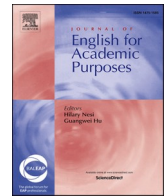




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A multimodal analysis of pair work engagement episodes: Implications for EMI lecturer training

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ARTICLE INFO

Keywords:

English-medium instruction
Lecturer training
Multimodal competence
Interactional competence
Engagement
Discourse analysis

ABSTRACT

Lecturers' abilities to use semiotic resources to construct meaning and to create engagement play an important role in university classrooms where English is the medium of instruction (EMI). The main focus of this study is on how EMI lecturers enrolled in a professional development program use semiotic and interpersonal resources to engage students through pair work activities. Two analyses were conducted on a dataset of twelve micro-teaching sessions extracted from an EMI teacher training corpus. The first analysis identified the moves and pedagogical functions lecturers instantiated while carrying out engagement episodes (EEs). The findings of this analysis served to design the "Pair work engagement episodes framework", which includes five basic moves: 1) contextualizing, 2) setting up, 3) monitoring, 4) eliciting, and 5) summarizing. The second analysis illustrated how the pedagogical functions found in each move of four EEs were constructed multimodally through verbal and non-verbal communicative modes (i.e., spoken, written, non-verbal materials, space, and posture). The pair work EEs framework and the multimodal analysis lend support to strategies that may be implemented in EMI professional development programs to enhance lecturers' multimodal interactional competence.

1. Introduction

Most lecturers would agree that effective teaching involves knowing "what" and "how" to communicate. While the *what* refers to the disciplinary content, the *how* takes into account the ability to use semiotic and interpersonal resources to convey meaning (Morell, 2015). In all classrooms, lecturers may express this knowledge through different degrees of multimodal and interactive discourse. It has been suggested that becoming aware of a varied use of semiotic resources (e.g., Kress, 2010; Norte, 2016, 2018; Ruiz-Madrid & Fortanet-Gómez, 2019) together with interactive discourse (e.g., Suviniitty, 2012; Walsh, 2011) may be beneficial to promote classroom engagement (e.g., Forey & Feng, 2016; Morell et al., 2020; Querol-Julián, 2021a, 2021b). This is especially true in English-medium instruction (EMI) contexts, where there is "an increased risk of disturbance in communication" (Björkman, 2011, p. 196). Due to the nature of these settings, multimodal competence, i.e., lecturers' efficient use of semiotic resources, becomes highly relevant (Heberle, 2010) to construct and represent meaning for students who may lack sufficient linguistic competence. Similarly, interactional competence, i.e., "teachers' and learners' ability to use interaction as a tool for mediating and assisting learning" (Walsh, 2011, p. 158) is needed to promote collaborative classroom discourse (Morell, 2018) that allows for L2 students' exposure to and engagement in meaningful interactions (Hsu, 2015).

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<https://doi.org/10.1016/j.jeap.2022.101124>

Received 11 March 2021; Received in revised form 15 April 2022; Accepted 2 May 2022

Available online 7 May 2022

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The current study focuses on how EMI lecturers taking a professional development program use semiotic and interpersonal resources to engage students through pair work activities. Much like in previous studies, for instance those included in [Morell & Volchenkova, 2021](#) and [Sánchez-Pérez, 2020](#), this research aims to address what to include in professional development programs, but in this case from a multimodal perspective.

A study of the literature on EMI in higher education reveals that institutions have not come to a consensus on the standardization of EMI lecturer training, such as course content and structure or participants' language proficiency requirements ([Costa, 2015](#); [Jiménez-Muñoz, 2020](#)). Concerning content, multimodality and classroom interaction have both been suggested as beneficial components of such professional development programs ([Ball & Lindsay, 2013](#); [Gay et al., 2020](#); [Jiménez-Muñoz, 2020](#); [Llinares & Mendikoetxea, 2020](#)). Nevertheless, EMI teacher training programs, such as the “Plan DOing” at the Autonomous University of Madrid, cover interactional competence ([Llinares & Mendikoetxea, 2020](#)) and others, for example the “Prof-teaching” teaching program at the University of Alicante, deal with both multimodal and interactional competences ([Morell et al., 2022](#)).

The inclusion of multimodal and interactional competences within EMI teacher training can be supported by Systemic Functional Multimodal Discourse Analysis (SF-MDA) (e.g., [O'Halloran, 2004](#)). This approach seeks to understand and describe the organization of semiotic resources and their functions to analyze the meanings that emerge from multimodal choices ([Jewitt et al., 2016](#); [Lim, 2021](#)). Outcomes of SF-MDA analyses can help to decide what aspects of these competences may be included in training. As [Kress et al. \(2001, p. 18\)](#) claimed,

this meaning-making resides in the combined effects of the orchestration of the modes by the producer and by the reproducer, in the interaction between what is said, what is shown, the posture adopted, the movements made, and the position of the speaker and the audience relative to each other in the interaction.

In the case of lecturers attempting to promote pair work activities, special emphasis should be placed on the combination of the semiotic resources they orchestrate. In terms of Systemic Functional Linguistics (SFL), the orchestration of modes is determined by the content (i.e., ideational metafunction), how it is presented (i.e., textual metafunction), and the content-audience relationship (i.e., interpersonal metafunction). In the classroom, this entails lecturers' orchestration of spoken, written, non-verbal materials (NVMs) (e.g., graphs, tables, images, realia), and body language modes, which are necessary to transmit and organize disciplinary content and to interact with students. [Fig. 1](#) represents a SF-MDA framework for classroom interaction (adapted from [Morell, 2015](#)), which includes:

- three basic classroom components: the lecturer, the students, and the topic;
- classroom semiotic resources: spoken, written, NVMs and body language modes; and
- three metafunctions of communication: ideational (content), textual (organization) and interpersonal (engagement).

As is commonly known, the three main components of any lecture are the lecturer, the students and the topic. Nevertheless, it is the lecturer who decides how to represent meaning and especially how to establish interpersonal relationships. The latter -the focus of this study- is fundamental to promote interaction and engagement, and it becomes particularly relevant for EMI contexts where students

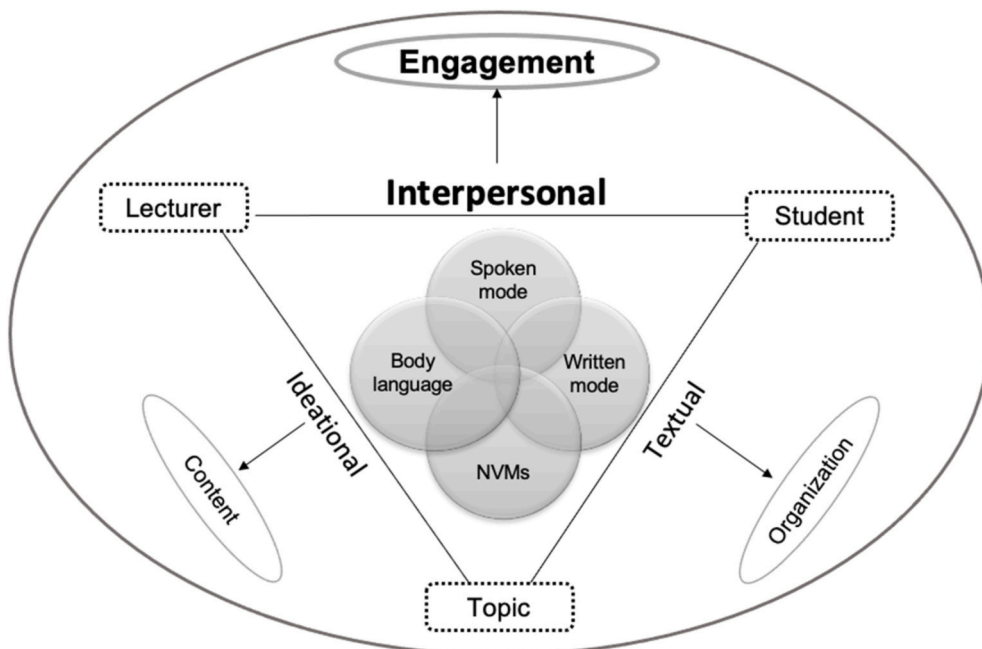


Fig. 1. SF-MDA framework for classroom interaction.

and lecturers may have problems in verbal communication. Interaction in contexts where English is used as a lingua franca is essential for effective lecturing since it helps students to process content (Klaassen, 2001; Querol-Julián, 2021b). In fact, some studies (e.g., Suviniitty, 2012) indicate that a higher degree of interaction will facilitate students' understanding, regardless of the language of instruction. In line with this, interactive lecturing also seems to provide rich opportunities for both lecturers and students to make use of pragmatic strategies (Björkman, 2011) such as questions, negotiation of meaning and elicitation to deal with content and language. These pragmatic strategies characterize engagement episodes (EEs), which are "the instances within the interactive lecture in which students are involved in pair work, group work, debates, games or web-based activities" (Morell et al., 2020, p. 309).

