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The knowledge base of CLIL teaching in multilingual primary education settings

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In collaboration with

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Abstract

In the context of high levels of internationalisation and mobility, the number of primary schools offering early foreign language programmes, particularly in English, has risen sharply in recent years. Increasingly, schools are adopting a content and language integrated learning (CLIL) approach, whereby the teaching and learning of subject content (e.g. science) and language occur in an integrated manner. At the same time, the cultural and linguistic diversity of pupils in primary education has increased significantly, calling for more multilingual approaches to both content and language education, and thus to CLIL. While CLIL offers many opportunities for high-quality, inclusive education in multilingual primary settings, questions remain as to how the integration of content and language teaching in these settings can be realised, and what teacher knowledge and competencies are required for that. We report on a collaborative research project involving UK and Dutch primary school teachers, teacher trainers and educational researchers, who are working to support English as an additional language (EAL) learners and English as a foreign language (EFL) learners respectively, and who are eager to collectively find answers to these questions. Combining practical examples and teachers' insights from the classroom with theoretical insights, we will present a framework of teacher knowledge for effective CLIL teaching in multilingual classrooms that emerged from this work. The framework explores the what, who, when and how of successful language teaching in the content area, and offering concrete recommendations for CLIL teacher professional development and research.

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Why CLIL?

1.1 Background to the study

Language is an inseparable part of learning: children develop language by taking part in intentional and meaningful conversations about learning tasks, while acquiring school knowledge involves becoming competent in the language of schooling (Grøver, Uccelli, Rowe & Lieven, 2019). In the context of high levels of internationalisation and mobility, which has resulted in an increase both in the number of primary schools offering bilingual and early foreign language learning programmes and in linguistic diversity in primary classrooms, children are now increasingly acquiring school knowledge in a second or even a third language. This requires a much stronger focus on language learning than commonly present in subject lessons where learners' first language is used for instruction, and calls for a methodology that facilitates the optimal integration of content and language learning.

Integrating language teaching in the content area also offers opportunities to extend language learning beyond the languages classrooms, thereby broadening its scope to include a wider range of vocabularies and language structures, as beneficial to literacy development and academic achievement more broadly (Heller & Greenleaf, 2007; Nunes, Bryant, Strand, Hiller, Barros & Miller-Friedmann, 2017). Knowing how to teach language in the content area has thus become an increasingly important issue for the provision of high-quality, inclusive education.

While content and language integrated learning (CLIL) is not unique to the teaching of English, the high status of the English language means that it features heavily in the development and implementation of CLIL pedagogy, both in English as an additional or second language (EAL/ESL) contexts or in English as a foreign language (EFL) contexts. While each of these contexts comes with their specific challenges, CLIL is relevant to both. In EAL/ESL contexts, there is great urgency to ensure children acquire the societal and school language fast to enable fuller participation in mainstream learning and avoid any learning delays that may arise from language barriers. In EFL contexts, opportunities for language learning outside of school may be more limited, requiring careful consideration of how to configure school classrooms for optimal language learning, both in language classes and across the curriculum. In both contexts, there therefore is a need for intensified learning of English at school, with integrated approaches contributing towards meeting that need.

Yet, CLIL also needs to be understood as occupying a specific place within the provision of English language education. While adopting a CLIL approach to support English language learners may mean that transitions from pull-out or sheltered classes to mainstream lessons can be made sooner and with greater ease, CLIL should not be seen as replacing dedicated language classes, whether sheltered or mainstream.

Furthermore, CLIL is often referred to as an 'umbrella term' covering a variety of instructional practices that result in a dual-focused education where attention is given to both subject and additional language learning (Dalton-Puffer, Llinares, Lorenzo & Nikula, 2014). While variation in implementation indeed exists, this definition highlights that CLIL is characterised by a dual teaching task as one of its defining properties. As such, CLIL goes beyond what is sometimes referred to as 'language-sensitive' or 'linguistically-responsive' teaching (Lucas & Villegas, 2011), where the emphasis has historically been on learners' (access to) cognitive and academic skills as a starting point for a language-focused pedagogy. It also goes beyond the well-established second language teaching method of content-based language teaching (CBLT; e.g. Song, 2006; Wesche & Skehan, 2002), where learners' language development has tended to be the driver of pedagogy, with content primarily being seen as a conduit for language learning rather than an objective of teaching.

