

# Collaborative Professional Development in English Medium Instruction

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**Abstract** In recent years, the need for focused student-centred teaching in general, and greater and higher quality interaction in particular, has been widely recognized. However, for this to occur in the field of EMI, it is believed that teachers need to undertake some re-examination of their teaching approaches and/or professional development. The present study carried out in Italy by means of a data-driven research protocol aims to investigate and improve the professional development of EMI teachers. Results and conclusions will hopefully contribute to further enrich the knowledge-base of researchers and practitioners working in the field.

**Keywords** EMI. Collaborative professional development. Teacher/student interaction. Teaching strategies. Higher education.

**Summary** 1 Introduction. 1.1 Interaction in the EMI Classroom. – 1.2 Professional Development and the EMI Teacher. – 1.3 English Medium Instruction in Italian Higher Education. – 2 The Research: Methodology and Data Analysis. – 2.1 Participants and Settings. – 2.2 Collected Data and Analysis. – 2.3 Findings. – 2.4 Discussion. – 3 Conclusion. – 3.1 The Final Outcome. – 3.2 Concluding Remarks.



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## 1 Introduction

English Medium Instruction (EMI) in higher education (HE) is now well established as a field of academic inquiry and comes with a substantial and indeed rapidly growing body of research (Macaro et al. 2017; Rubio Alcalá et al. 2019). Although there is some contestation as to what the term EMI encompasses (Baker, Hüttner 2017), the current generally accepted definition specifies that EMI is a phenomenon where teaching and learning of academic subjects is taking place through the medium of English in countries where the first language of the majority of the population is not English (Hellekjaer 2010; Macaro et al. 2018). In other words, the introduction of EMI (in contrast to offering academic subjects in the home language) is a ‘policy decision’ made at the national and/or institutional level. This fact alone brings with it a number of challenges, and concerns have been expressed about whether the English proficiency level of both teachers and students is sufficient for the latter to attain as high a level of content learning as they would, should the tuition be carried out in their home language (Ghorbani, Alavi 2014; Başibek et al. 2014). Some authors (e.g. Aizawa, Rose 2020) have called for additional English for Specific Purposes support to be given to students in order to meet this challenge. Indeed, some countries have opted for ‘preparatory years’ of intensive and targeted English (Kirkoz 2009) in order to ensure that students reach an appropriate level of academic English.

With regard to teacher English proficiency, although some research publications refer to CEFR levels as minimum requirement (Macaro et al. 2019; Bradford 2019) for teaching through EMI, there is an increasing realisation that it is not only the proficiency level that needs to be addressed but that the pedagogy has to change in order for successful implementation of EMI courses to be achieved (Bradford 2019; Macaro, Akincioglu et al. 2019). A particular aspect of the pedagogical change being called for is a move towards greater student-centred teaching in general and greater and higher quality interaction in particular (Hu, Duan 2019; Macaro et al. 2019). For this to happen, it is proposed, EMI teachers need to undertake some re-examination of their teaching approaches and/or more formal professional development.

The focus of the present research is to identify some alternative means to improve EMI teaching in terms of language and (as a consequence) content knowledge building. The results of this study suggest alternative solutions for investigation and practice in the field of EMI professional development. The research carried out here derives from, and confirms, the results of a previous in depth study involving a wide sample of both students and teachers (Macaro et al. 2019). Although the number of content teachers participating in the current investigation is low, we feel that their vast and lengthy experience within the

peculiar context of the Italian academic landscape, allows us to usefully contribute to the effectiveness of EMI teaching. Throughout the research the importance of teachers' involvement in developing models of good practices, thanks to collaborative research with linguists and educational linguists, comes to the fore.

Before presenting our research and its outcomes, we briefly illustrate the existing literature on EMI, concentrating on interaction, professional development and EMI as it stands in the Italian academic landscape.

## 1.1 Interaction in the EMI Classroom

It is not surprising that interaction should be given increasing importance by researchers and commentators when addressing their concerns about EMI classrooms. First, there is a considerable historical research tradition in Applied Linguistics which has sought to demonstrate the importance of interaction in formal and informal L2 learning contexts for comprehending the L2 and for learning it. This research has focused on teacher comprehensible input or modification of input (Chaudron 1988; Krashen 1985), on meaning negotiation between teacher and learners (Long 1983), on encouraging L2 learners to take risks with speaking (Swain 1995), and on various types of feedback given by teachers to learner mistakes (Ellis et al. 2001). This interest in interaction has been transferred to the EMI field (albeit mostly to pre-university level CLIL) (Martínez Adrián et al. 2019; Yoxsimer Paulsrud 2014; Dalton-Puffer 2007; Söderlundh 2013).