This study first attempts to identify and describe the moves lecturers may instantiate in pair work EEs. Moves are understood here as "rhetorical units that perform a coherent communicative function in a written or spoken discourse" (Swales, 2004, pp. 228–229). Then, these moves are analyzed to determine the pedagogical functions lecturers may follow to engage students. The dataset is taken from the AcqUA EMI micro-teaching corpus derived from the "Prof-Teaching" professional development program at the University of Alicante (UA) (Morell et al., 2022). The research questions that guided this study are as follows:

RQ1: What moves and pedagogical functions are instantiated in pair work activities by EMI lecturers in the Prof-teaching training course?

RQ2: How are these pedagogical functions constructed multimodally by these EMI lecturers?

2. Methodology

2.1. Context

This study draws on the EMI Prof-teaching teacher training workshops held at the UA (Morell et al., 2022). These workshops have been implemented to meet the communicative and pedagogical needs of lecturers from diverse disciplines who are faced with EMI teaching. Among the contents of the second of the three program modules, named "EMI-Reflections, Awareness and Practice (EMI-RAP)", is a special focus on multimodal and interactional competences, which has proven to be beneficial for lecturers' performances (Morell et al., 2020). As a final project of the "Prof-teaching" second module, trainees are asked to put into practice what they have learned (e.g., multimodal and interactive strategies) and to prepare an engaging subject-specific mini-lesson (10–20 min). This mini-lesson should be simplified so that participants from diverse disciplines may not only understand the content, but also be able to take part in the pair work EEs. It is important to point out that the trainees were encouraged to enhance pair work activities, but were not given any explicit instructions on how to go about it.

The participants of these workshops come from the university's seven faculties, namely Economics & Business (ECO), Education (EDU), Humanities & Arts (HUA), Law (LAW), Science (SCI), Health Science (HSC), and the Polytechnic School (PSC). For the purposes of this study, the disciplines of these faculties have been categorized either as Social Sciences (i.e., ECO, EDU, HUA, LAW) or Technical

Table 1
Dataset description.

Lecturer/field	Proficiency level	Experience in higher education/EMI (Yes/No)	Micro-teaching topic	Length of pair engagement episode (start-end)
SS1/Applied economic analysis	C1	3–10 yrs/No	What's an environmental tax? ECO03MIRAP20	6'57" (3'44"-10'41")
SS2/Economics and Business Science	C1	10–20 yrs/No	What is marketing? ECO02ECT115	6'43" (1'06"-7'49")
SS3/Civil Law	C1	>20 yrs/No	The concept of contract LAW01EMIRAP618	8'24" (9'08"-17'32")
SS4/Human geography	C1	10–20 yrs/Yes	Sustainability and tourism HUA03EMIRAP618	8'05" (7'10"-15'15")
SS5/English Studies	C2	3–10 yrs/Yes	Intercultural pragmatics HUA01ECT117	9'35" (4'35"-14'10")
SS6/Spanish Studies	B2	>20/No	Academic Spanish HUA02EMIRAP618	12'49" (2'45"- 15'34")
TS1/Nursing	B2	1–3 yrs/No	Stress and coping HSC01EMIRAP19	6'00" (0'20"-6'20")
TS2/Environmental Sciences	C1	1 yr/No	Urban sprawl SCI01EMIRAP618	10'10" (2'13"-12'23")
TS3/Graphical Expression Design and Projects	C1	3–10 yrs/No	Perception in architecture PSC04EMIRAP618	8'56" (0'43"- 9'39")
TS4/Civil Engineering	B2	3–10 yrs/Yes	Multi-functional concrete PSC01EMIRAP618	4'53" (0'50"- 5'43")
TS5/Applied Physics	B2	1–3 yrs/Yes	Nanoelectronics SCI01EMI19	4'41" (4'58"- 9'39")
TS6/Physics Systems Engineering and Sign Theory	B2	10–20 yrs/No	The Principles of dynamics PSC06EMIRAP618	5'58" (0'08"- 6'06")

Sciences (i.e., SCI, HSC, PSC). The participants' micro-teaching sessions are video recorded and compiled into the continuously developing AcqUA EMI Micro-teaching corpus. To date the corpus contains over 120 video-recorded sessions.

2.2. Dataset

The dataset consists of 12 video recorded EEs that were selected from among 45 of the most recently recorded micro-teaching sessions extracted from the AcqUA EMI corpus. The 12 EEs were taken from six Social Science (SS) and six Technical Science (TS) micro-teaching sessions. These EEs were chosen because they involved lecturers' enhancement of students' pair work activities, which is the object of study in this paper. They served to identify what moves and pedagogical functions EMI lecturers instantiated to foster students' engagement. Then, four of these 12 EEs –SS1, SS3, TS3 and TS6– (highlighted in bold in Table 1) were selected to describe how lecturers constructed these pedagogical functions multimodally. The choice of these four EEs was due to the variety of semiotic resources (e.g., spoken and written language, NVMs, kinesics and proxemics) trainees used throughout the EEs. Table 1 describes the EMI workshop participants' background (i.e., proficiency level, experience in higher education and EMI), the micro-teaching topic, and the length of the pair work EEs.

As shown above, the 12 EMI micro-teaching sessions represent a range of disciplines from three of the university's SS Faculties (i.e., Economics, Law, Humanities) and three of the university's TS Faculties (i.e., Polytechnic School, Science, and Health Science). The participants' English language competence as attested by official certification (e.g., Cambridge exams) is between a B2 (upper-intermediate) and C2 (proficiency) level according to the Common European Framework of Reference for Languages. Their teaching experience in higher education ranges from 1 to more than 20 years, with a median of approximately 10 years. Four lecturers indicated that they had prior experience in teaching in EMI contexts, while the remaining did not. The EEs ranged from 4'41" minutes to 12'49" minutes. The varying lengths of the episodes depended on the time needed to contextualize the topic.

2.3. Data analysis

The study consists of two parts. The first is the macroanalysis of the moves and pedagogical functions lecturers instantiated to promote students' engagement in 12 pair work EEs, whereas the second is the multimodal microanalysis of four of them. To carry out a systematic analysis of the data and to ensure intercoder reliability the three researchers worked together in the macroanalysis and microanalysis.

In the first part, the 12 micro-teaching sessions were carefully watched to identify the pair work EEs (See Table 1). Then, the selected EEs were transcribed and examined to determine the moves and pedagogical functions the lecturers performed. The

The screenshot displays the ELAN software interface. On the left, a video window shows a classroom scene with a lecturer standing at the front and students seated at tables. On the right, a transcription window is open, showing a list of annotations for 'Teacher talk'. The selected annotation (8) reads: 'I would like you to work in groups of... You're quite a few, so in groups of two, in pairs.' Below the transcription, a timeline shows various layers of data: Episode, Moves, Pedagogical functions, Teacher talk, Student talk, Written material-screen, Non-verbal material, Posture, and Spatial position. The timeline is currently set to 00:02:33.999.

Annotation Nr	Annotation Text
1	I would like you to... think about, in a very intuitive way, about your own personal experi...
2	An example about a building or place you've visited that had an impact on you.
3	Ok?
4	An impact can be, because, some, you know, some spaces can make you feel comforta...
5	Ok?
6	And try to explain why. This why is some reasons, it's just some concepts, some words L...
7	Ok?
8	I would like you to work in groups of... You're quite a few, so in groups of two, in pairs.
9	Ok?
10	Just for... a couple of minutes. And think about that.
11	Ok?
12	From your own personal experience. It's very intuitive, there is nothing wrong or right. It'...
13	Ok?
14	You have any doubt?
15	Ok. Perfect.
16	Yes, please.

Fig. 2. ELAN template.

macroanalysis was done to discern which moves lecturers used to carry out pair work activities, and if they coincided with those in Morell (2018) (i.e., setting up, supervising, and eliciting).