CLIL occupies a space in between these two approaches. This means that it is driven by the logic of the topic or subject being taught (Coyle, Hood & Marsh, 2010; Dalton-Puffer, 2013), with access to cognitively challenging content in the additional language being one of the instructional aims, but that the teaching of content in the additional language takes into consideration how the learner is to obtain and acquire new language from their environment (Costa & Coleman, 2012; Gibbons, 1998). In other words, teachers simultaneously establish high linguistic demand and stimulate language learning through guided language exposure and use within content curricula and learning activities.

1.2 Rationale for the study

It is not surprising, then, that while the rewards are many, implementing CLIL does come with considerable pedagogical challenges. These relate, on the one hand, to bridging the gap between additional language learners' cognitive and linguistic levels, their mismatch requiring careful consideration within the planning and implementation of CLIL lessons (Coyle, 2007): maintaining high cognitive demand and establishing high linguistic demand can be compatible, but they are not necessarily or automatically so, and can in fact be competing for limited cognitive resources. On the other hand, the challenges relate to the fact that integrating language teaching in the content area is not about simply 'applying language goals and methods to

content subjects' (Mahan, Brevik & Ødegaard, 2018, p. 3). Rather, it requires giving careful consideration to how language is used in content learning and teaching (de Jong & Harper, 2005), and to how to approach the teaching of these language structures in a classroom where content objectives, too, are major pedagogical drivers.

Doing so means looking at language 'through two lenses: that of *language learning* and that of *learning through language*' (Grøver et al., 2019, p. 1) and includes mapping the interplay between the two (de Graaff, 2016). It also means acknowledging the positive role that learners' home languages can play in the education of bilingual children in terms of both their linguistic and cognitive development (Cummins, 2007b; Liu, Fisher, Forbes & Evans, 2017). In other words, it means integrating not only the target language but all the learners' languages within the teaching and learning process (Cenoz, 2013; Lin, 2016); that is to say, the integration of content and languages.

Current CLIL theory and practice provide only partial answers to these complex pedagogical questions. In particular, most CLIL research focused on language integration – whether about subject-specific language or the inclusion of learners' full linguistic repertoires – has done so largely in theoretical terms, paying relatively little attention to how *pedagogic* integration is achieved (Coyle, 2015; Llinares, 2015; San Isidro, 2018) or to what knowledge is required by teachers to increase their effectiveness in integrating content and language learning in their classrooms (Morton, 2016; Troyan, Cammarata & Martel, 2017). Motivated by this reality, we embarked on a collaborative and international research project that took teachers' practical knowledge of integrated teaching in two different English teaching contexts – namely EAL provision in the UK and EFL provision in the Netherlands – as the starting point of our collective search for the professional knowledge base of CLIL teaching in multilingual primary education settings.

2

What did we do?

2.1 Aims and methods

The aim of the project was to address the critical need for an understanding of teacher knowledge of integrated language teaching that is more true to the task at hand; that is to say, that underlies decision making in actual CLIL classrooms and does justice to the complexity of language teaching in the content area in multilingual education settings.

Achieving this required, first, an integrated endeavour across teachers, teacher educators and educational researchers (de Graaff, 2016). Rather than defining the professional knowledge base of CLIL primarily on the basis of theories and insights gathered through applied linguistics research, we wanted to foreground teachers' practical knowledge – or 'the knowledge *of* teachers' (Fenstermacher, 1994) – as a vital source of information and central component within the total knowledge base, complementary to 'the knowledge *for* teachers' (*ibid.*) from existing theories.

Second, it required a methodology that would, on the one hand, allow for teachers' practical knowledge – which is highly situated, personal and often tacit in nature (Meijer, Verloop & Beijaard 1999) – to be captured in a way that is true to the complexity and interdependency of the task of integrated teaching, yet on the other hand permit comparisons across teachers and contexts (Hiebert, Gallimore & Stigler, 2002), as well as with existing theories, in order to systematise this knowledge and identify its place within the knowledge base.