Second, there is a parallel long-standing tradition with regard to the importance of interaction in other academic subjects, and in particular, in science (Mortimer, Scott 2003; Mercer et al. 2004) where interaction, quality of teacher questioning, a focus on students' contributions, and attention to feedback are seen as fundamental to student understanding (and demonstration of understanding) of scientific concepts. The fact that EMI research has been predominantly carried out and published by applied linguists is of some concern, as the important actors in the EMI teaching business are not being included (Di Sabato, Macaro 2018). This issue of involving EMI practitioners more closely in research is also something that the current study seeks, in part, to address by closely involving EMI teachers in the process of researching within their own classrooms.

Some of the aspects of teacher-whole class interaction that have so far featured in EMI (or CLIL) research and which are of particular relevance in the current study are: general interactive versus non-interactive approaches to teaching (Qiu, Fang 2019); cognitive and linguistic complexities of teacher questions (Hu, Duan 2019; Pun, Macaro 2019); teacher questioning and feedback (Chin 2006); teaching 'style'

and student participation (Lee 2014); functions of teacher talk (Kuni-oshi et al. 2016); teacher/student talk proportions, lengths of turns; IRF (Initiation-Response-Feedback) sequences and teacher questioning (Lo, Macaro 2012). The research reported in the present paper exploited these features to investigate EMI teaching in Higher Education in Italy in an attempt to develop strategies to raise teachers' awareness and, consequently, deliberate and planned pedagogic actions.

## 1.2 Professional Development and the EMI Teacher

Professional development (PD) in HE has traditionally faced a number of obstacles (Peat 2015), the most prominent of which are the relative autonomy of practice which university teachers have claimed on the basis of their high level of disciplinary knowledge, their need to dedicate large quantities of time to research, and the argument made that university students (unlike school students) should themselves develop autonomy of learning. These arguments have in part led to PD in HE being offered and accepted on a "less regulated basis than in many professions" (Peat 2015, 92).

Nevertheless, there is a widespread view that in order for teaching to be a successful research-based endeavour (Hargreaves 1996), PD needs to take account of research related to it. In the field of EMI, however, a number of views expressed by teachers suggest that PD based on identifying the challenges posed by language are likely to meet with resistance. For example, teacher respondents in Airey's 2012 study put forward the argument that they "don't teach language" (Airey 2012, 2) and some respondents in a study by Dearden and Macaro (2016) argued that their disciplines (e.g. science and mathematics) did not need much language even though students in those disciplines often refer to the linguistic challenges posed by their content (Uchihara, Harada 2018). Even though a clear division between language and content is blurred in EMI classes, it is possibly still the case that the content teacher considers herself/himself as the curriculum expert who cannot be challenged.

There has therefore been a growing interest in the EMI/CLIL field on collaboration between content teachers and language specialist teachers with researchers exploring the limits of this collaboration. In a study by Pavon Vasquez et al. (2015), participants were successful in collaborating on curriculum objectives and working together on some content but not in designing and conducting actual classroom activities, a possible reason being that content teachers felt uncomfortable about teaching in front of a language specialist. Similarly, in a study by Macaro, Akincioglu and Dearden (2016), the collaboration between content and language specialist 'pairs' was kept at the level of lesson planning and post-lesson reflection, not the teaching itself. It would therefore

seem that studies such as this play a useful role in the development of the field of vehicular languages when used to convey content subjects.

PD can be classified at the superordinate level as either practice-into-theory or theory-into practice (Farrell 2020, 281). Farrell proposes that where participant content teachers are already highly experienced, they are more likely to accept the former (practice-into-theory) approach whereby they are invited to examine their own pedagogy, modify it according to what they perceive as being successful and then relate it to a growing acknowledgement of evidence-based theory, a form of reflective practice (Escobar Urmeneta 2013) possibly using transcriptions of their lessons as points of reference (Kunioshi et al. 2016). This was the approach that we took in the current study given the experience level of our two participating content teachers and the characteristics of the Italian academic landscape.