In the second part, the microanalysis, we followed a SF-MDA (O'Halloran, 2004) approach to describe how these pedagogical functions were constructed multimodally. For this purpose, four micro-teaching sessions were selected to illustrate how lecturers performed the different pedagogical functions using verbal and non-verbal communicative modes. This analysis was supported by the multimodal annotation software ELAN (Wittenburg et al., 2006). The microanalysis of the moves and the pedagogical functions explored spoken and written language, non-verbal materials (NVMs), kinesics (posture) and proxemics (spatial position). Fig. 2 is an ELAN screenshot of TS3 (Perception in architecture) that illustrates the transcription of the discourse at a specific moment and the corresponding annotations found in the 9 tiers (i.e., episode, moves, pedagogical functions, teacher's talk, student's talk, written-material screen, non-verbal material, posture, and spatial position).

In the results section, Tables 5–8 represent the annotated data obtained with ELAN for each of the four EEs. These tables include the move and pedagogical functions as well as the modes (spoken, written, NVMs and body language) orchestrated. Concerning the spoken mode, a selection of the speakers' keywords and expressions that clearly represented the pedagogical functions were annotated. For the written mode, the words and phrases found on the slide and board were shown through screenshots. NVMs (i.e., images and realia) were also represented through screenshots. To have a general impression of the role of proxemics, i.e., use of space, and kinesics, i.e., body movements, we focused on lecturers' positions in the classroom and their posture when performing the pedagogical functions. In terms of lecturers' use of space, we distinguished two main positions: the authoritative space –in front of the room in control of all students– and the interactive space –near groups of students to promote interaction (Lim et al., 2012). Regarding lecturers' posture in the classroom, two categories were established: dynamic –in movement– and static –still.

3. Results

3.1. Identification of the moves and pedagogical functions in pair work engagement episodes

Having carefully examined each of the pair work EEs of the 12 micro-teaching sessions, it appeared that they had followed five moves, namely contextualizing, setting up, monitoring, eliciting and summarizing (See Table 2).

Much like in Morell (2018), the lecturers set up, monitored (or supervised), and elicited. In the current study, the term “supervising” is renamed “monitoring”. The latter is understood as it is used at lower educational levels, where teachers actively supervise, provide feedback, praise and prompt individuals or groups while carrying out activities (Doyle, 2006; Evertson & Emmer, 2012). In addition to the setting up, monitoring, and eliciting moves, the results of this study indicate that there are two other moves, namely contextualizing and summarizing. This is due to having explored more EEs and broadening the scope of the analysis by taking note of what the lecturers did before the setting-up and after the eliciting moves. The findings reveal that lecturers seem to activate students' background knowledge, raise their awareness and/or familiarize them with a new concept before setting up the activity. In doing so, lecturers can situate students in the context of the activity and begin to involve them. After completing the activity, the summary move serves to recapitulate, reinforce, and build new knowledge. Another finding is the identification of at least three optional pedagogical functions within each move. Fig. 3 shows the moves and pedagogical functions in pair work EEs.

At the start of the EEs, lecturers contextualized the topic for the activity by activating background knowledge, and/or raising awareness, and/or familiarizing with the concept. Lecturers could decide on using one, two or three of these pedagogical functions depending on their particular intentions. Then, in the setting up move, lecturers established the objective and gave instructions, but not necessarily in the same order. In addition, some lecturers appeared to encourage students to participate in this move, as well as in others. This may be a result of having been taught the benefits of active learning, language usage and critical thinking throughout the EMI workshop.

Once the participants had started to work in pairs, the lecturers monitored each by approaching and supervising them or participating in their discussions. That is, some lecturers only supervised the classroom activity, whereas others intervened to support students or in response to their requests. The former provides students with the opportunity to work autonomously, while the latter allows lecturers to enhance students' comprehension and progress. These interventions, initiated by the lecturers or students, involved negotiation of meaning (Morell, 2004), in which the students, for example, requested clarification or the lecturers checked comprehension (Morell, 2020). Moreover, in some cases, lecturers provided scaffolding (Vygotsky, 1978) to best support and encourage students to achieve the pedagogical goals (Gibbons, 2002). After monitoring the students, the lecturers began the eliciting move by either checking if the pairs had completed the activity or requesting them to finish. Then, they proceeded to gather contributions from students and, in some cases, give feedback. The fact that some lecturers did not give feedback and that others simply smiled or nodded

Table 2
Pair work move descriptions.

Moves	Description of lecturers' actions
Contextualizing	situates students in the context of the activity
Setting up	establishes objectives, gives instructions and encourages students to carry out activity
Monitoring	supervises, negotiates meaning, scaffolds, and provides feedback to individuals or pairs
Eliciting	checks completion, asks pairs to provide their responses to the activity and gives feedback
Summarizing	recapitulates, reinforces and builds new knowledge

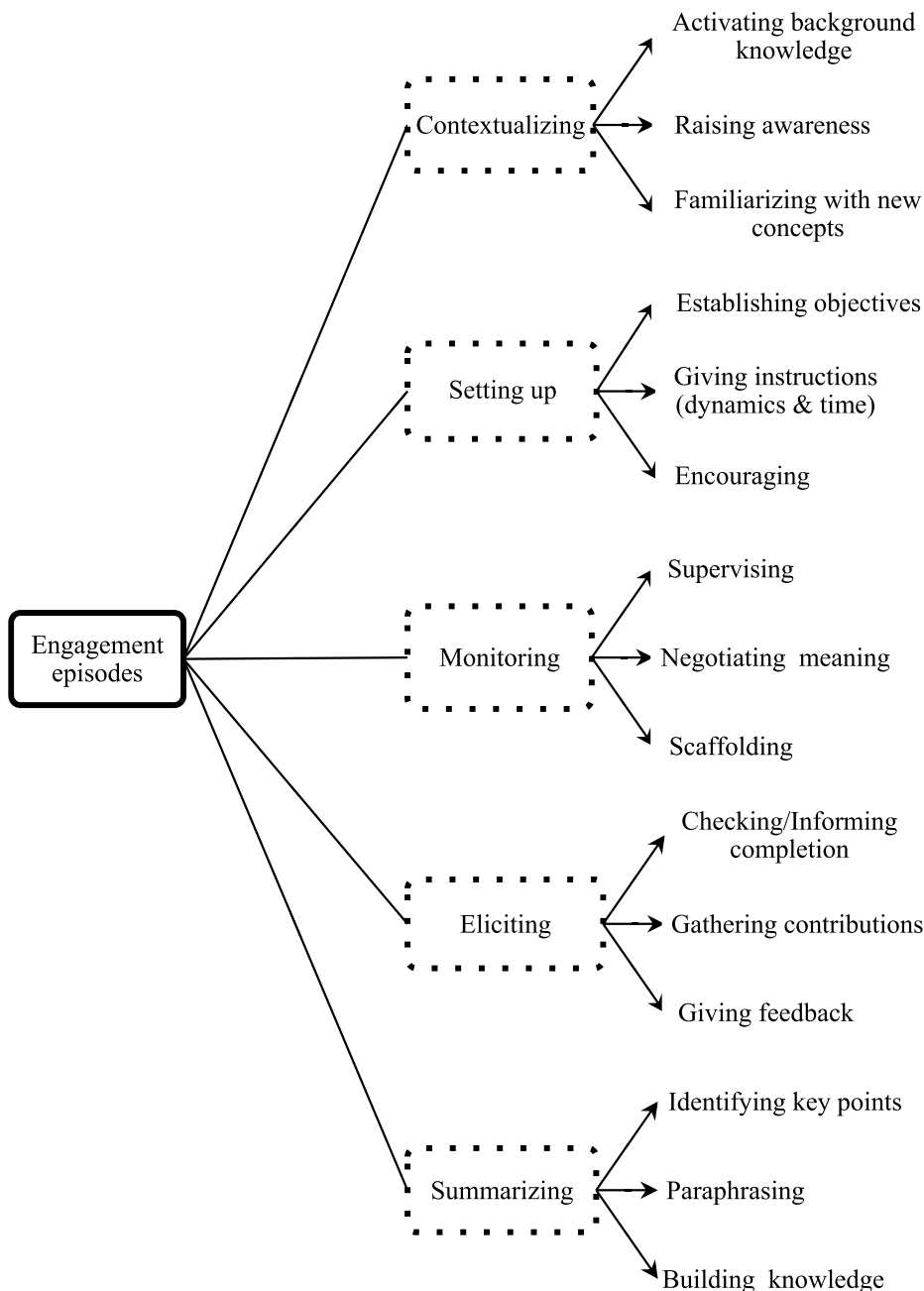


Fig. 3. Pair work engagement episodes framework.

made us decide not to categorize giving feedback as a separate move. In the summarizing move, lecturers drew on students' contributions to identify and paraphrase key points. In this final move, these two pedagogical functions were instantiated at times by means of oral repetition and/or written synthesis of students' contributions on the board. Occasionally, lecturers also showed a previously prepared summary slide. In addition, some lecturers chose to go a step further and helped students make connections between their pair work outcomes and the pedagogical objectives.

