

EMI materials in online initial English language teacher education

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Abstract

In Argentina, initial English language teacher education (IELTE) programmes are four-year long and often prepare teachers for all levels of education. IELTE programmes are usually structured around three broad areas: general pedagogical principles, English linguistics and literature, and language teaching methodology. While the modules included in the second area are implicitly expected to be delivered through the medium of English, the modules in the other two areas are not. Notwithstanding, tutors may decide to deliver modules in such areas in English. This decision has implications at the level of course design and materials. The purpose of this study is to explore EMI materials development at an online IELTE programme in southern Argentina.

Drawing on complementary materials development frameworks (e.g., Banegas, 2017) for the integration of content and language learning, in this study we are both the researchers and researched to examine our pedagogical decisions and criteria for materials development, assessment on implementing such materials, and our student teachers' experiences and perceptions of learning through them. Special attention is given to how content learning and language learning are scaffolded in an online environment. Data were collected through reciprocal interviews, questionnaires with student teachers, and content analysis of teaching and learning artefacts during the 2019 academic year. Results show that we employ multimodal resources, adapted texts, and language awareness raising activities for designing and implementing their EMI modules. On the other hand, student teachers exhibit different attitudes, perceptions, and ways of engaging with the materials, not always aligned with our aims and beliefs. The chapter includes implications for research and pedagogical suggestions for effective EMI materials development in IELTE programmes.

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Introduction

EMI is usually applied in higher education and sometimes used alongside other terms such as content and language integrated learning (CLIL) (Banegas & Pinner, forthcoming), integrating content and language in higher education (ICLHE) (Schmidt-Unterberger, 2018) or English-medium education (EME) (Dafouz & Smit, 2020). Macaro *et al.*, (2018) identify a number of crucial factors for EMI outcomes, and one such factor is related to the focus of this chapter, the kind of "accommodation needs" (p. 38) to be made to support EMI learners.

EMI is burgeoning in diverse courses and programmes, initial (sometimes called *pre-service*) English language teacher education programmes (IELTE) worldwide are mostly delivered in English. For example, in Argentina, IELTE programmes include modules on knowledge about English, which are delivered in English (e.g. English Phonetics and Phonology, English Grammar, American Literature), in Spanish (e.g. General Pedagogy), or in both Spanish and English in tandem (e.g. Professional Practice). However, there may be courses which include modules with a broader scope (e.g., Sociolinguistics or Educational Research) which may also be delivered in English. In this latter scenario, how do tutors select, adapt, and create materials to deliver modules in IELTE? In other words, what accommodation needs to be made so that content is properly scaffolded? One fundamental way of supporting student teachers in their building a strong sense of self-efficacy and professional identity is through quality materials which scaffold pedagogical knowledge and knowledge of and about English (Amez & Dobboletta, 2017; Banegas & Pinner, forthcoming).

Drawing on materials development frameworks (e.g. Ball, 2018; Banegas, 2017a) for the integration of content and language learning, our study examines our own pedagogical decisions and criteria for materials development, our assessment on implementing such materials, and student teachers' experiences and perceptions of learning through them. In this study we are both researchers and informants as we examined our own modules. Special attention is given to how content learning and language learning are scaffolded in an online environment. Data were collected from interviews with each other, a questionnaire with student teachers, and content analysis of teaching and learning artefacts during the 2019 academic year.

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In this chapter we first provide a brief review of materials development in EMI and CLIL. Second, our study is described by offering details about the online IELTE programme, the participants and data collection. Third, findings are divided into two parts: (1) materials analysis, and (2) our views as tutors and student teachers' thoughts on materials design and implementation. Last, the chapter discusses the criteria for the design and implementation of materials and it outlines three macro principles for EMI materials in online IELTE programmes.

Materials development in EMI and CLIL

EMI is not a language or educational teaching approach. It is a policy, a strategic decision made by higher education institution's authorities or on a national level. Indeed, in an article about EMI in Japan, Rose and McKinley (2018) define the EMI phenomenon as an educational system. Thus, EMI, we reason, stays at a macro-level in educational implementation and it necessitates other approaches, such as CLIL, for it to be articulated in practice. As will be shown below, criteria and principles for EMI materials are usually based on findings from CLIL research. It should be noted that connections between CLIL and EMI in higher education are not original. In a study about university teachers' beliefs of language and content integration in EMI, Dafouz, Hüttner and Smit (2016) found that content teachers exhibit awareness of the pivotal role that language plays in understanding content; however, they seem to downplay its presence in actual EMI practices. Hence, the authors conclude that EMI educators should guide their teaching by a framework that systematises content and language integration.

In the context of our experience, the online IELTE programme aims at supporting student teachers in the development of three areas: (1) English language proficiency/language use, (2) linguistic knowledge of English, and (3) pedagogical knowledge about English language teaching. Due to the integration of language (area 1) and content (areas 2 and 3), CLIL is considered the most suitable approach for designing materials and delivering content through the medium of English. From a broad view on practices around the world (Hemmi & Banegas, forthcoming), CLIL can be conceptualised as an educational approach or a language teaching approach. These two types of implementation may be

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regarded as ends on a continuum in which, regardless of the weight assigned to content and language, integration is critical, and, indeed, the very essence of CLIL territory.

In this chapter, we focus our lens on materials in EMI, i.e. curriculum and cultural artefacts that organise learning and teaching. Garton and Graves (2014) acknowledge that even though teaching and learning materials may include almost anything that can be used with a pedagogical intent, coursebooks, whether global or local, continue to dominate the scene across educational settings and language teaching approaches. While this may run true in primary and secondary education, higher education seems a different game as there are expectations around the deployment of authentic and unabridged materials given the relevance that content knowledge plays in higher education. Yet, this position may imply that L2 learners or learners who receive higher education through the medium of another language already hold a proficient language level or are expected to work on their language improvement on their own and outside lecture hours.