### 1.3 English Medium Instruction in Italian Higher Education

The data available on the official web pages of the Italian institutions confirm that EMI teaching in Italian HE is well-established. While there are no national laws regarding EMI at academic level, the 2010 Gelmini law induces to increase the offer of L2 study programmes by requiring compliance with the Bologna Declaration (1999). By pursuing mutual recognition of degrees, qualifications and periods of study abroad, by promoting degrees in a foreign language (Costa 2021), Italy tries to comply with the European objectives. The last update of the University webpage devoted to university courses in English (Ministry of Education, MIUR accessed March 2023) lists 595 courses taught in English offered by a total of 62 universities, mostly at second cycle post-graduate degree level,<sup>1</sup> with only 63 undergraduate degree courses, and a smattering of so-called ‘single cycle degrees’, i.e. a five or six-year degree course which is typical of the curricula in Medicine (19 courses are in English), Pharmacy (2) and Dentistry (2) or Law (none).

The tendency to postpone programmes taught in English to the second and third cycle of university studies is further confirmed by the official data concerning doctoral and second-level master’s degrees which record a general rise in the opportunities to study in English. The Conference of Italian University Rectors (CRUI, Conferenza dei Rettori delle Università Italiane) survey shows an increase of approximately 30% from 2016 to 2019 in the number of third-cycle courses delivered in English (CRUI 2017; 2019) [tab. 1].

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**1** The terms adopted when referring to the various levels within the Italian educational system are taken directly from the Italian Ministry of Education website: <http://www.miur.it/guida/guide.htm>.

**Table 1** Number of postgraduate courses taught in English in Italy from 2016 to 2019

Type of course	2019	2016	Increase
Doctoral programmes	382	271	41%
Master programmes	262	192	36%
Winter/Summer Schools	239	219	9%
<b>Total</b>	<b>886</b>	<b>682</b>	<b>+30%</b>
CRUI 2019 (Authors' translation)			

Academic research further confirms the relevant presence of EMI in Italian universities. On the basis of data reported in previous studies (Broggini, Costa 2017; Costa 2016; Costa, Coleman 2013), Costa, Mariotti 2021 conclude that 90% of Italian universities now offer EMI programmes (see also Broggin, Costa for a comparison between data collected in surveys carried out in 2012 and 2015). Studying in English at Italian universities is therefore a grounded and growing reality, despite the presumed loss of mother tongue domain-specific competence which stands out in the field of EMI as one of the stakeholders' main concerns (see for example Campagna 2017; Clark, Guarda 2018; Costa, Mariotti 2021; Santulli 2015).

The 'language' side of the coin in EMI is, in any case, not a specific learning objective; English plays a vehicular function which does not imply the "declared aim of improving students' competence in English" (Costa, Mariotti 2021, 80). This could well be an explanation for the evident incongruence in the relationship between the Italian educational system and the presence and role of languages other than Italian. In spite of the considerable number of courses on offer, EMI in Italian higher education is not supported by any national laws or regulations. By contrast, its close relative at school level - CLIL - has been regulated by law since 2010 and made compulsory in the last two years of secondary school (Serragiotto 2017).

Research on EMI in Italy confirms concern regarding the impact of the teachers' English proficiency on students' comprehension and knowledge building (see for example, Broggin, Costa 2017; Clark, Guarda 2018; Bier 2020). At the same time, Italian researchers, mainly in the field of applied linguistics, highlight the need for better pedagogical preparation: indeed, the lack of EMI teachers' pedagogy training is a serious concern. In 2013, Costa, Coleman's survey covering 50% of Italian universities, reported that 77% of these did not provide teacher training, and the remaining ones focused mainly on improving the teachers' language competence (15% provided a language course for their professors), whereas only a meagre 8% offered methodological training (Costa, Coleman 2013). Though the situation is now changing slightly, with some universities trying to provide support and training for their EMI lecturers (Clark,

Guarda 2018), it is a fact that offering language and/or methodological training to “experienced subject specialists with a high social status” (Costa, Mariotti 2021, 87) is not easy because they find it difficult to recognize the need for either or both (see also Costa 2012). Also, in line with Bier 2020, we acknowledge that it is somewhat difficult to draw the line between language and methodological training/competence: collaborative professional development would appear to be the best way to acquire these fundamental skills, rather than formal and structured training which EMI professionals have difficulty accepting.

On the basis of these considerations, we set up a data-driven research protocol, and video-recorded four lessons taught by two EMI higher education teachers from different subject fields at two different universities in Italy. The verbatim lesson transcriptions were closely analysed with a view to responding to the following research questions:

- What were the patterns of interaction being used by two EMI teachers and did this change as a result of collaborating with experts in language education?
- What reactions did the teachers have towards the collaborative-research model?