The model of the moves and pedagogical functions (Fig. 3) represents a prototypical lecturers' performance of a pair work EE as attested in this study. It seems that if lecturers follow through with the five moves (i.e., contextualizing, setting up, monitoring, eliciting, and summarizing), as was the case in our dataset, they may have a better chance of engaging students in the task. Nevertheless, as explained above, it may be assumed that lecturers do not necessarily implement all five moves or each of the pedagogical functions contained within them.

The examination of the moves and pedagogical functions of the 12 pair work EEs also permitted the identification of how lecturers performed them linguistically. Table 3 provides examples of lecturers' utterances during the specific moves and their pedagogical functions.

3.2. Multimodal construction of the moves and pedagogical functions in pair work engagement episodes

The multimodal analysis of the four pair work EEs (Table 4) was carried out to exemplify how the lecturers instantiated the moves and performed the pedagogical functions drawing on verbal and non-verbal modes of communication. Specifically, we looked at the lecturers' spoken mode, written mode (i.e., on board or screen), use of NVMs (i.e., images and realia), space (i.e., authoritative or interactive), and posture (dynamic or static). In the case of the written mode and the NVMs, lecturers' original slides and illustrations have been maintained. For this purpose, we chose two of the SS (SS1 and SS3) and two of the TS (TS3 and TS6) micro-teaching sessions because they implemented clear examples of the pedagogical functions within the five moves. The selected lecturers did not have any experience in EMI teaching, but they had taught at university for over three years. In the next two sections, the lecturers' multimodal performances in the selected pair work EEs (3.2.1.) will be described, and then the common characteristics found in each of the moves will be discussed (3.2.2.).

3.2.1. The multimodal performances in the EEs

The following descriptions (1–4) provide an overview of the two Social Science (SS1 and SS3) and the two Technical Science (TS3 and TS6) lecturers' multimodal performances while instantiating each of the moves.

Description 1: SS1 What's an environmental tax?. The objective of this micro-teaching session (Table 5) was to explain what is meant by environmental taxation. For this purpose, the lecturer, who started in the authoritative space, not only defined the topic but also represented it on the screen through a written definition and an accompanying image of a factory emitting smog. This seems to have been done to raise students' awareness regarding the impact of environmental taxation on society as well as to introduce a new concept. As she proceeded to set up the activity, she continued in the authoritative space and told the pairs of students that they should decide whether or not their given presumed environmental tax fitted in with the previously presented definition. These instructions were not only spoken ("I want you to discuss if these taxes fit or not in the definition we have studied before"), but also written on the screen so as to reinforce the purpose of the task. Following this, she verbally encouraged them to complete the task and entered the interactive space to negotiate meaning with them ("At first glance, what do you say?"). Having approached each of the pairs, the lecturer returned to her original space (authoritative) to begin the eliciting move by informing them that time was up. As she gathered their contributions, she provided them with feedback ("Yes!", "Exactly!") and simultaneously showed the types of environmental taxations written in red on the screen (perfect, imperfect, and false). Drawing on students' contributions and on the keywords presented on the slide, the lecturer identified the main points and elaborated on them to construct knowledge.

Description 2: SS3 The concept of contract. This engagement episode (EE) aimed to make students aware of the four elements that are necessary for a contract to exist (Table 6). It was contextualized through the previous episode where the participants were encouraged to think of examples of contracts they had recently made. Then, from the authoritative space she briefly activated their background

Table 3

Examples of utterances used to perform pedagogical functions in pair work engagement episodes.

Moves	Pedagogical function	Example
Contextualizing	Activating background knowledge	"Everyone knows what is this?" (TS5)
	Raising awareness	"Imagine that you are in the middle of the African Savanna and enjoying a nice trip and taking some pictures" (TS1)
	Familiarizing with new concept	"This is an atom, ok? An atom is the minimum quantity of the material that we can have" (TS5)
Setting up	Establishing objective	"I'd like you to define the concept of cultural stereotypes" (SS5)
	Giving instructions	"Try to find some keywords, the main keywords that can be used to explain the concept of smart city. Work in pairs for 2 min" (TS4)
Monitoring	Encouraging	"What do you think?" (SS1)
	Supervising	<i>No verbal language (e.g., lecturers moving about and remain silent)</i>
	Scaffolding	"The concept has more than one factor to analyze" (TS2)
Eliciting	Negotiating meaning	S: "We defined like the process that you can sell your best image of your company or our professional project, in global" T: "In global but to sell your image?" (SS2)
	Checking completion	"You have a limited time, so I would like to continue, please" (SS2)
	Gathering contributions	"Ok? Did you finish? Would you be able to share the definitions with the rest of the class?" (SS4)
Summarizing	Giving feedback	"I think you've done a great job" (TS4)
	Identifying key points	"These are the three principles of dynamics" (TS6)
	Paraphrasing	"Newton's laws. This is the first, this is the second, and this is the third" (TS6)
Building knowledge	Building knowledge	"Most people when try to think about marketing and try to define marketing employ these words in their definitions. Promotion, firms, sales ..." (SS2)

Table 4
Selected micro-teaching sessions for the multimodal analysis: lecturers and topics.

Lecturer	Micro-teaching topic
SS1 ECO03MIRAP20	What's an environmental tax?
SS3 LAW01EMIRAP618	The concept of contract
TS3 PSC04EMIRAP618	Perception in architecture
TS6 PSC01EMIRAP618	The principles of dynamics

knowledge by referring to a previously explained sequence of a contract. Immediately after, she set up the activity by establishing the objective of the task (“to find out the four elements needed for a contract to exist”) and told students to work in pairs for 2 min. These instructions were also on the screen. In addition, she provided elicitation clues such as “Think about ... I want to buy ... !” or “He wants to sell ...”, which would allow them to come up with the four elements of a contract. This move was followed by the monitoring of the activity, where she moved around the room in the interactive space, paying attention to all pairs and scaffolding by asking them specific questions to trigger their contract schema. Then, back in the authoritative space, she checked completion and started to gather students’ responses. As she encouraged each of the pairs to answer, she approached them, returned to the board to write their responses, and finally gave feedback. To conclude the EE, she reviewed each of the elements of a contract, which appeared in red one by one on a slide. In so doing, she built knowledge and prepared students for the subsequent activity, which involved defining the term ‘contract’.










Description 3: TS3 perception in architecture. In this micro-teaching session (Table 7 below) the lecturer aimed to raise participants’ awareness of perceptions in architecture, particularly about the effects specific buildings had had on the participants. While standing at the front (authoritative space), near the screen, and addressing the audience the lecturer both contextualized and set up the activity. To contextualize this episode of engagement, the lecturer attempted to activate the students’ background knowledge by referring to how architecture could evoke certain emotions. This was done by stating “perception is the quality of architecture that is capable to (sic) connect with people’s emotions”. Moreover, she provided examples of specific emotions related to architecture (raise awareness). Then, she showed and read a quotation projected on the screen about how architecture may be perceived so as to introduce a new concept. In the setting up move, the lecturer asked students to give an example of a building that had had an effect on them. These instructions were visually represented on the screen. As she explained what the examples should entail, she moved back and forth. Then, she told them to work in pairs and approached each of them to monitor their discussion by means of negotiation of meaning and scaffolding. Once she had interacted with all the pairs, she asked, “have you finished?” and then proceeded to request volunteers to give examples of buildings. While they were giving their examples, the lecturer approached each of the pairs, and positively reinforced them with “ok”, “yes”, or “perfect”. In addition, she wrote the types of buildings and their influencing characteristics on the board. The students’ contributions, which had been written on the board, served as a summary of the key points discussed. In this case, instead of following the usual summarizing move, the lecturer shared her own experience, thus making a connection between the students’ contribution and her own.