To meet these two requirements for establishing the knowledge base of CLIL teaching, we adopted a qualitative and comparative study design, centring on a CLIL teaching wall activity embedded within teacher interviews. This procedure, as adapted from a procedure developed by Koopman and colleagues (2014), required teachers to first write down on cards any actions or activities they use to support integrated learning, with the rationales for these on the back of these cards. They then were asked to use the cards as 'bricks' to build a wall, placing essential bricks at the base and building the next layers using increasingly less essential bricks.

This approach ensured that teachers' externalisations of their cognitions related to their actual classroom practice, thereby overcoming limitations associated with ecological validity (i.e. relevance to classroom life) inherent in alternative self-report instruments (Kagan, 1990). Moreover, the approach provided teachers with the support they needed 'to begin to articulate their own theories of teaching' (Borg, 2003, p. 88) as important for bridging the gap between CLIL theory and practice. The semi-structured interviews framing the CLIL teaching wall activity, in turn, enabled us to understand teachers' practical knowledge in relation to background and contextual factors known to impact on classroom practice, such as prior education, years of experience and the school context (Meijer et al., 1999).

2.2 Participants

Given the dual task underlying CLIL teaching, of providing access to cognitively challenging content in the additional language and stimulating additional language learning within content learning activities, we set out to bring together participants with expertise in these areas. While CLIL-with-English provision in the Netherlands has, in the main, seen a stronger focus on learners' foreign language development (e.g. de Graaff, Koopman, Anikina & Westhoff, 2007), EAL provision in the UK has been particularly concerned with the overall academic achievement and inclusion of linguistic minority children (Leung, 2016), placing greater emphasis on learners' cognitive development within a language developing pedagogy. In working with a more diverse group of learners, the EAL context also holds particular expertise in teaching and learning in multilingual classrooms, and thus offers unique opportunities for advancing CLIL theory and practice in this area.

The study involved eight primary school teachers in the UK from four schools with medium-to-high proportions of EAL learners (40 per cent or higher), and six teachers in the Netherlands selected from across four schools offering Dutch–English bilingual programmes providing 30 per cent of lessons in English. As pupils' age or year group impacts on the nature of teachers' practical knowledge and on the language demands of content learning, we worked with teachers teaching in the upper levels of primary education (ages 8–11). All teachers had at least five years of teaching experience, with the exception of one UK teacher (Sean), who was the EAL co-ordinator for his school, having been a qualified primary school teacher for four years.

2.3 Analysis procedure

The analysis focused on teachers' descriptions, explanations and contextualisation of the strategies they identified as facilitative to integrated learning. Inspired by the work of Shulman (1987) and Meijer, Verloop and colleagues (1999; 2001) on pedagogical content knowledge and the knowledge base of teaching, as well as by Morton's (2016, 2018) work on teachers' knowledge of language for CLIL, we coded teachers' verbalisations under the following categories of teacher knowledge:

1. *Language knowledge for CLIL*, as referring to teachers' understanding of how language operates in content area teaching and learning. Like Morton (2018), we distinguished between teachers' knowledge of the everyday and academic language that is needed to communicate subject-matter content and teachers' knowledge of the language needed to represent, unpack, make accessible and explore new content and linguistic knowledge (i.e. to *teach* content). Building on Shulman's (1987) distinction between 'content knowledge' and 'pedagogical content knowledge', the latter referring to a special form of content understanding unique to the teaching profession, we refer to these two types of language knowledge as 'content-language knowledge' and 'pedagogical content-language knowledge'.

2. *Pedagogical knowledge for CLIL*, as relating to teachers' knowledge of integrated language teaching approaches and teachers' knowledge of learners' common misconceptions, learning difficulties and learning trajectories.

3. *Integration knowledge for CLIL*. During the analysis, a further knowledge category emerged to capture those instances where CLIL teachers bring together and weigh up different and sometimes conflicting pedagogical knowledge within their decision making. It refers to CLIL teachers' unique knowledge of how to balance the dual learning tasks.

4. *Knowledge of educational context for CLIL*, as pertaining to teachers' understandings of the affordances and constraints of the context in which their teaching takes place, including curricular and timetabling issues, general characteristics of both CLIL learners and the wider community, knowledge of school workings, and teachers' own understandings of the teacher skills required for CLIL.