Drawing from existing research, we acknowledge the pivotal role of interaction in EMI contexts together with the practice-into-theory approach to PD, in order to develop a successful collaborative research path. After collecting rather discouraging results from our corpus analysis, we attempted to turn these unforeseen challenges into a positive outcome by proposing a new tool for EMI PD. A further aim of the study was to investigate whether the widely-used research protocol employed, could produce reliable results.

Before presenting the methodology, the collected data and our analysis, we will provide a detailed outline of the participants and settings.

## 2 The Research: Methodology and Data Analysis

### 2.1 Participants and Settings

In order to explore two different disciplinary fields, we sought out the participation of two EMI teachers from the fields of Medicine and Economics. Our two volunteer participants differ in terms of gender, age, position (in the university hierarchy) and professional development.

The participant from the field of Economics (Teacher 1 henceforth) is a management engineer and an associate professor of Operations and Logistics in her mid-thirties who has been teaching for approximately ten years and whose doctoral studies focused on healthcare operations management. At the time of data collection, she had been teaching through EMI for four years.

The participant from the Faculty of Medicine (Teacher 2 henceforth) is a full professor of Chemistry and Propedeutic Biochemistry. He is in his late sixties and began his career in the late 1970s at a time when a doctoral degree was not the compulsory first step on the academic career ladder. He has been teaching his subject through EMI since 2015. Thus, both teachers had roughly the same amount of experience of teaching through English although Teacher 2 had much greater experience overall.

At the university where Teacher 1 works, students may opt to attend the third year of their undergraduate degree in Business Administration entirely in English and, should they choose to do so, the EMI course in Operations and Logistics (OL) is compulsory. Though no identical Italian language course runs parallel to OL, Teacher 1 also teaches an Italian language Economics and Business Management course in the third year of another degree programme.

At the single cycle degree in Medicine in another Italian university, Chemistry and Propedeutic Biochemistry is taught in the first year of the English-language five-year degree in Medicine. The students who attend the EMI course in Medicine are in the main foreign (French, Turkish, Greek, Afghan, Chinese, and Spanish). The number of native Italian students has however increased in the last two years and they now make up approximately 40% of the 25 students who enrol on the course each year.

The lessons in Chemistry and Propedeutic Biochemistry are held in a large amphitheatre-shaped room in which the 25 students who make up the attendees appear to cluster either in the front two rows or in the very top three rows. The professor stands at the front quite far-removed from his students, even those in the front rows. On the wall behind his desk, there is a large screen upon which he projects his Powerpoint presentations and, behind the screen, a three-panelled blackboard on which he illustrates calculations and formulas



when necessary. The acoustics in the room are good and the professor never wears a microphone, however, the students sitting in the top three rows do occasionally ask him to raise his voice.

In the Economics Department where Teacher 1 works, the EMI Operations and Logistics lessons are taught in a small, rather cramped, classroom with six rows of multiple-seater worktables and very little space between the front row and the teacher's desk and blackboard. Approximately 15 students regularly attend lessons but of these only 4 or 5 are non-Italians. Just like the other participant, the OL teacher projects a Powerpoint and uses the blackboard for further illustration.

The language specialist obtained written consent from the two teachers and all the attending students in order to video record their series of lessons. An initial questionnaire was sent to both teachers with the intent of gathering biographic information, viewpoints about teaching practice and, more specifically, their comments regarding the similarities and differences between L1 teaching/EMI teaching of their disciplinary subjects.

## 2.2 Collected Data and Analysis

A first two-hour lesson taught by each of the EMI teachers was video recorded (120 minutes each). These two lessons were then transcribed verbatim, and a detailed lesson analysis was prepared in relation to teacher-whole class interaction with a focus on the following aspects:

1. Quantification of student talk vs teacher talk in the number of words spoken.
2. Use of Lower Order / Higher Order questions.
3. Teacher Recasts/Reformulations.

The recordings and transcripts from the two first lessons, together with the corresponding analyses, were then sent to the two EMI teachers. No judgments or opinions were expressed by the researchers regarding what they believed to be good or bad practice. The agreement was that the teachers listen/watch the recordings, read through the transcripts of the lessons and observe the interaction patterns listed in the analyses. The language specialist then interviewed the two teachers in order to record their impressions and comments upon watching/listening to their lessons.

A second two-hour (120 minutes per teacher) EMI lesson was then video-recorded and subsequently analysed using the same criteria as above. Again teacher-whole class interaction was taken into account and the same aspects as in lesson 1 were focused upon in order to see whether the teachers modified any of the previously established patterns.