In relation to materials development for the integration of content and language learning, Porto (2018) notes that despite efforts to work with authentic sources, initiatives and practices include rediscursification (changing a text typology), extension (adding examples or definitions), or simplification (reducing sentences) (Lorenzo, 2013), and the use of English textbooks; however, these practices explore CLIL materials in secondary education. Three specific publications are reviewed below as they examine materials in higher education at the intersection of CLIL and EMI.

Chou (2017) carried out a multiple-case study to understand the effects of edited versus unedited authentic law textbooks at a law course in Taiwan. The author found that the students benefitted more from authentic law textbooks and authentic US Court decisions provided these materials were approached through case-based interactions guided by the tutors. The case studies also show that within an EMI environment, materials should provide learners with guided English language support. With this premise, Kao and Liao (2017) present two case studies which analyse how EMI tutors developed their own materials for a new course in the humanities. The tutors found developing their own materials time consuming as the materials required continuing updates. The authors recommend that in designing EMI materials, globalisation and localisation, i.e., glocalisation, should be taken into account. Last, Jiang, Zhang and May (2019) adopted

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a mixed-method design to examine tutors' practices and perceptions and learners' motivations and needs. This third and most recent study provides evidence that in an EMI environment, L2 learning should receive informed scaffolding through materials and tutors' practices as lack of language support increases distress, anxiety and demotivation among higher education learners.

In relation to CLIL materials, Banegas (2017a) notes that materials, i.e., sources of input and activities, need to move from general and students' prior knowledge and experiences to subject-specific knowledge. This sequence should also cater for the systematic development of lower-order and higher-order thinking skills so that students can move from understanding and describing to more complex cognitive processes such as critiquing or evaluating. In EMI, higher education students are usually under the pressure of developing critical thinking skills in English (Lin, 2018). While students can transfer critical thinking skills developed in their L1 to English, they need to be able to understand what they read or hear in English. Therefore, English language proficiency plays a crucial role in critical thinking skills development. For example, in a face-to-face IELTS programme, Banegas (2017b) analysed the pedagogical decisions that had to be made by a course tutor in order to teach linguistics to a group of student teachers. In terms of materials, the following decisions were implemented: (1) new subject-specific terms were introduced through general academic vocabulary, (2) topics were introduced through multimodal texts and with increasing length as the module progressed, (3) authentic and modified (modifications included simplification or extension) reading materials were used complemented with comprehension questions to guide understanding and promote purposeful reading, (4) new topics were sometimes introduced through activities such as matching or rearranging items.

More recently, Ball (2018) notes that authors tend to emphasise broad aspects related to content, cognition, autonomy, and cooperative learning, and, from a narrower and practical perspective, the use of graphic organisers and the inclusion of information and communication technologies (ICT). Ball (2018) also argues that if CLIL aspires to integrate content and language learning, there should be CLIL materials principles that cater for language as a meaning-making system that allows learners to become operative in a CLIL environment. Thus, drawing on Ball, Kelly and Clegg (2015), Ball (2018) proposes a list of seven principles to CLIL materials (Table 1).

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Table 1. CLIL materials principles (based on Ball *et al.*, 2015)

PRINCIPLE	WHAT IT MEANS
1 The primacy of task (the text-task relationship)	Tutors need to choose input material according to the task, its aims, processes, and outcomes. The task should help maximise the text content and format.
2 Prioritizing the three dimensions of content	Content includes concepts, procedural choices to understand and manipulate content and solve tasks, and the specific language needed to understand content and complete tasks. Materials need to aim at balancing these dimensions.
3 Guiding input and supporting output	Materials should contain activities that support understanding of key specific terms and help learners develop spoken and written language skills. There should also be linguistic support (e.g., key phrases, sample paragraph, language awareness) for solving a task.
4 Scaffolding and embedding	This refers to explicit and implicit forms of language support for task completion.
5 Making key language salient	This may entail including boxes with key phrases and terms.
6 The concept of ‘difficulty’	Tasks can be difficult, not texts. Thus, tasks need to be sequenced from less to more demanding.
7 Thinking in sequences	As a unit of work progresses, language also does from more general academic language to more complex and specific terms and structures.

Building on Ball’s (2018) principles, authenticity should also be regarded as a principle to guide the selection and development of tasks and texts. Gilmore (2019) acknowledges that authenticity is mostly linked to materials, usually implying that input sources have

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not been modified in any way (e.g. discursively or content complexity-wise) to accommodate L2 language users. From a more complex perspective, Pinner (2019) provides evidence of teachers and learners engaging in motivational synergy when authenticity enters the classroom through topics and materials. The author argues that when authenticity becomes a systematic feature of language teaching and learning, learner motivation increases, and consequently, motivates teachers encouraging them to energise and innovate in their teaching practices. Such a motivating environment leads to better conditions for language learning and therefore motivational synergy has a positive effect on L2 development and proficiency.

McCarthy and Clancy (2019) stress that English is both "the medium and intended outcome of instruction" (p. 212) in IELTE; therefore materials and overall formative practices should help future teachers understand and navigate language not only as a system of subsystems (grammar, pragmatics, phonology), but most importantly as discourse. Against this backdrop, we sought to examine what features EMI materials have on two modules at an IELTE programme delivered online in Argentina. In particular, we wish to analyse how content and language learning are scaffolded in materials and tutors' practices (e.g. feedback).

The study

Programme and participants

The context of our study is a four-year online IELTE programme in Argentina. As previously described (Banegas & Manzur Busleimán, 2014), the programme prepares student teachers to teach English as a foreign language in kindergarten, primary, secondary, and higher education. It consists of mandatory modules organised around three areas of knowledge in teacher education: general pedagogical principles or general education, English linguistics and literature, and language teaching methodology. In this study we focused on two different modules we individually teach: (1) Information and Communication Technologies and (2) Educational Research.