By categorising teachers' practical knowledge in this way, we were able to explore the teachers' expertise in relation to each other and to existing CLIL theories. This exploration enabled us to develop a framework of the teacher knowledge underlying successful CLIL implementation that is informed by both educational practice and applied linguistics theory. The resulting framework does not only address the question of *what* language knowledge is required to manage the task of integrated teaching, but crucially also presents an understanding of CLIL that is informed by *who* teachers have in their classroom, and *when* teachers focus on language (or languages) in response to the affordances and constraints in their teaching context. We will next describe the framework as it emerged from our conversations with teachers.

3

What did we find? – The WHAT, WHO, WHEN and HOW of teacher knowledge for language teaching in the content area

And content and language integrated learning comes into life and that's what makes it super difficult I think, because you always have to think how to link that particular topic [...] with the particular language structure, or what can you get out of this topic to teach them some grammar on the side or correct some grammar [...] Also, to constantly think about creating the materials yourself. Okay well, what does this child need? What are the particular curricular needs? And then building the language within that.

Lena, UK teacher

A teacher who may have a bit more difficulty expressing him or herself in English, they are really looking up in advance, like, these words can come up in a lesson, so those I need to have on a list, because then when I explain things I can have it on me. [...] And I think that, sometimes this is really good, but sometimes it also limits you because you start from that perspective when you should actually start from the input you get from the children and from what surfaces in conversation.

Janneke, Dutch teacher

In both the UK and the Dutch contexts, teachers' descriptions of their practice revealed *pedagogic* integration to never just be about the integration of content and language curricula. Rather, it highlighted, as the above extracts show, that optimising language learning in the content areas starts first and foremost with knowing *who* you have in your classroom. Moreover, as Janneke's reflection reveals, the *what* and *who* of integrated teaching often interact with contextual constraints and affordances – in this case, teachers' own language proficiency – as affecting *when* teachers focus on language or languages within content teaching. Teachers' practical insights thus revealed that understanding how we can support teachers in increasing their effectiveness in integrating content and language learning warrants careful consideration of these dimensions of teacher knowledge (i.e. the *what, who* and *when*) and *how* they inform the how of integrated teaching.

3.1 The WHAT of language integration: The multidimensional nature of 'language' in content area teaching

Let's say your learning objective is something like, to – let me think of a good maths one – to identify right angles [...]. That's going to be jargon for a pupil that doesn't speak English as a first language. So first of all you're going to have to jump straight in with your visuals.

Bob, UK teacher

Whatever you scaffold for them, it would just be exactly the same if they have no understanding of what is, you know, written in that scaffolded activity. They won't access it, there is no meaning for them.

Karolina, UK teacher

Embedded within teachers' explanations of their approaches, we found a rich understanding of the complex nature of the language of content classrooms that integrated language teaching needs to address. Firstly, teachers' reflections confirmed the importance of distinguishing between content-language knowledge and pedagogical content-language knowledge, as the above quotes confirm. The actuality of CLIL teaching thus supports existing CLIL theorisations on this distinction (e.g. Coyle et al., 2010; Llinares, Morton & Whittaker, 2012; Morton, 2018). At the same time, teachers' practical knowledge added new layers of meaning to this twofold distinction. In fact, the teachers referenced six types of talk first discussed in the work of Moate (2011) as relevant to their CLIL practices (see Table 1).

With regards to content-language knowledge for CLIL teaching – what Moate (2011, p. 23) refers to as *expert talk* or 'the formal voice of the subject' – teachers' practical knowledge included awareness of the multilayered nature of this talk type in CLIL classrooms. Specifically, Karolina (see Table 1) rightly questions whether a conceptualisation of expert or academic language as limited to technical jargon is helpful from the perspective of the actual subject-specific language learning task that English language learners face (see also Aukerman, 2007; Bunch, 2006, 2014 for discussions on the role of everyday language in academic processes in the classroom). The teachers' practical knowledge thereby confirms the importance of what Snow, Met and Genesee (1989, p. 201) refer to as 'content obligatory' and 'content compatible language' for deciding *what* aspect of content-language to focus on, the former referring to the 'language essential to an understanding of content material' and the latter to the 'language that can be taught naturally within the context of a particular subject matter and that learners require additional practice with'.