Description 4: TS6 The principles of dynamics. In this engagement episode, the lecturer aimed to review the principles of dynamics (Table 8). While standing in the authoritative space, he contextualized the pair work activity by showing a cartoon picture of Newton, who was twittering while apples were falling on his head. Then, the lecturer asked, “who is this guy?”. This served to connect the topic with present day students and established rapport with them. Then, he proceeded to inquire if anyone knew the principles of dynamics and dropped a notebook on the floor not only to catch their attention, but also to exemplify what these principles involved. To set up the activity, he divided the group into pairs by approaching them and calling out their names. They were asked to answer the questions that he verbalized and were projected on the slide (“Do you remember the principles of dynamics? How many are there? Could you tell (sic) any of them?”). As the participants were discussing possible responses, he came closer and intervened to scaffold (“Be careful, the principles of dynamics not their physical magnitudes”) and negotiated meaning with them (S: “I don’t know what is dynamics (sic)” T: “The explanation of why things move the way they move”). After a minute, he called on the different pairs to elicit their answers, and then he collected the three correct responses on the board (principle of inertia, action/reaction and $F = ma$), and subsequently, summarized by showing them on the screen. In addition, he recapitulated the content discussed throughout the engagement episode to prepare them to construct new knowledge.

3.2.2. Common characteristics in the multimodal performances


Having multimodally analyzed the four pair work EEs, we now proceed to compare the lecturers’ multimodal performances to determine what may be considered common characteristics in each of the moves. This comparison of what the lecturers did allowed us to observe how they orchestrated semiotic resources to create the moves and to carry out the pedagogical functions. What follows is a systematic description of the multimodal ensembles found in the data. First, it takes into account the pedagogical functions, then the spoken and written modes, the NVMs and finally the lecturers’ use of space and posture in each of the moves.

Table 5
SS1's multimodal construction of pedagogical functions

SS1 Environmental Taxation					
Move	Pedagogical Functions	Spoken	Written (slide/board)	NVMs (slide / realia)	Proxemics
Contextualizing 	Activating background knowledge Raising awareness	— “It is a question of having an impact on society to reduce environmental taxes”	— “An environmental tax is a tax whose tax base is a physical unit (or a proxy of it) that has a proven specific negative impact on the environment ” <div style="border: 1px solid orange; padding: 2px; text-align: center;"> POLLUTER-PAYS PRINCIPLE </div>	— 	— Authoritative space and dynamic posture
	Familiarizing with new concepts	“This is the way we should represent environmental taxation”	“An environmental tax is a tax whose tax base is a physical unit (or a proxy of it) that has a proven specific negative impact on the environment ” <div style="border: 1px solid orange; padding: 2px; text-align: center;"> POLLUTER-PAYS PRINCIPLE </div>		Authoritative space and dynamic posture
Setting up 	Establishing objectives	“I want you to discuss if these taxes fit or not in the definition we have studied before”	<u>Work in pair...</u> Your teacher will give you an example of a presumed environmental tax applicable in Spain. Discuss with your partner if it fits in the general definition of environmental tax.	—	Authoritative space and dynamic posture
	Giving instructions (dynamics & time)	“now it's your turn” “I want you to work in pairs”	<u>Work in pair...</u> Your teacher will give you an example of a presumed environmental tax applicable in Spain. Discuss with your partner if it fits in the general definition of environmental tax.	Index cards with examples	Authoritative space and dynamic posture
Monitoring 	Encouraging	“What do you think?”	“An environmental tax is a tax whose tax base is a physical unit (or a proxy of it) that has a proven specific negative impact on the environment ” <div style="border: 1px solid orange; padding: 2px; text-align: center;"> POLLUTER-PAYS PRINCIPLE </div>		Interactive space and dynamic posture
	Supervising	—	“An environmental tax is a tax whose tax base is a physical unit (or a proxy of it) that has a proven specific negative impact on the environment ” <div style="border: 1px solid orange; padding: 2px; text-align: center;"> POLLUTER-PAYS PRINCIPLE </div>		Interactive space and dynamic posture
	Negotiating meaning	“At first glance, what do you say?” “Is it clear?”	“An environmental tax is a tax whose tax base is a physical unit (or a proxy of it) that has a proven specific negative impact on the environment ” <div style="border: 1px solid orange; padding: 2px; text-align: center;"> POLLUTER-PAYS PRINCIPLE </div>		Interactive space and dynamic posture
Eliciting 	Scaffolding Checking completion	— “OK, it's time. It is time to discuss”	— <u>Work in pair...</u> Your teacher will give you an example of a presumed environmental tax applicable in Spain. Discuss with your partner if it fits in the general definition of environmental tax.	—	Authoritative space and dynamic posture
	Gathering contributions	“What do you say about tax emission?”	Possible classification: <u>Work in pair...</u> Your teacher will give you an example of a presumed environmental tax applicable in	—	Authoritative space and dynamic posture

(continued on next page)





Table 5 (continued)

SS1 Environmental Taxation					
Move	Pedagogical Functions	Spoken	Written (slide/board)	NVMs (slide / realia)	Proxemics
			Spain. Discuss with your partner if it fits in the general definition of environmental tax. Possible classification: 1. Perfect environmental taxes (tax on emissions) <u>Work in pair...</u> Your teacher will give you an example of a presumed environmental tax applicable in Spain. Discuss with your partner if it fits in the general definition of environmental tax. Possible classification: 1. Perfect environmental taxes (tax on emissions)	—	Authoritative space and dynamic posture
	Giving feedback	“Yes!” “Exactly!”	2. Imperfect environmental taxes (water tax). <u>Work in pair...</u> Your teacher will give you an example of a presumed environmental tax applicable in Spain. Discuss with your partner if it fits in the general definition of environmental tax. Possible classification: 1. Perfect environmental taxes (tax on emissions) 2. Imperfect environmental taxes (water tax). 3. False environmental taxes (commercial establishment)	—	Authoritative space and dynamic posture
Summarizing	Identifying key points	“The first tax is perfect because there is a relationship between the contaminating units... the second is imperfect...and the third is false...”	Spain. Discuss with your partner if it fits in the general definition of environmental tax. Possible classification: 1. Perfect environmental taxes (tax on emissions) 2. Imperfect environmental taxes (water tax). 3. False environmental taxes (commercial establishment)	—	Authoritative space and dynamic posture
	Paraphrasing Building knowledge	— “What I wanted to show through these examples is that in Spain environmental taxes is a mixture of different things”	— <u>Work in pair...</u> Your teacher will give you an example of a presumed environmental tax applicable in Spain. Discuss with your partner if it fits in the general definition of environmental tax. Possible classification: 1. Perfect environmental taxes (tax on emissions) 2. Imperfect environmental taxes (water tax). 3. False environmental taxes (commercial establishment)	—	Authoritative space and dynamic posture

Contextualizing. Each of the three pedagogical functions of the contextualizing move, i.e., activating background knowledge, raising awareness, and familiarizing with new concepts, was found in at least one of the four episodes examined. In all cases, lecturers orchestrated spoken, written and body language modes. Three lecturers activated background knowledge by making a request (TS3), asking a display question, (i.e., a question to check knowledge) (TS6), and by uttering an expository statement (SS1 and TS3). Two lecturers raised awareness by means of an expository statement (SS1) and an expert’s perspective (TS3). Only one lecturer introduced a new concept through an expository statement (SS3). In addition, in the written mode, some lecturers purposely highlighted keywords on slides. Two lecturers (i.e., SS1 and TS6) were found to make use of NVMs, specifically a book and images projected on the slides. In terms of posture, the four lecturers were dynamic in the authoritative space while contextualizing the topic.

Setting-up. In this move, the four lecturers implemented the three pedagogical functions, i.e., establishing objectives, giving instructions, and encouraging. As in the previous move, the lecturers combined spoken, written and body language modes. The spoken mode was used to establish the objectives. For this purpose, requests (SS1 and TS3), an expository statement (SS3), and a display question (TS6) were used. Instructions were given in all cases by means of requests. The lecturers encouraged students to participate through a referential question (i.e., a real question related to experience) (SS1), clues (SS3 and TS3), and by praising (TS6). NVM was used by SS1 in giving instructions and encouraging moves. While explaining what to do, SS1 provided students with index cards with some examples related to the topic. In addition, even though she was projecting the activity on the slide, she was asked by the students