Information and Communication Technologies (ICT) in Education is a one-term (four-month) module delivered in English (60%) and Spanish (40%) and pedagogically based

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on sociocultural pedagogies in second language teacher education (Golombek & Johnson, 2019). The aims of the module are to promote reflection on the concept of literacy in the digital age (Anstey & Bull, 2018; Bull & Anstey, 2019) in order to explore different teaching approaches in the knowledge society and to foster understanding of the pedagogical use of ICT in the language classroom (Bao & Shang, 2018; Dudeney & Hockly, 2016; Lightfoot, 2019). The main topics explored in the module are: understanding the social nature of technology and ICT as cultural tools, analysing the interrelation of education and technology, examining the concepts of hypermedia and multimedia and their implications in (language) teaching and learning, and exploring different digital literacies and the pedagogical uses of technologies in a new ecology of learning.

Educational Research is a one-term (four-month) module delivered entirely in English and pedagogically based on sociocultural, reflective and critical pedagogies in second language teacher education (Farrell, 2019; Golombek & Johnson, 2019; Gray, 2019). The module aims to encourage teacher reflection, to promote research-based pedagogical decisions, and to allow future teachers to develop a teacher-researcher identity. The main topics covered in the module are: understanding and defining educational and teacher research, action research, exploratory action research, planning a teacher research project, understanding data collection and analysis, improving academic reading and writing skills in English, identifying benefits and challenges of teacher research engagement, and understanding the ways in which teachers can create local communities of practice and local knowledge production through teacher research. Two main textbooks act as guides: Burns (2010) and Smith and Rebolledo (2018). Student teachers are also provided with updated empirical studies published in regional journals such as *Profile* or the *Argentinian Journal of Applied Linguistics*, and international journals with teachers (rather than researchers) in mind such as the *ELT Journal*.

Both modules are divided into four units of work. The contents are studied through hypermedia materials that include updated articles, book chapters and audiovisual resources of well-known scholars from different parts of the world. Each unit includes two forum discussions and a mandatory written assignment, some of which are developed individually, and others involve collaborative work. Based on their performance during the module, the student teachers may pass the subject without a final exam. Those who

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are not able to build a sound knowledge and awareness of the contents studied must sit for a proctored written exam based on questions that relate theory to practice and the analysis of a sequence of activities that integrate ICT or a research report.

The present study was possible thanks to student teachers' participation and our interest in examining our own teacher education practice. The ICT in Education tutor (Graciela Manzur) has a ten-year experience in the fields of language teacher education and online education. She has worked as an online tutor of the module ICT in Education for 3 years. She is responsible for designing the materials and leading the forum discussions of each unit. The module had 50 student teachers in 2019. The average age of the group is 25 and they spend five years in the programme, on average. Darío Banegas is the Educational Research tutor and author of the material developed for that module. In 2019, 36 student teachers completed the module. Demographic characteristics are similar to those of student teachers in the ICT in Education module.

Data collection and analysis

The study reported in this chapter was exploratory in nature. Because of the small sample size, we adopted a qualitative paradigm. The analysis shown in the following section comes from four sources: (1) the English-medium units of work designed by the tutors to deliver the modules online, (2) the mid-term exam completed by the student teachers and with our feedback as tutors, (3) a questionnaire completed by the student teachers, and (4) two interviews through which we, in our dual researcher-tutor identity, interviewed each other. We acknowledge that structuring our conversations as reciprocal interviews is not usually found in studies where authors are also the researchers and researched.

While content analysis (Cohen, Manion & Morrison, 2011) was employed to analyse the pedagogical materials (sources 1 and 2), qualitative analysis was used to understand the open-end questions in the questionnaire (source 3) and interviews (source 4). Details about procedures are found together with specific findings.

Findings

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Materials analysis

Our analysis combines the principles and practices of EMI-CLIL materials discussed earlier in the chapter. We analysed each other's teaching materials in terms of overall structure, genre, text-task relationship and content, and language support.

Overall structure and genre

Both modules are organised around four units, and each unit is divided into one or two lessons. Each lesson is usually sequenced as follows: (1) a quote, a video, pictures, or a forum that invites student teachers to reflect on their prior knowledge, beliefs, and experiences (Figure 1), (2) formal input and “breaks” for reflection and recapping, and (3) mandatory assignments for submission.

Figure 1. Introduction to an ICT lesson.

FORUM: Have you ever heard of ubiquitous learning and one-to-one learning? Share what you know here.

Because of the online nature of the programmes, we as tutors have chosen a professional and dialogic style to write the units (Figure 2). Student teachers are addressed using “you” and both of us assume a “we” stance, usually found in Spanish to mitigate individualisation on the writer's part.

Figure 2. ICT tutor-made unit.

To explore these modes of learning we invite you to surf [this web page](#) about learning approaches. These videos explain the social, cultural, and political context in which ubiquitous learning and the one-to-one approach have emerged.

The reader-friendly writing style adopted may contribute to reducing anxiety on the student teachers' part as they may not feel overwhelmed by depersonalised and highly dense material in terms of content and language load. More importantly, this style may make content more digestible while still being authentic and pedagogically purposeful as we may vary the linguistic density and complexity of the input based on student teachers' English language proficiency.

Text-task relationship and content

In both modules, all sources of input, i.e., written, audiovisual (e.g. a video), and multimodal resources (e.g., a written text with embedded hyperlinks, videos, and pictures) are authentic (Pinner, 2019). While ICT in Education offers input material in either Spanish (40%) or English (60%), Educational Research includes material only in English.

Both modules rest on pedagogical descriptions and summaries we have written, articles, and book chapters. Our texts incorporate bullet points and different visual organisers and figures to scaffold learning by highlighting central concepts. For example, on the topic of blended learning, the ICT in Education tutor wrote a text with bullet points to make salient concepts clearer (Figure 3).

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Figure 3. Tutor-made bullet points.