Mary, in turn, shows us that content-language or expert talk does not only relate to the language of concepts and facts, but also to the language structures of disciplinary procedures (i.e. 'the working of scientific parts' or the doing of science), thereby reminding us to consider more complex language structures that go beyond vocabulary and include the sentence and discourse levels of different subject-specific skills, genres and literacies (Ball, Kelly & Clegg, 2015; Dalton-Puffer, 2013; Meyer, Coyle, Halbach, Schuck & Ting, 2015; WIDA Consortium, 2012, 2014), something that research has shown to still be relatively uncommon in CLIL classrooms (Dalton-Puffer, 2007; Hüttner, Dalton-Puffer & Smit, 2013; Scarcella, 2003).

Table 1: Teachers' language knowledge for CLIL

Content-language	
Expert talk *Content obligatory language* Language essential to an understanding of content material	'You have drawn a plant, so now go and describe it. Well, then you have to say something about the leaves, the flower, and the roots and those kind of things' (Els, Dutch teacher). 'So, visual success criteria […] so for the rocks topics I'd created certain pictures to go with the different aspects of what would be taught about rocks or the working of scientific parts, different things to represent something. So for measuring skill, there would be a little picture that was measuring using a ruler or a measuring jug' (Mary, UK teacher).
Content compatible language Language that can be taught naturally within the content area, and that learners require additional practice with	'They read the questions of the maths test that they complete every half term, and I asked them to highlight any word they didn't understand. […] And it were funny, it was a question about fractions, the child knew the fractions, but the child didn't understand the word 'shade', they didn't understand 'draw' or 'look at the table', the table as the table, which is such a classic misconception. And then there was really eh, culturally based question about soap operas, EastEnders, things like that. She thought it was about the soap bar, not about the movies, the films. And there were some completely not even maths-related vocabulary that threw them up. So I think with those is more academic language' (Karolina, UK teacher).

Pedagogical content-language	
Pedagogic talk Talk that bridges everyday understandings and expert conceptualisations	'So much scaffolding comes into play then. Because you have to constantly create your language. So if you're a teacher and you look at, you know, at the content of this lesson and the topic, and you think […] well it's obvious, I understand that. But then you forget that this is usually very specific technical vocabulary so you have to use even simpler and simpler terms to describe it. This is where you start actually seeing that they understand it. So obviously, comparing it, but also making it easier and easier, and then making it more difficult' (Lena, UK teacher).
Social and exploratory talk Safe, non-assessed talk and talk explicitly focused on pupil understanding	'When I see that a child is totally not understanding something, sometimes it works well to ask a fellow student to explain it again. […] So, you involve other students in how you offer something. Sometimes it is really nice to hear back from another student, at their language level and their level of understanding, what it actually was that I was saying' (Jan, Dutch teacher). 'Okay, so talk-for-writing, for when they read a text. We talk through the vocabulary and answer all the comprehension questions to make sure they understand what the text is about and then we draw a story map with some pictures, based on these pictures we say a sentence, we practise and then label the key vocabulary, and we do step by step by step until they learn to rehearse a story using the language features, and then they will try their own. […] Sometimes they need to rewrite about, I don't know, similar question. […] And I think rehearsing gives them confidence, they actually can understand that they can speak English. It's them in a group so there's no pressure on them if they mispronounce, or if they're a bit quieter and still very shy to speak up' (Karolina, UK teacher).
Metatalk *Talk about talk and about language use*	'I think it's all about clear instruction on responses. I'd say, I want you to speak for two to three full sentences – like they're aware that they have to when they talk to their partner […] – yeah that, high challenge' (Harry, UK teacher). 'And what I also always do with questioning is, when I ask a child something and they don't know what it is, then I ask, and I say 'now listen carefully I'm going to ask somebody else', and then I ask somebody else and then they're supposed to listen to that child' (Karen, Dutch teacher).
Organisational talk *Talk expressing the what, when and how of classroom activities*	'Facial expressions, body language. They can join in with the routines and learn the basic communication skills quite quickly just by making sure I'm doing all of the right bodily cues' (Sean, UK teacher). 'And that independence as well. They see a symbol […], so they will know they need to write if they see a pencil, a speech bubble they know they will have to say something, that gradually, because they tend always to rely on the adult, but you need to put all this in place to build up that independence and self-esteem as well. That I can do it, I don't need her to stand and tell me, or sit and wait because she will write it for me on the board' (Karolina, UK teacher).