Table 6
SS3's multimodal construction of pedagogical functions

SS3 The concept of contract					
Move	Pedagogical Functions	Spoken	Written (slide/board)	NVMS (slide / realia)	Kinesics and Proxemics
Contextualizing 	Activating background knowledge	"Think about the sequence I've explained to you, okay?"	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Dynamics</div> 1) To think about the contracts we have made in the last days (individual task, 1 minute) contract of sale contract for medical services contract for restaurant services	—	Authoritative space and dynamic posture
	Raising awareness	—	—	—	—
	Familiarizing with new concepts	—	—	—	—
Setting up 	Establishing objectives	"So the second task is to find out the four elements needed for a contract to exist. Four elements"	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Dynamics</div> 1) To think about the contracts we have made in the last days 2) To find out the elements needed for a contract to exist (work in groups, 2 minutes) 3) To come up with a definition of contract	—	Authoritative space and dynamic posture
	Giving instructions (dynamics & time)	"And I want you to work in pairs for two minutes"	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Dynamics</div> 1) To think about the contracts we have made in the last days 2) To find out the elements needed for a contract to exist (work in groups, 2 minutes) 3) To come up with a definition of contract	—	Authoritative space and dynamic posture
	Encouraging	"Think about... I want to buy... he wants to sell... he offers... yes... I want to buy...you want to sell... and you say yes, I want!"	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Dynamics</div> 1) To think about the contracts we have made in the last days 2) To find out the elements needed for a contract to exist (work in groups, 2 minutes) 3) To come up with a definition of contract	—	Interactive space and dynamic posture
Monitoring 	Supervising	—	—	—	—
	Negotiating meaning Scaffolding	S: "It has to be an exchange, no?" T: "Okay. You have to think about, not what is behind, but what is to make the contract, the need is something before, okay? But in the contract, you..."	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Dynamics</div> 1) To think about the contracts we have made in the last days 2) To find out the elements needed for a contract to exist (work in groups, 2 minutes) 3) To come up with a definition of contract	—	Interactive space and dynamic posture
Eliciting 	Checking completion	"So, are we ready? More or less? Okay, more or less, so..."	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Dynamics</div> 1) To think about the contracts we have made in the last days 2) To find out the elements needed for a contract to exist (work in groups, 2 minutes) 3) To come up with a definition of contract	—	Authoritative space and dynamic posture
	Gathering contributions	"Let's start with Borja and Patricia"	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Dynamics</div> 1) To think about the contracts we have made in the last days 2) To find out the elements needed for a contract to exist (work in groups, 2 minutes) 3) To come up with a definition of contract Board: 1. People - parties 2. Object - goods & service 3. Agreement - consent	—	Authoritative space and dynamic posture

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Table 6 (continued)

SS3 The concept of contract					
Move	Pedagogical Functions	Spoken	Written (slide/board)	NVMs (slide / realia)	Kinesics and Proxemics
	Giving feedback	"That's interesting!"	<div style="border: 1px solid black; padding: 5px; display: inline-block;">Dynamics</div> <ol style="list-style-type: none"> 1) To think about the contracts we have made in the last days 2) To find out the elements needed for a contract to exist (work in groups, 2 minutes) 3) To come up with a definition of contract Board: 1. People - parties 2. Object - goods & service 3. Agreement - consent 4. Engagement	—	Interactive space and dynamic posture
Summarizing	Identifying key points	"The second one is the agreement"	<div style="border: 1px solid black; padding: 5px; display: inline-block;">ELEMENTS NEEDED IN A CONTRACT</div> <p style="color: red; text-align: center; margin-top: 10px;">AGREEMENT</p>	—	Authoritative space and dynamic posture
	Paraphrasing Building knowledge	— "So, with these elements I think we are ready to come up with a definition of contract"	<div style="border: 1px solid black; padding: 5px; display: inline-block;">ELEMENTS NEEDED IN A CONTRACT</div>	—	Authoritative space and dynamic posture




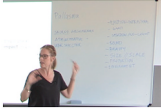
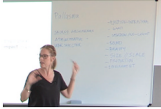
to change it to show the slide containing the definition needed for the activity. While giving instructions, it appears that the four lecturers were conscious of the need to ascertain that the students clearly understood the instructions; thus, they not only verbalized them but also had them written on slides. While some lecturers showed the instructions for the activity (SS1 and SS3), others included referential (TS3 and TS6) and display (TS6) questions to be answered. Instructions for pair dynamics were also added on slides by three lecturers (SS1, SS3 and TS6). Regarding space and posture, data showed that while stating objectives the four lecturers were in the authoritative space, whereas when encouraging they were in the interactive space. Nevertheless, when giving instructions two lecturers (i.e., SS1 and SS3) remained in the authoritative space, whereas two others (i.e., TS3 and TS3) were in the interactive space. In all cases, the lecturers were dynamic throughout the move.

Monitoring. During the monitoring move, the four lecturers entered the pair discussions by either negotiating meaning (SS1) or scaffolding (SS3), or both (TS3 and TS6). In this move, as in the others, the lecturers employed spoken, written, and body language modes. NVM was only used by SS1. The remaining lecturers kept using slides to present the same information as in the setting up move. Regarding the spoken mode, those lecturers who negotiated meaning asked display questions, comprehension checks and confirmation checks, while those who scaffolded included responses to students' questions along with follow-up elicitation questions, and guidance. Due to the nature of the monitoring move, the lecturers were dynamic within the interactive space to approach each of the pairs.

Eliciting. In the eliciting move, the three possible pedagogical functions, i.e., checking completions, gathering contributions, and giving feedback, were instantiated by the four lecturers. In this move, the lecturers also orchestrated spoken, written, and body language modes. To check completion, lecturers used either requests (SS1 and TS6) or polar questions (SS3 and TS3). Then, while gathering contributions, three lecturers (SS1, SS3 and TS6) overtly approached each of the pairs and encouraged them to share their responses, and one lecturer asked for volunteers (TS3). The lecturers mostly provided feedback that reinforced them positively. In regard to the written mode, three lecturers (SS3, TS3 and TS6) progressively collected students' contributions on the board, while the initial prompts for the activities remained projected. In contrast, one lecturer did not collect students' contributions but gradually presented a previously prepared slide containing a list of highlighted key points. Concerning posture, all the lecturers were dynamic and stood in the authoritative space when checking completion of the activity and gathering contributions. However, when giving feedback, two remained in the authoritative space (SS1 and TS3) and two in the interactive space (SS3 and TS6).


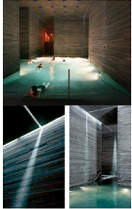
Summarizing. In the last move, the pedagogical function of building knowledge was instantiated by all lecturers. Nevertheless, two also identified key points, and another paraphrased. As in all the previous moves, the lecturers also relied on the spoken mode, written mode and body language to construct meaning. The four lecturers spoke to build knowledge by reviewing what the students had

Table 7
TS3's multimodal construction of pedagogical functions

TS3 Perception in architecture					
Move	Pedagogical Functions	Spoken	Written (slide/board)	NVMs (slide / realia)	Kinesics and proxemics
Contextualizing 	Activating background knowledge	"Perception is the quality of architecture that is capable to connect with people's emotions"	PERCEPTION	—	Authoritative space and dynamic posture
	Raising awareness	"I think architecture can be inspiring, can be life enhancing, can be engaging but also can be annoying"	PERCEPTION people's emotions	—	Authoritative space and dynamic posture
	Familiarizing with new concepts	"It's these three parts material, embodied and spiritual essence"	"An architectural work is not experienced as a series of isolated retinal pictures, but in its fully integrated material, embodied and spiritual essence "	—	Authoritative space and dynamic posture
Setting up 	Establishing objectives	"Think about your own per-personal experience in architecture...an example about a building or place you've visited that had an impact on you"	Can you think about a building or place you've visited that had an impact on you? Why?	—	Authoritative space and dynamic posture
	Giving instructions (dynamics & time)	"You're quite a few so in groups of two, in pairs" "Just for... a couple of minutes"	Can you think about a building or place you've visited that had an impact on you? Why?	—	Interactive space and dynamic posture
	Encouraging	"Try to remember how you felt there and try to-to explain why, ok?"	Can you think about a building or place you've visited that had an impact on you? Why?	—	Interactive space and dynamic posture
Monitoring 	Supervising	—	—	—	—
	Negotiating meaning	S: "I don't know, it's for... It was for the mix of styles the-the light that we can perceive into"	Can you think about a building or place you've visited that had an impact on you? Why?	—	Interactive space and dynamic posture
Eliciting 	Scaffolding	S: "How can I say <i>rectorado</i> ? Eh... the building of <i>rectorado</i> " T: "Eh... well, the... I don't know, the main... administrative building"	Can you think about a building or place you've visited that had an impact on you? Why?	—	Interactive space and dynamic posture
	Checking completion	"You finished more or less?"	Can you think about a building or place you've visited that had an impact on you? Why?	—	Authoritative space and dynamic posture
	Gathering contributions	"Now I want you to tell me these-these examples you have. Who wants to start? Anyone?"	Can you think about a building or place you've visited that had an impact on you? Why? <u>Board Left:</u> Pallasma. Sacred architecture <u>Board Right:</u> Light. Beauty.	—	Authoritative space and dynamic posture
Eliciting 	Giving feedback	S: "A very good building the cathedral of Palma" T: "Ok perfect"	Can you think about a building or place you've visited that had an impact on you? Why? <u>Board Left:</u> Pallasma. Sacred architecture Administrative War shelter <u>Board Right:</u>	—	Authoritative space and dynamic posture