- Don't start with technology. Begin with the problem you want your learning experience to solve.
- Use technology judiciously to support, enhance, and differentiate instruction, which means taking account of students' differences and similarities.
- Develop a plan and define your role in the process.
- Set concrete goals about what students will know and be able to do at the end of your instruction.
- Reference assessments at the beginning, middle, and end of lesson preparation and delivery.
- Empower students to apply their knowledge in real-world applications.
- Create shared spaces for collaboration and repositories of resources for sharing.
- Develop and plan across disciplines and grade levels.

As mentioned in the preceding section, input (written, audiovisual, or multimodal texts) comes before tasks. These are usually questions which ask student teachers to focus on specific information, thus encouraging understanding, followed by questions that aim at personalising global content. In other words, the input illustrates glocalisation (Kao & Liao, 2017). For example, in Unit 2 of Educational Research, the topic of collecting data within an action research methodology is organised as follows (Figure 4): tutor introduction, video, questions for identification and reflection, and written input (two research articles) followed by a simple task which again requires student teachers to identify specific information. However, this information is not used for a follow-up, more complex task.

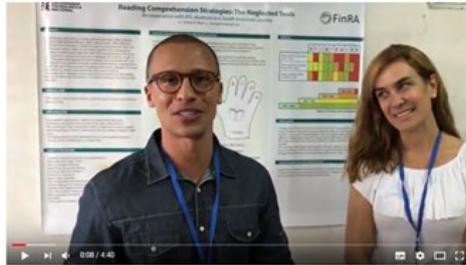
Figure 4. Activity sequence (Educational Research).

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2 Action research: acting

Once we have identified and refined our AR questions, we need to plan what to do in the classroom. The Acting Stage involves putting into action a new strategy or something that we think will address the issue or puzzle we've identified. It also involves collecting data as we implement our new course of action to see whether our change has been effective.

Let's begin with a video.



Interview with Viviana Miglino at the Latin American Conference for Teacher Research in ELT

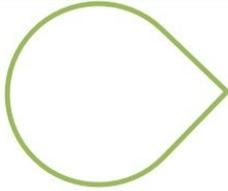
Does Viviana mention how she collected data for her research project? What does she say about her study? Would you like to do something similar?

READING TIME! From the platform download the study by Banegas & Manzur (2014) and Banegas (2017). Read the entire articles but focus on the Methodology section. Take note of the type of research and the instruments used to collect data in each study.

In both modules we noted that as units unfold, authentic texts are followed by tasks, usually questions, aimed at developing comprehension. However, units also contain, often towards the end, complex tasks which require content integration, analysis, and evaluation based on the reading input provided (Figure 5).

Figure 5. Mandatory assignment.

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Mandatory Written Assignment 2 B

This assignment can be done in small groups (max 4 people).

1. Read the article by Guzmán and Moreno (2019).
 - a) Where did the study take place?
 - b) What was the aim of the study?
 - c) What sources/instruments were used to collect data in their action research project?
 - d) Do you think that this study was helpful for the people involved in it?
 - e) In what ways does the article illustrate what you read in Chapter 3 from Burns (2010) and Chapter 5 from Smith & Rebolledo (2018)?

What is important to underline is that the articles and resources usually included in both modules are connected to the student teachers' professional and geographical contexts as they may aid in scaffolding understanding in EMI. For example, the articles and video under analysis in Figures 4 and 5 come from South America and are specifically contextualised in state education, the sector in which our student teachers usually find their first teaching post.

Drawing on the three dimensions of content (concepts, procedural choices to understand and manipulate content, and the specific language needed to understand content and complete tasks) proposed in Ball (2018), the content of both modules is primarily conceptual and procedural as the student teachers are introduced to key terms and definitions about ICT and educational research through different tasks. In addition, they are required to design pedagogical activities through which ICT and educational research can become part of their situated practices. In terms of procedures for conceptual appropriation we have identified the tasks listed below. Following Ball's (2018) principles for CLIL materials, these tasks not only support student teachers' output but also help them think in sequences as they need to combine subject-specific input with language teaching pedagogy.

- Answering questions (fact-finding, analytical, and evaluative)
- Completing tables with specific information from assigned reading texts.

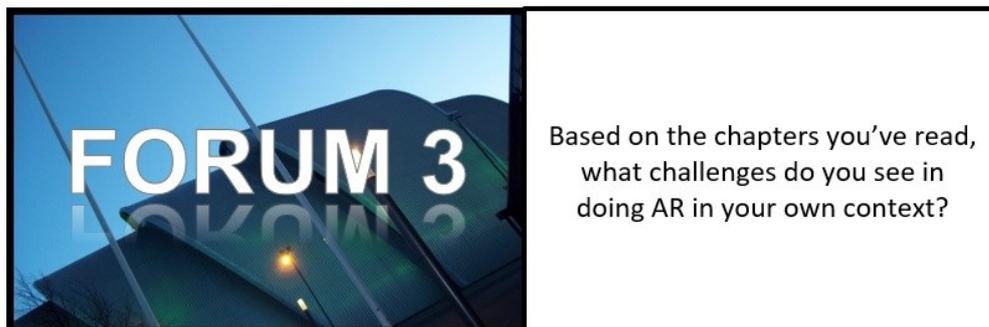
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- Completing tailored online surveys.
- Designing teaching materials and including rationale that evidences student teachers' reading and understanding course resources.
- Drafting a research project plan.
- Exchanging views or experiences through online forums. These forums also contribute to content personalisation and reading material integration (Figure 6).

Figure 6. Forum task.

Reading time!