Initially, a final encounter and discussion with the two collaborating teachers had been planned, however, after our data analysis, this stage of the research protocol was substituted with a short list of suggestions drawn up on the basis of second lesson observations, teachers' comments, and in-depth knowledge of the referenced literature quoted in the introduction to this paper. As we highlight in the final section of the study, the teachers' reaction to this initiative seemed to confirm the validity of such a move in terms of EMI PD.

### 2.3 Findings

The first aspect we chose to investigate concerns student/teacher interaction. As can be seen in the first column of Table 2, for Teacher 1, very little changed from lesson one to lesson two in terms of student contributions as measured by the total number of words.

**Table 2** Summary of findings

	<b>Teacher/student talk (in words)</b>	<b>Lower/Higher order questions</b>	<b>Recasts / Reformulations</b>
Teacher 1 TIME 1	TT: 8.000ST: 141	Teacher 1 attempted to ask 1 higher order question but received no reply.	0
Teacher 1 TIME 2	TT (in words): 8.195ST: 160	Teacher 1 asked 2 higher order questions. Adequate replies were provided	1
Teacher 2 TIME 1	TT (in words) 6.130ST: 192	Teacher 2 asked 3 higher order questions. Adequate replies were provided	No
Teacher 2 TIME 2	TT (in words) 3.942ST: 37	No higher order questions were asked	2

On the other hand, in Teacher 2's second lesson the number of student contributions decreased considerably when measured in words; this was surprising and apparently counterproductive in terms of the expected research outcome. We will return to this point in the Discussion.

The following are examples of teacher/student interaction from their first two-hour lessons:

Teacher 1:

T: Do you remember what product family is?

S: It's a series of product that have common parts that can be, yes, product with the same machine, the same plan.

T: What are the reasons why we want to do the batch or the mixed?

S: According to the characteristics of your product.

T: If you want to find out the requirements of the components and raw materials what you need?

S: Coefficient for each type, and then you must consider what you have in inventory, and what you have in warehouse.

Teacher 2:

T: Is it possible to use another numbering? A different numbering?

S: Yes, I think there is one from the radical.

T: Why not in the middle?

S: Because there are more 2p than 2s.

T: No possible rotation because here you have a double bond. Here?

S: Yes, so sp<sup>3</sup> because there are two unpaired electrons. So, the two lone pairs are, here and here such as in word.

In the interviews carried out with the teachers after they had received the analysis of their initial two-hour lessons, they commented on student contributions as follows:

Teacher 1: Examining the text, it is crystal clear that I did not interact a lot with the students. I made some questions at the beginning of the lesson to recap previous knowledge and there were just a few people answering. I believe there are multiple reasons: general shyness of the students in presence of the camera; willingness of the students to avoid being wrong, undermining in some way my 'authority'; complexity of the topic, which needs to be digested before coming to questions; unpreparedness of the students - most of them didn't attend the last part of the course and only came up during these two lessons due to my email informing them of the recording - which suggested me not trying to involve them too much.

However, I believe I should have done more to interact with students, and thanks to this experience I'll try to do better in the future.

Teacher 2: The interaction between teacher and students is heavily influenced by the particular personality (shy to a greater or lesser extent) of each student (it would be rather difficult to change my personality at my age!). However, in an attempt to involve them all, I have them carry out stoichiometric calculations. Each student is called to the blackboard to do an exercise, either autonomously or under my guidance. This procedure can strengthen their self-confidence and prepare them for the final examination. (Transl. by the Authors)

While Teacher 1 appears to suggest that normally students' interventions are more numerous, the former being influenced by the presence of the camera, by a particularly difficult subject, etc., she also acknowledges she might have done more to encourage students to interact. Teacher 2 shows some sensibility towards the different personalities of the students making up the class though he also shows some resistance to modifying his own. He seems to try to involve students with practical activities on the board rather than by exploiting more general interaction patterns.

We now come to the issue of the types of questions that the two teachers asked the students. As argued in the introductory section, research has highlighted the importance of teacher/whole class interaction in EMI (or CLIL): the previously mentioned studies on the cognitive and linguistic complexities of teacher questions (Hu, Duan 2019; Pun, Macaro 2019) underline the importance of higher order questions for meaning making and knowledge building. We therefore investigated the two teachers' awareness of the questions they posed, and the responses they elicited.