(continued on next page)

Table 7 (continued)

TS3 Perception in architecture					
Move	Pedagogical Functions	Spoken	Written (slide/board)	NVMs (slide / realia)	Kinesics and proxemics
Summarizing 	Identifying key points	—	Light. Beauty. Shadow/no-light. Sound. Size. Scale. Proportion. Environment <u>Board Left:</u> Pallasma. Sacred architecture Administrative War shelter <u>Board Right:</u> Light. Beauty. Shadow/no-light. Sound. Size. Scale. Proportion. Environment	—	Authoritative space and static posture
	Paraphrasing Building knowledge	“I think almost everyone when they experience something with architecture is really based on beauty or very negative, no? I’m going to show you one of my favorite buildings in the world”	— <u>Board Left:</u> Pallasma. Sacred architecture Administrative War shelter <u>Board Right:</u> Light. Beauty. Shadow/no-light. Sound. Size. Scale. Proportion. Environment		Authoritative space and dynamic posture

learned through the pair activity and by making a connection with the forthcoming activity (SS1 and TS3). To identify key points, two lecturers (SS1 and TS6) restated what had been discussed while gathering students’ contributions. Similarly, to paraphrase, one of the lecturers (TS6) drew on students’ answers to devise a well-structured and combined response. In the case of the written mode, all the lecturers highlighted words to emphasize key points and three of them (SS1, SS3 and TS6) included a final overview of the topic addressed. NVMs were used by two lectures, SS3 and TS3; the former used a diagram with key points, and the latter projected an image to share her own example. Finally, with respect to space and posture, the four lecturers remained in the authoritative space and were dynamic.

4. Discussion

In the study, we attempted to identify the moves lecturers instantiate when carrying out pair work engagement episodes and the possible pedagogical functions that may emerge from them. In addition, we explored the ways in which lecturers implemented these pedagogical functions from a multimodal perspective.






The first analysis allowed us to devise a prototypical and adaptable framework for the construction of pair work episodes. This model consists of five moves, namely: 1) contextualizing, 2) setting up, 3) monitoring, 4) eliciting, and 5) summarizing. For each of these moves, we found that depending on lecturers’ aims they can select from several pedagogical functions to promote participants’ engagement in pair work. Data revealed that in the contextualization move, lecturers activated students’ background knowledge and/or raised their awareness and/or familiarized them with new concepts. The setting up move consisted of establishing objectives, giving instructions and possibly encouraging. The monitoring move involved supervision with or without verbal interactions to negotiate meaning and/or to scaffold. In the elicitation move, all lecturers either requested the pairs to finish (or checked if they had), gathered their contributions, and in some cases gave feedback. Finally, in the summarizing move, lecturers synthesized key points or paraphrased, or chose to go a step further and build knowledge.

The second analysis was conducted to explore how lecturers used and combined communicative modes in pair work engagement episodes to perform these pedagogical functions. For this purpose, a multimodal discourse analysis of four lecturers’ use of spoken, written, NVMs, space and posture was carried out. In the five moves they were constantly moving and making use of all modes except for NVMs, which were implemented only occasionally. It was found that an intersemiotic relationship (Jewitt et al., 2016) exists between the spoken and written modes in each of the moves. The only exception was the monitoring move where the spoken mode, use of space, and posture were foregrounded. In general terms, our findings describe how modes may be combined within each of the moves.

In the contextualization move, the spoken and written modes are orchestrated to capture the audience’s attention and engage them in the proceeding activity. To activate background knowledge and/or raise awareness, the lecturers asked audience-oriented questions, made requests and presented statements or professional views about a topic. These spoken strategies were reinforced by the written words on slides, which were at times highlighted in colors. NVMs served as illustrative or expository tools (Morell, 2015) to either support spoken and written information or stimulate the co-construction of discourse between the lecturer and students. During the contextualizing move, lecturers occupied the authoritative space (Lim et al., 2012) to take control of the lecture and to attract the audience’s attention.


In the setting up move, both the spoken and written modes took on a crucial role to assure that students understood objectives and

Table 8
TS6's multimodal construction of pedagogical functions

TS6 Principles of dynamics					
Move	Pedagogical Functions	Spoken	Written (slide/board)	NVMs (slide /realia)	Kinesics and Proxemics
Contextualizing 	Activating background knowledge	T: "What's Newton doing here apart from twitting?" S: "He is receiving apples on his head" T: "Yes, he's observing nature, yes?"	The principles of dynamics	Image and a book (realia) 	Authoritative space and dynamic posture
	Raising awareness Familiarizing with new concepts	— —	— —	— —	— —
Setting up 	Establishing objectives	"Does any of you remember the principles of dynamics? How many? Could you tell any?"	The principles of dynamics Do you remember the principles of dynamics...? How many are there? Could you tell any them?	—	Authoritative space and dynamic posture
	Giving instructions (dynamics & time)	"Why don't you try to gather in groups of two" "You have one minute"	The principles of dynamics Do you remember the principles of dynamics...? How many are there? Could you tell any them?	—	Interactive space and dynamic posture
	Encouraging	"Oh you have two already, that's great!"	<i>Gather in groups of two and try to recall them</i> The principles of dynamics Do you remember the principles of dynamics...? How many are there? Could you tell any them? <i>Gather in groups of two and try to recall them</i>	—	Interactive space and dynamic posture
Monitoring 	Supervising Scaffolding	— "Be careful, the principles of dynamics, not their physical magnitudes gravity is not a principle"	— The principles of dynamics Do you remember the principles of dynamics...? How many are there? Could you tell any them? <i>Gather in groups of two and try to recall them</i>	— —	— Interactive space and dynamic posture
	Negotiation of meaning	S: "I don't know what is dynamics" T: "The explanation of why things move the way they move"	The principles of dynamics Do you remember the principles of dynamics...? How many are there? Could you tell any them? <i>Gather in groups of two and try to recall them</i>	—	Interactive space and dynamic posture
Eliciting 	Checking completion	"Ok?, well, I think time is over"	The principles of dynamics Do you remember the principles of dynamics...? How many are there? Could you tell any them? <i>Gather in groups of two and try to recall them</i>	—	Authoritative space and dynamic posture
	Gathering contributions	"Let's start with this first group" "Then second group"	<i>Gather in groups of two and try to recall them</i>	—	Interactive space and

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Table 8 (continued)

TS6 Principles of dynamics					
Move	Pedagogical Functions	Spoken	Written (slide/board)	NVMs (slide /realia)	Kinesics and Proxemics
		“And you?” “Anything else?”	The principles of dynamics Do you remember the principles of dynamics...? How many are there? Could you tell any them? Gather in groups of two and try to recall them		dynamic posture
	Giving feedback	“That’s good” “That’s beyond the principles of dynamics”	Board: -Principle of inertia The principles of dynamics Do you remember the principles of dynamics...? How many are there? Could you tell any them? Gather in groups of two and try to recall them	—	Interactive space and dynamic posture
Summarizing 	Identifying key points	“Ok, we’ve got everything” “So in fact these are the three Principles of dynamics”	The principles of dynamics Do you remember the principles of dynamics...? Principle of inertia (Newton’s 1 st law) F = ma (Newton’s 2 nd law) Principle of action-reaction (Newton’s 3 rd law) Board: -Principle of inertia -action/reaction -F=ma	—	Authoritative space and dynamic posture
	Paraphrasing	“Newton’s laws. This is the first, this is the second, and this is the third”	The principles of dynamics Do you remember the principles of dynamics...? Principle of inertia (Newton’s 1 st law) F = ma (Newton’s 2 nd law) Principle of action-reaction (Newton’s 3 rd law) Board: 1.Principle of inertia 3. action/reaction 2. F=ma	—	Authoritative space and dynamic posture
	Building knowledge	“Through the principles of dynamics, let’s root out misconceptions”	The principles of dynamics Do you remember the principles of dynamics...? Principle of inertia (Newton’s 1 st law) F = ma (Newton’s 2 nd law) Principle of action-reaction (Newton’s 3 rd law) Board: 1.Principle of inertia 3. action/reaction 2. F=ma	—	Authoritative space and dynamic posture

instructions for the activities. However, when encouraging students to participate, the spoken mode prevailed. In terms of kinesics and proxemics, lecturers tended to remain in the authoritative position when establishing the objectives, whereas some progressively moved to the interactive space to give instructions and encourage students. This transition from the authoritative to the interactive space corresponds with the shift from the teacher-fronted to the learner-centered classroom set up (Ball & Lindsay, 2013), which increases throughout the following move.