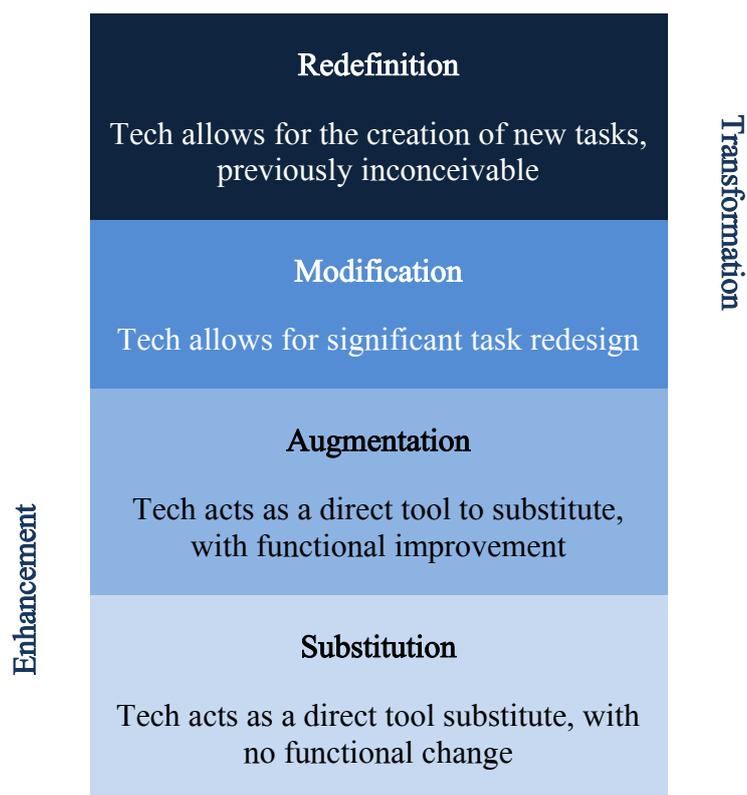
- From Burns (2010), read Chapter 4.
- From Smith & Rebolledo (2018), read Chapters 6 and 7. Remember to complete the tasks found in both chapters.



Specific language as content is only found in bullet-point sentences where key terms have been typed in bold or appear in graphic organisers extracted from key readings. For example, Figure 7 comes from Unit 1 in the ICT module.

Figure 7. Visual support (adapted from Puentedura, 2006).

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Language support

While specific language as content is only reflected in giving prominence to subject-specific terminology, both modules offer little support embedded in the materials. Only Educational Research includes activities aimed at enhancing academic language awareness (Figure 8).

Figure 8. Activity on language awareness.

4. Go back to Smith & Rebolledo (2018) and read Chapter 3. As you read the chapter, focus on the academic/formal language the author use. Complete the table below with around 3-5 examples for each category.

Examples of specific nouns related to the chapter	Examples of connectors that make the text more cohesive	Examples of phrases that help make the text more cohesive	Examples of reporting verbs

However, student teachers also receive language use support through other practices. For example, some assignments include tables or sentences for completion, i.e. these becoming instances of scaffolding output. In addition, we both used these direct and indirect feedback strategies to refer to content as well as language: (1) supplying correct forms, (2) questions such as: Could you reword this bit?, (3) suggesting alternative words or phrases, (4) asking for improvements in textual organisation such as: “Could you break this paragraph down?” In other words, our comments aim at both accuracy and meaning at sentence as well as textual level. We return to how we provide feedback in the following section.

All in all, the materials from both modules exhibit the following features:

- Use of authentic and multimodal sources of input, though there is a preference for textbooks produced by international publishers.
- Use of reader-friendly discourse to introduce and summarise key concepts and readings.
- Input texts are sequenced from less to more complex and from more international to more regional.
- Activities are often formatted as questions. In growing order of cognitive complexity, questions require understanding, analysing, evaluating, and creating.
- Scaffolding is sought through visual organisers, building new professional knowledge on student teachers’ prior knowledge.

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- Use of peer collaboration for round-up assignments.
- Little language support embedded in the materials. However, tutors do support output by commenting on accuracy, textual fluency, and meaning.

Tutors' and student teachers' views

In this section, our views as tutors as well as student teachers' views are organised around themes identified through thematic analysis.

Tutors' views

Given the fact that we live in different countries, we agreed to interview each other through WhatsApp. In the interviews, we concentrated on spelling out the criteria behind materials selection and activity design in their modules. The following major themes were identified: (1) focus on a learner-centred approach, (2) practicality and context-responsiveness as guiding pedagogical principles, (3) multimodality to support learning, and (4) awareness of affordances and constraints found on the institutional website.

We agreed that our EMI materials had a learner-centred approach to content learning. We also agreed that we designed the units in a learner-friendly manner, taking into account student teachers' interests in practical ideas for the classroom and English language proficiency. For example, Graciela Manzur expressed:

The materials seek to be comprehensible, easy to navigate, and non-linear so that the student teachers can decide how to complete each unit. I've also made sure that the reading material is at their level of English proficiency. (Graciela, Extract 1)

Extract 1 shows that despite the use of authentic sources of input, these have been selected taking into consideration student teachers' English language proficiency.

A learner-centred approach is also linked to ensuring that the content is personalised and appropriated by the student teachers considering that they are expected to become teachers of English. For instance, Darío Banegas said:

Every reflective question or forum question, and even the end-of-unit assignment, seeks to help student teachers see themselves doing research. By asking them to think about topics for their own contexts, possible ways in which they can collect data, I'm placing them at the centre so that they can see that they can also do research. (Darío, E2)

Undoubtedly, a focus on student teachers entails understanding and expanding their professional horizon, and by extension, their identity. In Extract 2, Darío implies that the personalisation feature, i.e., the addressing of students using 'you' in the input material, found in the module materials not only scaffolds learning but also may enable student teachers to explore different and complementary professional identities, i.e., being practitioners and being researchers.