As we can see in column two of Table 2, Teacher 1 attempted to ask one higher order question in Time 1 but had to then answer her own question; she asked two higher order questions in Time 2. Teacher 2 asked two higher order questions in Time 1 and no higher order questions in Time 2. If we consider these two aspects of the interaction together (ratio of T/S talk and demands of higher order questions) we can begin to build a picture of the amount of linguistic effort required of the students in each of the classes. The following are some extracts from questioning in Time 1:

Teacher 1:

Time 1

T: So, in total why there's the maximum between orders and forecasts? [The teacher then answers her own question]. Because it depends on the time fences, on the time buckets you are considering. (as is evident here, in her first lesson (Time 1) the teacher did in fact attempt to ask some higher order questions but, due to the lack of student participation, she then ended up answering them herself).

Time 2

T: If you want to find out the requirements of the components and raw materials what you need? Yesterday we put numbers inside, yes?

S: Coefficient for each type.

T: Perfect! and then?

S: You must consider what you have in inventory... and what you have in warehouse.

Teacher 2:

Time 1

T: Why according to your opinion is not, so you should expect carbon of at least 50%, only 9%? Why that?

S: Some water.

T: Not water, the most abundant element is hydrogen and you remember...

S: Hydrogen is quadrivalent, is tetravalent.

T: Is it possible to use another numbering? A different numbering?

S: Yes, I think there is one from the radical.

Regarding their use of questions, in the interviews the teachers confirmed that their choice of questions was deliberate, and that they could also distinguish between the two types of questions in terms of their discourse functions. They stated:

Teacher 1: I try every time to make students thinking and reasoning critically on what I'm saying. So, I really go for higher order questions, while sometimes lower order questions are needed to make them remember the basics elements for reasoning.

Teacher 2: Both question typologies are fine if they are used with the right timing. You should start by trying to ask the 'simple' questions and then move on to the 'more difficult' ones that require the mental elaboration of previously acquired concepts. (Transl. by the Authors)

The final column of Table 2 illustrates the number of recasts employed by each teacher in their lessons. This mechanism appears to be employed by both teachers to help the students to reformulate their answers in a more complete manner without expressing any kind of formal right/wrong judgement.

Teacher 1:

T: Ok so the objective of the plan will be to define what?

S: The best quantity of short period.

T: The best quantity of what?

S: Components.

Teacher 2:

T: So, 1,2,3,4 and the remaining one?

S: Behind the first.

T: So, you mean both placed with this carbon, one here and one here.

Before reaching our conclusions, we present a brief qualitative analysis of the data collected as we feel that some of the general consid-

erations we shared with the teachers regarding their deliveries in terms of lesson structure, fluidity, teacher/student relationship and interaction are pertinent to our findings.

### **Lesson Structure**

Teacher 1, the economist, spends a lot of time recapping the previous lessons. This is doubtless due in part to the number of attending students which fluctuates from lesson to lesson. Another reason is that the final exam is oral rather than written; the teacher believes that by repeating concepts she will fix them in the students' memories. The following excerpt is from the interview:

Teacher 1: I spent a lot of time in repeating previous lessons at the beginning of both lessons we recorded. I did that because we were close to the end of the course, many (Erasmus) students - which are the most part of my class - had disappeared for a while, and I felt I need to repeat to make them know what they have missed and try to involve them in the new topic of the lesson. However, this could have been tedious for the students that attended all lessons. I think that, using both slides and board, and having designed the lessons with introduction, development, examples, and recap, the flow should have been easy to follow.

As a consequence, the pace/momentum of her lessons is relatively slow and not that much ground is covered.

Teacher 2, the 'medical' lecturer, seemed to expect far more of his students with faster pacing and virtually no initial recap.

### **Speech Flow/Pace/Fluidity**

Repetitions, and a constant use of subordinating conjunctions, especially 'so' were used by both teachers in both of their lessons. These could be interpreted as expedients to structure the discourse and to provide clarification, however, such features also denoted a lack of flow. Teacher 2 also pointed out that the repetition of technical terminology is due to the monosemic nature and lack of synonymity of specialized discourses: During the interview, he responded in the following manner:

Teacher 2: I believe that the use of repetitions during the lessons is 'physiological', especially when dealing with scientific topics which use specific monosemic terms. For example, in order to allow the students to understand the monosemic nature of the terminology employed the terms hybridization, hybrid atom have undoubtedly been repeated many times. (Transl. by the authors)

## Teacher/Student Relationship

Teacher 1 appears to have a closer relationship with her students; during the lessons, she was able to call some of them by name and to interact with them to a greater extent. When comparing the two teachers in terms of interaction it must be remembered that Teacher 1 is younger than her co-participant and that her classes were smaller.

