-Medium Instruction, 1*(1), 48–64. https://doi.org/10.1075/jemi.21011.las

Lepp, A., Barkley, J. E., Karpinski, A. C., & Singh, S. (2019). College students' multitasking behavior in online versus face-to-face courses. *Sage Open, 9*(1), 1–9. https://doi.org/10.1177/2158244018824505
Lim, F. V. (2021). *Designing learning with embodied teaching: Perspectives from multimodality*. Routledge.
Macaro, E. (2018). *English medium instruction: Content and language in policy and practice*. Oxford University Press.
McClave, E. Z. (2000). Linguistic functions of head movements in the context of speech. *Journal of Pragmatics, 32*(7), 855–878. https://doi.org/10.1016/S0378-2166(99)00079-X
Morell, T. (2018). Multimodal competence and interactive lecturing. *System, 77*, 70–79. https://doi.org/10.1016/j.system.2017.12.006
Morell, T. (2020). EMI teacher training with a multimodal and interactive approach: A new horizon for LSP specialists. *Language Value, 12*(1), 56–87. https://doi.org/10.6035/LanguageV.2020.12.4
Morell, T., Norte, N., & Beltrán-Palanques, V. (2020). How do trained English-medium instruction (EMI) lecturers combine multimodal ensembles to engage their students? In R. Roig-Vila (Ed.), *La docencia en la Enseñanza Superior. Nuevas aportaciones desde la investigación e innovación educativas* (pp. 308–321) (Octaedro).
Mortiboys, A. (2012). *Teaching with emotional intelligence: A step-by-step guide for higher and further education professionals* (2nd ed.). Routledge.
Norris, S. (2004). *Analyzing multimodal interaction: A methodological framework*. Routledge.
Norris, S. (2020). *Multimodal theory and methodology: For the analysis of (inter)action and identity*. Routlege.
Norris, S., & Pirini, J. P. (2017). Communicating knowledge, getting attention, and negotiating disagreement via videoconferencing technology: A multimodal analysis. *Journal of Organizational Knowledge Communication, 3*(1), 23–48.
O'Halloran, K. L., Tan, S., & E, M. K. (2017). Multimodal analysis for critical thinking. *Learning, Media and Technology, 42*(2), 147–170. https://doi.org/10.1080/17439884.2016.1101003
Pascarella, E. T. (2006). How college affects students: Ten directions for future research. *Journal of College Student Development, 47*(5), 508–520.
Querol-Julián, M. (2021a). The multimodal genre of synchronous videoconferencing lectures: An eclectic framework to analyse interaction. In K. Ling, I. N. Mwinlaaru, & D. Tay (Eds.), *Aspects of specialized genres: Research and applications* (pp. 198–215). Routledge.
Querol-Julián, M. (2021b). How does digital context influence interaction in large live online lectures? The case of English-medium instruction. *European Journal of English Studies, 25*(3), 299–317. https://doi.org/10.1080/13825577.2021.1988265
Querol-Julián, M., & Amondarain-Garrido, M. (Forthcoming). Listening to silence in Spanish and English-medium instruction online lectures. In V. Beltrán-Palanques & E. Bernad-Mechó (Eds.), Current trends in EMI and multimodality in higher education. Routledge.
Ruiz-Madrid, N., & Fortanet-Gómez, I. (2019). Using pedagogical affordances in order to unveil disciplinary discourse in Electrical Engineering for EMI lecturer training. In A. Jiménez-Muñoz, & C. A. Lahuerta Martínez (Eds.), *Empirical studies in multilingualism. Analysing contexts and outcomes* (pp. 203–229) (Peter Lang).
Ruiz-Madrid, N., & Valeiras-Jurado, J. (2020). Developing multimodal communicative competence in emerging academic and professional genres. *International Journal of English Studies, 20*(1), 27–50. https://doi.org/10.6018/ijes.401481
Sánchez-Pérez, M. M. (Ed.). (2020). *Teacher training for English-medium instruction in higher education*. IGI Global.
Santamaría-Urbieta, A., & Querol-Julián, M. (2020). Training teachers on interactional competence in an online environment: A methodology. In *Proceedings of the 12th international conference on education and new learning technologies* (pp. 2739–2744). https://doi.org/10.21125/edulearn.2020.0829
Sathik, M., & Jonathan, S. G. (2013). Effect of facial expressions on student's comprehension recognition in virtual educational environments. *SpringerPlus, 2*(1), 1–9.
Scollon, R. (1998). *Mediated discourse as social interaction: A study of news discourse*. Longman.
Siczek, M. M. (2022). Advancing global learning through genre-based and multimodal oral academic communication pedagogy. In M. M. Siczek (Ed.), *Pedagogical innovations in oral academic communication* (pp. 19–36). University of Michigan Press.
Sinclair, J., & Coulthard, M. (1975). *Towards an analysis of discourse: The English used by teachers and pupils*. Oxford University Press.
Smit, U. (2019). Classroom discourse in EMI: On the dynamics of multilingual practices. In K. Murata (Ed.), *English-medium instruction from an English as a lingua franca perspective* (pp. 99–122). Routledge.
Suviniitty, J. (2010). Lecturers' questions and student perception of lecture comprehension. *Helsinki English Studies, 6*(1), 44–57.
Terras, K. L. (2017). Transforming the lecturer: Examining personal transformations of faculty redesigning courses from face-to-face to online. *Journal of Transformative Learning, 4*(1), 33–49.
Thomas, G., & Thorpe, S. (2019). Enhancing the facilitation of online groups in higher education: A review of the literature on face-to-face and online group-facilitation. *Interactive Learning Environments, 27*(1), 62–71. https://doi.org/10.1080/10494820.2018.1451897
Tobin, K. (1986). Effects of lecturer wait time on discourse characteristics in mathematics and language arts classes. *American Educational Research Journal, 23*(2), 191–200.
Weimer, M. (2002). *Student-centered teaching: Five key changes to Practice*. Jossey-Bass.
Wertsch, J. V. (1998). *Mind as action*. Oxford University Press.

Mercedes Querol-Julián is an Associate Professor in the Department of English teaching at the Universidad Internacional de La Rioja (Spain). She leads the research group PRODIGI (Personal and Professional Development through Digital Genres). Her current research focuses mainly on the areas of interpersonal relationships and multimodality in academic spoken discourses, with particular interest in online teaching and English-medium education at university. She has published on these topics in journals such as English for Specific Purposes or System, and book chapters in Routledge or John Benjamins.