A focus on student teachers' trajectories and biographies is connected with the second theme: practicality and context-responsiveness as guiding pedagogical principles. This theme merges our interest in introducing the module content from a practical perspective, i.e., a perspective that invites the student teachers to find the pedagogical and practical value of learning about and engaging with ICT and teacher research. On this aspect of the EMI materials, Darío mentioned:

I designed each unit with a practical spirit. By practical I mean each unit being easy to navigate. And I also see each unit practical because it offers strong links between pedagogy and research. I want student teachers to think about teacher research as something possible in their own contexts. This is why I've chosen the Smith and Rebolledo book, as it's highly practical and teacher oriented and where research projects are told by teachers for teachers. Also, the research articles for analysis are set in Latin America and that also gives them awareness of journals and articles from the region. (Darío, E3)

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Extract 3 also signals our interest in promoting local knowledge flow since student teachers are exposed to publications authored by Argentinian and other South American educators who have first-hand knowledge of the teaching context they write about.

We both agreed that multimodality, and, as Graciela added, hypermedia, may become a valuable tool to support EMI. The modules include texts, pictures, videos, and links to online presentations outside the institutional website to add variety and help student teachers construct meaning through different semiotic modes. Regarding the use of multimodal resources, Graciela commented:

Because it's distance learning, the materials need to be engaging, motivating, and offer different ways to show how content can be taught and learnt. Particularly, for a module on ICT, the use of different online tools to scaffold learning is a must, and student teachers need to learn through personal exploration and manipulation of such tools. (Graciela, E4)

Graciela's extract also shows a facet that may seem obvious, but it is not always found within IELTE programmes: interdisciplinary coherence. In other words, all IELTE modules should have a strong language teaching pedagogy element so that the student teachers can experience solid connections between different areas of professional knowledge and how these may inform teaching practice.

Finally, our creative capacity for developing EMI materials for a programme delivered entirely online was largely dependent on the affordances and constraints placed by the institutional website. For example, Graciela commented:

I try to include multimodal resources and play with linearity, but the website only allows us to upload pdf files, and therefore, running texts and a fixed sequence of how materials are presented is a limitation we need to be aware of. (Graciela, E5)

And Darío added:

Yes, and sometimes we use so many tools and apps outside the institutional website that we somehow lose a sense of unity as student teachers may feel that

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there are units and lessons all over the place, and that could obstruct learning organisation. (Darío, E6)

It should be noted that only in the first theme we make reference to the impact of language learning through the EMI materials. Thus, it may transpire that concerns with practicality, context, content learning support through multimodal resources for materials development exceed the impact that student teachers' English language proficiency may have on our pedagogical decisions, apart from selecting sources of input which are within student teachers' linguistic understanding.

Student teachers' views on module materials

The student teachers attending both modules completed an online questionnaire with closed- and open-ended questions. The closed-ended questions asked them to rate different aspects of the learning materials using a four-point Likert scale (1= I completely disagree, 2= I disagree, 3= I agree, 4= I completely agree). In turn, the open-ended questions provided the opportunity to expand on issues pertaining to the closed-ended questions and tutor practices in relation to the module materials.

The questionnaire was completed by 73 student teachers of the 86 that registered in 2019 for the modules under examination in this chapter. Table 2 shows the results from the closed-ended questions.

Table 2. Student teachers' views on learning materials.

Item	Mean	SD
1 The units of work are appropriate in terms of content load.	3.42	0.16
2 I find the reading material too difficult because of its complexity.	1.79	0.55
3 The reading material is excessive.	2.33	0.94
4 I enjoy the combination of reading material and videos.	3.12	0.14
5 I find the sources of input easy to follow.	3.09	0.23

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6 The material should include activities to improve specific areas of language development.	2.02	1.04
7 I find the activities well sequenced from less to more demanding.	3.45	0.12
8 I enjoy the collaborative nature of some activities.	1.97	0.92
9 The assignments help me personalise the content.	3.57	0.06
10 The forums are helpful to improve content and language learning.	1.93	0.18
11 There should be more varied activities (e.g. multiple choice) to maximise the input.	3.12	0.21
12 The units should start with a box containing salient concepts and academic language structures.	3.04	0.34

The quantitative results show that while the student teachers show satisfaction with content load and the sources of input included in each unit, they would like to find solid connections in terms of, as Ball (2018) calls it, text-task relationship. Concerning language, item 6 reveals that activities for specific language improvement are not necessary; nonetheless, key terms and linguistic structures should have a prominent position. In other words, there is a need for making key language salient. Regarding the forums (Item 10), the students did not find them helpful. However, the student teachers did not develop this issue further in the open-ended questions.

Of the 73 who completed the questionnaire, only 52 answered the open-ended questions. Five themes were identified through coding and analysis of the open-ended questions (1) practical and contextualised nature of the content in the material, (2) need to exploit reading input, (3) need to find key language foregrounded, (4) need to receive detailed feedback on language and content aspects, and (5) collaborative work as frustrating.

Aligned with student teachers' answer to Item 1 (Table 2), 47 student teachers valued that the materials stressed practice of including ICT and research in teachers' professional lives. One student teacher wrote:

The activities included make teacher research real. And the stories we read are from teachers in Chile, Mexico, and Argentina, and therefore I think that I can

understand the theory behind teacher research because I can see it in practice and I can picture myself doing research too. (Marina, E7)

Another student teacher noted her becoming aware of the dialogic and reader-friendly writing style found in each unit:

I'd like to congratulate the tutors on their friendly style. I feel they write to me, personally, and for that reason I try harder to understand the content and reflect on how the input can resonate with the institutions in my town. (Elisa, E8)

Both extracts show that for an online environment where student teachers may enjoy autonomy but face isolation, learning materials with a personal touch and anchored in the student teachers' context is paramount for meaningful learning and engagement.