Teacher 2 opts for less interactive lessons, especially in lesson two. This is confirmed by the ratio between low/higher order questions. As we have seen in Table 2 above, he ceases to ask higher order questions in Time 2. This is doubtless due to a lack of participation on behalf of the students. In fact, the teacher replies to his own questions because no answers are forthcoming. It is interesting to note that in Time 2 a student replies to a lower order question with a complex answer (see § 2.3): this confirms that it is advisable to continue seeking student participation even when there is no apparent feedback.

## Interaction

There is more interaction with teacher 1 who, as mentioned previously, is closer to the students in age and consequently has a closer relationship with them. Non-verbal and more informal exchanges are present in teacher 1's lessons: smiles and nodding were regularly noticed by the researcher who recorded the lessons. There is, however, quite a significant dialogical 'exchange' (as opposed to question + answer) in Teacher 2's first lesson, in which he corrects a student's misunderstanding:

S: When we said (pause) it tends to be more stable and to be more stable.

T: No, no I don't speak about stability. I just state, I am just stating which kind of energy you should expect for the hybridized orbital.

S: In the middle?

T: Not in the middle. Ok? In the middle ok but more oriented toward 2p orbital because you use three 2p orbitals and only one 2s orbital. I made the example of white and black.

S: No, it's different, it was more (pause) than 2p because it (pause) to be more stable, 2p is not stable.

T: No stability now. I am not speaking of stability. I am just stating which kind of energetic level for the atomic orbitals you should expect?

S: So, after making bonds (pause) remain (pause) 2p or it returns 2s after making bond?

T: Before bond, I said I am just stating what happens when I mix the atomic orbitals? I obtain 4 hybridized orbital and the energy level, the energetic level of this hybridized orbitals must be more

close to the energy level of the 2p orbital because the contribution of three 2p orbitals is greater compared to the contribution of only one's orbital. Are orbitals clear?

S: Yes.

We also identified numerous attempts made by both teachers to encourage the students to participate, or at least to feel more part of the lesson procedure through the use of direct pronouns. The use of 'you' and 'we' by both teachers seems to function as an inclusive device to involve students in the interaction (ex. Are you with me? Are you following me? Are we ok here?). This feature was highlighted during the interview, to increase the teachers' awareness of their recurring discursive traits. The intention was to allow the researchers to steer clear of judgmental values (in terms of good/bad practices) while underlining the contextual efficacy of some pragmatic traits.

## 2.4 Discussion

The analysis of the four lessons conducted by the two teachers (two lessons per teacher) confirmed the urgent need to develop some form of PD aimed at improving class/teacher/student interaction. We once again emphasize the fact that the role of interaction in EMI is crucial in terms of students' content and L2 knowledge and competence acquisition.

Overall, data confirm a very slight change in teacher behaviour between Time 1 and Time 2. With regard to the reduced student talk and lack of higher-order questions in Teacher 2's second lesson illustrated in Table 2 above, as previously mentioned, this was surprising and seemingly counterproductive in terms of the expected research outcome. We interpreted such evidence by considering that watching the video recordings, reading the transcripts of their lessons, and being interviewed on their performance may have been frustrating for the two teachers; and this, in turn, may have provoked a return to more traditional, and doubtless more comfortable, lecture-style teaching practices.

A further point to consider stems from Teacher 1's comment regarding the students' low level of interaction due to the presence of the camera (see § 2.3): she appeared to suggest that during her lessons students' interventions were normally more numerous. The data-driven protocol based on video recording and transcription is widely employed and consolidated in the field of education. Indeed, as previously mentioned, in terms of interaction, the results of the present study reflect those of a previous research concerning CLIL and EMI in the Italian educational context (Macaro et al. 2019). An alternative research protocol could have been the research questionnaire.



However, we feel that such questionnaires typically rely on structured and predefined response options which can limit the participants ability to provide in-depth responses, resulting in a loss of richness of information. Although we still believe that the methodological approach selected for this study is the one which provides the widest and deepest range of data, Teacher 1's comment provides food for thought for anyone working in this specific field.

### 3 Conclusion

#### 3.1 The Final Outcome

In her 2020 volume *Professional Development of CLIL Teachers*, Lo argues that a further crucial stage in the professional development of EMI teachers is to examine the effectiveness of targeted PD interventions. Although initially it appeared that the teachers had not gained any benefit from the collaborative endeavour, an unexpected bonus emerged during the last stage of the project.