The monitoring move takes place entirely in the interactive space and entails mostly spoken discourse to best facilitate students’ comprehension and completion of the activity. It is during this move that students truly work together, and lecturers can support them

by negotiating meaning and scaffolding. During this time, lecturers relegate power to students, who adopt a central role by engaging in thinking-based learning and assuming more responsibility in peer and lecturer interactions. These interactions may be considered a mediational tool to assist students' learning (Walsh, 2011), shown to be necessary especially in EMI contexts (e.g., Björkman, 2010; 2011) where students need support both in language and content (Airey, 2011; Hellekjaer, 2010; Suvinitty, 2012).

In the elicitation move, speech and writing on the board are found to prevail over the other modes. The combination of these two modes is observed in the pedagogical function of gathering contributions since lecturers not only engage students in interaction but also used the board to note down their responses. In contrast, the spoken mode is salient in the pedagogical functions of checking completion and giving feedback to provide positive reinforcement. Regarding the use of space, most lecturers stay in the authoritative position whereas others make use of the interactive space to gather contributions and give feedback. This is true if the room is set up in such a way (e.g., U-shape student seating arrangement) that allows lecturers to move about and approach students.

The use of semiotic resources in the summarizing move appears to be similar to the setting up and contextualizing moves because they are characterized by the orchestration of spoken, written and, occasionally, NVM modes. In relation to the spoken mode, lecturers tend to repeat the concepts that have been alluded to throughout the activity so as to consolidate learning. Furthermore, the intertwining of the spoken and NVM modes may be used to connect what has been reviewed with the following topic and/or activity. Lecturers usually remain in the authoritative position at the end of the engagement episode to regain control of the lesson.

The findings of these two analyses seem to show the complexity of constructing EEs in EMI contexts, where lecturers are not only confronted with the use of English to teach content but also with the need to involve students and promote interaction. Furthermore, there is also a shift in the teaching approach, where teacher-fronted and learner-centered methodologies are combined to give students opportunities to deal with both content and language in meaningful situations. To construct EEs, the first analysis alludes to lecturers' use of pedagogical functions to contextualize the topic, set up the activity, monitor students' work, elicit their contributions, and summarize the consolidated concepts. The analysis of the moves revealed that each move consisted of three optional pedagogical functions (see Fig. 3). The second analysis revealed how these pedagogical functions were multimodally configured and implemented to engage students. Specifically, the orchestration of speech, written materials, and posture was found to be salient throughout each of the moves to construct the EEs. This multimodal ensemble allowed lecturers to reiterate meaning and thus facilitate the expression of content to enhance students' comprehension (Campoy-Cubillo & Querol-Julián, 2015; Norte & Morell, forthcoming) and, in turn, to promote interaction (Suvinitty, 2012). In addition, in some cases, NVMs fulfilled the expository and illustrative functions (Feng, 2021; Rowley-Jolivet, 2002), found in the contextualizing, setting up and summarizing moves. Throughout each move, it was found that lecturers adopted a dynamic posture at all times and varied their spatial position from the authoritative to interactive space (Lim et al., 2012). These changes in space served to promote a more interpersonal learner-centered approach.

This study is not without limitations. The limited number of pair work EEs does not allow us to make any strong claims in terms of the framework's reliability. In future studies, the dataset could be expanded to determine how well the framework represents what lecturers do when carrying out pair work EEs within a greater range of disciplines. On the one hand, this would permit us to verify if the moves identified in the 12 pair work EEs are also found in other disciplines. On the other hand, this would also serve to find out if there are differences in pair work EEs between the diverse fields of study. Furthermore, the multimodal analysis could be broadened to also take into account other modes of communication such as facial expression, gaze and gestures, which have also been considered important for effective communication. Not only could we explore more semiotic resources but we could also examine how lecturers set up EEs in other types of activities such as group work, debates and oral presentations. Further research could explore how EMI trained lecturers create spaces for multimodal interaction and implement the pedagogical functions in authentic lessons.

5. Pedagogical implications

This study analyzes pair work engagement episodes by participants of an EMI professional development program. Although they were not taken from authentic EMI classrooms, these pair work EEs may possibly provide insights into how lecturers can create spaces for engagement in the diverse EMI classroom scenarios and across disciplines. Drawing on the pair work EEs framework and the multimodal analysis, research-based strategies to enhance lecturers' multimodal and interactional competences are suggested. These strategies may be useful for EMI lecturers and designers of professional development programs at university. The first five strategies (1–5) consist of recommendations for lecturers on how to implement multimodal resources so as to engage students and allow them to take on a more active role. The remaining five strategies (6–10) focus on each of the five moves of the pair work EEs framework.

In terms of multimodality and the specific modes of communication alluded to in this study, lecturers should consider the following:

1. orchestrate speech, writing, NVMs, space and posture throughout the EEs to facilitate lecturers' representation of meaning and students' comprehension, as well as to initiate and maintain interaction (Multimodality);
2. share professional experiences and ask audience-oriented questions (e.g., referential and display questions) that engage students (Speech);
3. use written words and NVMs (e.g., images and realia) to reinforce spoken discourse and to represent concepts (Writing and NVMs);
4. combine authoritative and interactive spaces to promote a more learner-centered approach (Space); and
5. adopt a dynamic posture to foreground specific semiotic resources and to maintain students' attention (Posture).

In terms of the specific moves of pair work EEs, lecturers should keep in mind the following strategies:

6. attracting students' attention by combining different modes (e.g., spoken, written, and NVMs) to trigger their background knowledge and raise awareness (Contextualizing);
7. giving instructions by means of spoken and written modes so as to make sure students follow them accordingly (Setting up);
8. entering the interactive space to guide and support students (e.g., negotiate meaning) verbally and non-verbally (Monitoring);
9. writing students' contributions on board to gather relevant points and provide feedback (Eliciting); and
10. repeating the concepts that have been alluded to throughout the activity by means of diverse modes so as to consolidate learning (Summarizing).

These strategies are based on the macro- and microanalysis of the pair work EEs found in mini-lessons extracted from an EMI micro-teaching corpus. Nevertheless, they may be extrapolated to other teaching and learning contexts in higher education to promote interaction and engagement. This is true because as described in the SF-MDA framework for classroom interaction (Fig. 1), lecturers not only choose multimodal ensembles to represent the content (i.e., ideational function) and the way it is presented (i.e., textual metafunction), but also to establish the kind of relationship they wish with the audience (i.e., interpersonal metafunction).

6. Conclusions

This paper invites reflection on how EMI lecturers set up spaces for interaction and engagement through verbal and non-verbal modes of communication. The exploration of how EMI lecturers use semiotic resources to construct meaning and to create engagement paves the way to a unified multimodal interactional competence. In general, the mastery of this competence enables lecturers to convert students from passive listeners/observers to active participants, giving them opportunities to engage in active learning, language usage and critical thinking. For the specific case of EMI lecturers, multimodal interactional competence becomes even more important. This is so because the orchestration of modes besides speech may give EMI students the extra support they need to understand not only the content, but also the language of instruction. From a SF-MDA perspective, EMI lecturers should take into account which semiotic resources they may use and combine to communicate and represent the content, its organization and how it relates with the audience. In other words, lecturers should become more aware of the ideational, textual and interpersonal metafunctions of communication to facilitate the transmission and organization of content and to promote students' engagement. In this study, we have given special emphasis to the interpersonal metafunction (see Fig. 1), which is crucial to enhance EMI students' active participation and engagement. The outcomes of this study point to the need to address multimodal interactional competence in professional development programs, as described in Morell et al. (2022) to promote effective lecturing in the diverse EMI scenarios.

Acknowledgements

We would like to thank the support given by el *Institut de Ciències de l'Educació de la Universitat d'Alacant* for sponsoring the EMI workshops from which the corpus of this study has been drawn. In addition, we would like to express our gratitude to all the EMI workshop participants, who allowed us to video record their exemplary micro-teaching sessions. Finally, we would also like to thank Katrien Deroey, the editor of this Special Issue, and two anonymous reviewers for their insightful comments and suggestions that helped to improve this paper.

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