While the decision to foreground informed (research-based) and situated practice was found positive, 40 student teachers commented on the necessity to exploit reading input. On this concern, a student teacher wrote:

Sometimes we have to read one or two chapters, and then an article, and all we have to do is participate in a forum or save all that for later, for an assignment. Sometimes, I don't see the aim of reading so much even if it is relevant, but it's not clear what to do with it in the unit. (Antonio, E9)

Along this line and as a reflection of student teachers' reaction to Item 11 (Table 2), a student teacher suggested:

I'd like to have more activities, like pre-, while-, and post-reading activities for the texts, and activities which are not only questions, but true or false, or sentence completion, and these may come with suggested or correct answers at the end of the unit. (Luisa, E10)

Luisa's comment stresses the perception that reading materials should be supported with purposeful reading and activities that help student teachers maximise learning. On the other hand, Luisa's suggestion of incorporating reading-based activities before, while, and after reading mirrors what student teachers learn about teaching reading in another module. Perhaps, this is a call for stronger congruence across modules so that what is expected from student teachers in terms of language teaching practices can be found and experienced in all the programme tutors' own practices and materials.

In connection to systematic language support, two themes emerged. First, a need to find key language foregrounded was mentioned by 32 student teachers. As an extension of Item 12 (Table 2), these student teachers remarked the need to know in advance key terms as well as key structures that would aid in solving tasks (Ball, 2018). On this request for salient language a student teacher wrote:

We may need to find key language being made prominent, like key terms but also key verbs or collocations that then we can use to complete an assignment successfully. I don't think we need exercises for language improvement, but I do need key vocabulary I can use. (Mario, E11)

Another student teacher included the following suggestions for making key language salient:

Because we work with articles and books in pdf format, a good idea could be that the tutor highlights key vocabulary and phrases in them. It's simple and really helpful. (Manchi, E12)

Second, systematic language support was also expected through our feedback. Twenty-five student teachers expected to receive detailed feedback on language and content aspects. A student teacher said:

I don't think the units should include gap filling exercises on collocations. In my case, I need specific and detailed corrections on my language mistakes, and also

feedback when I did something right content- or language-wise so that I can exploit what I'm good at. (Paola, E13)

On our feedback as tutors, another student teacher commented:

I often receive my assignments with questions, or phrases underlined for me to go over my own writing, but this kind of awareness raising doesn't help me. I should have more explicit corrections telling me why this is right or why that is wrong. And if my answer is "excellent" then I need to know why. Sometimes, corrections or feedback are only about looking at the glass half empty. (Oriana, E14)

These extracts indicate that while student teachers' demands on systematic language support embedded in the materials may not be a priority, formative direct feedback may prove more helpful in their professional development. It should be noted that Extracts 13 and 14 emphasise that our feedback as tutors should provide comments on strengths and weaknesses in a balanced way, and that both language and content should be considered when providing feedback.

Last, 20 student teachers commented on a systematic feature found in module assignments: collaborative work. However, there were divided views as the two extracts below show:

I like it when we have the option of submitting an assignment in pairs because it gives me the opportunity to learn with and from a peer. It also makes me pay more attention to content and language accuracy as I don't want to look like a fool in front of a peer. (Paulina, E15)

I find collaborative tasks and assignments simply frustrating. If I am doing this programme online it is because I don't have the time to get together with others and because I want to complete the modules at my own pace, whenever I can. (Ramiro, E16)

While Extract 15 is representative of only three student teachers, 17 peers found collaborative tasks frustrating because it posed challenges to personal schedules and motivations for studying online.

In retrospect, it is worth pointing out that while we discussed materials design as we interviewed each other, the student teachers' shared their experiences with the materials. This shows that we may have little awareness of how materials implementation affect the teaching and learning processes and only pay attention to principles and intended outcomes rather than observing realistic outcomes. However, it is fair to say that through the study reported in this chapter we have sought to counteract such an attitude.

Developing EMI materials for online IELTE

In this section, we discuss the findings aided by the literature review included in this chapter to understand what accommodation needs should be considered in EMI materials.

From tutors' criteria to materials design and implementation

Drawing on our mentioned criteria and the materials analysis carried out, we found congruence between our intended aims and what is delivered through the materials. As we explained in our interviews (E1-2), the materials follow a learner-centered principle. In an online environment, where student teachers have more control over how and when to engage in learning, we favoured the design and selection of materials that respected student teachers' personal trajectories. In both modules, a learner-centred approach was realised through a learner-friendly writing style, welcomed by the student teachers (E8), and by prioritising context, personalisation, and student teachers' prior. This feature crystallises not only a socio-constructivist paradigm but also Kao and Liao's (2017) suggestion that EMI materials need to be based on locality and particularity so that prior experiences help support learning through an L2. In the experience reported in this chapter, it should be added that the sources of input were not only context-responsive but also easy to understand and with a strong practice-theory relationship (Table 2).

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Regarding the sources of input, the analysis shows that all sources, including written texts (e.g. textbooks and journal articles, videos and pictures) were authentic. In line with Pinner (2019) and Gilmore (2019), authenticity, in our and student teachers' eyes, was not reduced to sources of input; it often extended to authenticity of purpose (but see E9) and task (E7). This was achieved because, unlike the teachers in Jiang *et al.*'s (2019) study, the modules did not rely heavily on textbooks used in UK/USA higher education.

One prominent feature of the module materials was scaffolding. According to the materials analysis, content, and, to a significantly lesser extent, language were scaffolded through different strategies. One strategy included simplification (e.g. bullet points as in Figure 3) and rediscursification (Lorenzo, 2013). Notwithstanding, simplification was only found in the tutor-developed units as preparation to reading the original and unabridged texts. Another strategy was the use of multimodal resources to support learning. These ranged from pictures and graphic organisers to videos, online forums, and online presentations and websites outside the institutional platform. The combination of continuous text with videos and other visuals was positively evaluated by the student teachers. One last broad strategy for scaffolding was sequencing texts and activities from less to more demanding in terms of cognitive and linguistic load.