A final encounter with the two collaborating teachers had been planned as a conclusive step to bring the project to an end. In light of the outcomes described so far, in an attempt to be less intrusive, we opted to substitute the encounter with a different final step: we developed a short *vademecum* drawn up on the basis of second lesson observations, teachers' comments during the interview, and an in-depth review of the referenced literature quoted in the introduction to this paper. We delivered our three suggestions to our teachers allowing them plenty of time to consider and reconsider their teaching practices.

Suggestions for effective EMI practice

1. Take your time. Slow down the pace of the lesson in order to allow the students to understand the questions (be they lower/higher order) and respond adequately when they are willing and ready to do so.
2. Encourage students to take risks. Mistakes are part of knowledge building and therefore perfectly acceptable/accepted.
3. Remember to recast rather than correct. Do not be judgmental, corrections should be a reformulation of the student's answer rather than a substitution imposed by the teacher.

The teachers welcomed the short *vademecum* and agreed to send detailed feedback at the end of their courses. Both Teacher 1 and Teacher 2 stated that the suggestions had helped them to understand the necessary balance between the need to complete the syllabus and the need to ensure adequate student participation, interaction and comprehension, all crucial ingredients for knowledge building. More-

over, they also realized that by slowing the pace of their lessons the content delivery improved vastly and the students' participation and consequent motivation increased accordingly. Teacher 1's email comment at the end of her course illustrates this:

Teacher 1: I've really appreciated your effort to photograph the 'as is' about teaching in English and, I also think, teaching in general, and I hope this would be a good starting point to develop a catalogue of best practices in different contexts.

I think 'teaching courses' are needed not just for elementary and high school professors, but also for university ones. Nowadays, with the further complication of e-learning courses, we really risk losing our classes and being ineffective.

Recording my lesson and observing my performance has been of help in kindly identifying some advantages - as the way I make examples - and gaps - as the lack of interaction - of my lessons. I would like to learn more and I'm looking forward to hearing about this project and its outcomes. Sorry for my English... I'm studying to improve it!

### 3.2 Concluding Remarks

This research aimed to further contribute to developing effective practices in EMI teacher training. We recorded and transcribed four lessons in an Italian university context following the procedure illustrated in § 2.2 to identify the patterns of interaction used by two EMI teachers and the changes resulting from peer collaboration with experts in language education. Our main limitation is that there were only two teacher participants. However, as previously mentioned, this is the follow up to a previous far broader study (Macaro et al. 2019). The qualitative aspect of our analysis was particularly relevant since the teachers' comments provided novel insight regarding the impact of such forms of data collection on spontaneous lesson delivery and class interaction.

We are firmly convinced by the results of this study, and by the previous research we have carried out, that the teaching profession is enhanced by critical reflection and pedagogic flexibility. Critical thinking must be sought and experimented with thanks to peer collaboration for research and PD.

We consider the *vademecum* "Suggestions for Effective Practice" a final winning move: provided after the second lesson, it motivated the teachers to focus on their teaching methods while reducing the effect of a second peer-to-peer interview on the interviewed teachers' self-esteem. The solution we developed to conclude the project, turned out to be a meaningful step in the field of collaborative

professional development in EMI. The teachers' appreciative reaction to the list of suggestions is a result in itself. We are well aware that a further recording to monitor/observe the teacher's effective teaching after this step was required to test the effects of our procedure, but this was not possible due to the onset of the COVID-19 pandemic. A future research endeavour will include this last procedural stage.

A research model greatly benefits from peer collaboration. In line with Farrell 2020, we believe that if content teachers are already highly experienced, they are more likely to accept the practice-in-to-theory approach whereby they are collaboratively invited to examine their own pedagogy, modify it according to what they perceive as being successful, and then relate it to a growing acknowledgement of evidence-based theory. However, recording and self-review/analysis as a form of reflective practice as suggested by Escobar Urmeneta 2013 and the use of transcriptions of lessons as points of reference (Kunioshi et al. 2016) is not enough. Our research revealed that listening to or watching a personal performance can be frustrating and in a pedagogic environment this may bring about a return to the past, i.e. to apparently more comforting and well-trodden teaching styles, where the lack of feedback from students is interpreted as positive feedback *tout court*. Peer reflective action is therefore crucial to turn an inevitably critical and negative attitude into a positive and proactive one.

## Note

Although the authors conceived and wrote this paper collaboratively, Ernesto Macaro is the author of the "Introduction", "Interaction in the EMI Classroom", and "Professional Development and the EMI Teacher" sections. Bruna Di Sabato is the author of the "English Medium Instruction in Italian Higher Education" and "Conclusion" sections. Bronwen Hughes is the author of "The Research: Methodology and Data Analysis" section.

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