As tutors researching our own modules we realised that language learning appears marginal in the architecture of both modules. Key terms were made salient through visual organisers, and acquiring general academic as well as specific language was scaffolded through language noticing (Figure 8). However, student teachers raised concerns about language support not only for guiding input but also for supporting output through formative and direct tutor feedback (E13-14). The student teachers suggested ways in which language could be made salient maximising the strategies and tools already found in the modules (E11-12). This view on the lack of language support signals that English language proficiency still needs attention in EMI in higher education (Chou, 2017) and IELTE (McCarthy & Clancy, 2019).

The relationship between text and tasks was a feature that we addressed in the materials as many tasks derived from the reading input. These tasks helped with understanding key concepts and synthesising and recontextualisation information. While the presence of contextualised texts and tasks was received with approval by the student teachers, except

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for collaborative activities (E16), the student teachers demanded more activities built around sources of input to increase purpose and maximise learning (E10). Such a demand reflects Ball's (2018) emphasis on text-task relationship and the prominence that tasks should have in materials development. It is interesting to observe that this feature is also present in higher education. In other words, future teachers do not only want texts and multimodal sources; they may wish to become engaged in learning tasks, which should not be limited to answering questions or discussing in groups, as modules develop. For example, they can be asked to design an online multiple choice task or information-gap activity which other peers complete.

Principles for EMI materials in (online) IELTE

While the materials and voices included in our study lend support to the principles usually found among CLIL and EMI materials, three should be foregrounded.

As in the modules examined, EMI tutors cannot restrict themselves to selecting authentic sources of input and textbooks from contexts where English is a majority language. In this chapter we described how we designed our own tasks and also included tasks already found in the textbooks selected (Figure 6). Therefore, one major principle behind EMI materials for IELTE is TUTOR ENGAGEMENT AND AGENCY. It is of course vital to point out that principles such as context-responsiveness, personalisation, and construction of new knowledge based on students' prior knowledge are to be found in EMI materials; however, they can be effectively achieved if tutors become developers of their own instructional materials and produce a handbook-like text built around the module syllabus and accompanying the core module bibliography. In addition, tutor engagement and agency is expected to be found in formative feedback practices which comment on both language and content. Notwithstanding, it should be acknowledged that for tutors to become materials developers and provide formative language feedback, professional development opportunities should be encouraged and offered together with a workload that allows them to engage in materials writing.

A second principle to be put into practice is PURPOSEFUL MULTIMODALITY. Tutor as well as third-party materials for EMI instruction should provide students with a myriad

of possibilities that can be adapted and employed according to students' needs in connection to the aims of a module and course. In the case of IELTE, whether online or face-to-face, it may be expected that the deployment of multimodal resources and texts be surrounded with tasks that help students understand and exploit input as well as engage in output that proves relevant and transformative. In this regard, the purpose of multimodal texts and resources should also be channelled through tasks that make key terms and general academic language in context salient as modules unfold.

The last principle we would like to highlight is AUTONOMOUS LEARNING. EMI materials should provide students with the opportunity to manage their own learning both in terms of content knowledge and L2 development. Perhaps, materials, preferably tutor-made, should include "breaks" for self-assessment and reflection in which students can check on their own progress content- and language-wise and think of practical ways in which areas of concern could be addressed. Nevertheless, these self-assessment breaks should act as further support to formative tutor feedback on both content and language. The challenge for tutors may be how to provide systematic formative feedback while helping student teachers develop their own autonomy and self-assessment practices.

Because of the affordances provided by online learning, more and more programmes are transitioning into blended learning or complete online delivery, autonomous learning and activity completion may need to be prioritised over collaborative tasks. Collaboration, in fact, may become a risk factor if not used judiciously as having the possibility of working alone may be what has attracted learners to join an online course for instance. In the cases where collaborative learning is implemented, reasons for collaboration should be explicitly spelled out to students and be evident in task instructions.

Conclusion

In this chapter we sought to examine our own tutor engagement with EMI materials design, and our student teachers' experiences and perceptions of learning through them. The current small-scale study was not without its limitations, one of which was our identity of researchers investigating our own teaching materials, practices, and student

teachers. Their and our own perceptions may have been influenced by our dual role of online tutors and researchers.

In the context of IELTE, EMI materials for modules not directly connected to language as a system or discourse should include systematic language support and tasks that reflect activities for language skills development. As suggested in Dafouz *et al.*, (2016), language has a pivotal learning role and therefore a framework for content and language integration should be designed and implemented by both content and language tutors in IELTE and higher education in general. Yet, it is imperative to say that we cannot expect tutors, particularly content tutors, to scaffold language learning only resting on intuition or personal experiences. They need to receive support from the institutions where they work.

EMI is a political decision, and as such it necessitates that certain conditions are met for its successful implementation and sustainability. This chapter has shown that teaching and learning materials need to be developed to meet the demands and expectations that EMI entails, and in the process of EMI materials development, tutors exert a critical role as they have first-hand knowledge of content, context, and learners' trajectories and needs. EMI as policy should be developed hand in hand with a context-responsive EMI-based curriculum for teacher education or other courses.

Future research should investigate different facets of EMI materials development such as selection of input sources or materials implementation and evaluation, and encourage institutional action research initiatives that provide in-depth examination from materials design to materials delivery to materials evaluation. A further line of research could investigate the extent to which the virtual learning environment adopted by a programme conditions materials design and course delivery and influences learners' experiences.

Recommendations for EMI teacher practice

- Engage in developing context-sensitive EMI materials that feature glocalisation.
- Include activities that develop learners' language awareness not only in terms of specific vocabulary, but also in terms of textual grammar.

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- Provide formative direct and indirect feedback in relation to both content and language use.
- Ensure that the materials used for online EMI respond to the affordances, possibilities, and limitations that the virtual learning environment (VLE) in use holds.
- Promote learner autonomy and do not assume collaborative learning is always preferred, especially in online EMI.

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