Teachers' reflections on their practice also favoured a widening of our understanding of 'pedagogical content-language knowledge' to include more than just *pedagogic talk* (see Table 1), highlighting in particular the importance of *exploratory* and *social talk*, which can overlap in collaborative classroom activities (see Jan and Karolina's reflections in Table 1). All teachers stressed the central role of collaborative activities in their practices, and revealed a strong awareness of the affordances that peer talk can provide for establishing understanding and trialling language that teacher talk may not. Specifically, positive social and non-assessed talk contribute to the community building required for both the more critical and exploratory work 'committed to learning [and] building understanding together' (Moate, 2011, p. 25) and for 'becom[ing] accustomed to the feel of the foreign tongue as an expression of oneself' (*ibid.,* p. 24).

In addition, the teachers emphasised the importance of *metatalk* (see Table 1) to CLIL classrooms. In order to meet the high cognitive and high linguistic demands required for integrated learning, CLIL classrooms are often characterised by higher levels of talk and hands-on activities to involve learners in difficult-to-access content learning, than perhaps found in non-CLIL classrooms. Metatalk plays a vital role in setting boundaries and giving direction to talk-in-interaction for appropriate knowledge articulation, and thus in taking CLIL classrooms beyond comprehensible input. Of course, this metatalk too needs to be made accessible to additional language learners, as vital to metatalk and strategy teaching in CLIL classrooms.

Lastly, the teachers foregrounded the importance of making accessible the language structures of classroom routines to support participation in learning in content classrooms. This foregrounds *organisational talk* (see Table 1) – whether relating to general or content-oriented classroom activities – as another important discourse space to consider within the teaching of language in the content area, with the use of body language and visuals being offered by Sean and Karolina as examples of how initial access to this language can be achieved. They also reveal teaching the language of organisational talk to be vital for building the confidence required for effective development in dual-focused classrooms.

The analysis of teachers' language knowledge for CLIL thus showed that deciding *what* aspect of language to focus on stems from a thorough understanding of 'the linguistic foundations underlying effective content lessons' (de Jong & Harper, 2005, p. 102), seeing the many and diverse types of talk that characterise CLIL lessons as spaces for language teaching and learning. While expert talk was certainly seen as a priority, the language knowledge underlying the teachers' integrated practices was found to be broader than that, with their instructional strategies also addressing the language of their instruction, of collaborative and exploratory talk, of classroom routines, and the rules and expectations set for participating in CLIL learning. Moreover, all teachers' reflections on the language of content classrooms reveal that what counts as high linguistic challenge and as worth focusing on is not just defined by the content being learned, but also by the learner doing the learning.

3.2 The WHO of language integration: Supporting emergent multilingual learners

But it's just then, you're using those strategies to then learn more about that child, so I think it's just being more, ehm, … clinical I guess in, in understanding their ability and what they're understanding or not understanding, I suppose.

Becky, UK teacher

The teachers' practical knowledge confirmed the central place of knowledge of CLIL learners within the professional knowledge base of integrated teaching in multilingual education settings. Knowing *who* you have in your classroom was found to be of particular concern to our primary teachers, who tended to enter the profession because they were interested in whole-child development rather than subject teaching *per se*. Two main areas of teacher knowledge of CLIL learners were foregrounded, namely the psychology and the emergent language knowledge of young, multilingual learners (see Table 2).

Table 2: Teachers' language knowledge for CLIL

CLIL learner need	Teacher reflection
Confidence	'I think it's probably confidence. I think for those pupils that arrive maybe on day one with no English at all, for them they could've been the most high-ability pupil in the class in their mother tongue, as it were, and they all of a sudden find themselves in a setting where they're maybe the opposite end of the class and that can do a lot of damage in terms of confidence! You know I've seen it over the years and pupils have actually gone into their shells' (Bob, UK teacher). 'Yeah that definitely, be more safe because they're stepping out of their comfort zone, lots of kids. And if they're not very good at English then, yeah, I've gotta make sure that they still feel valued […]. When you've got that basis there then you can do all the teaching' (Karen, Dutch teacher).
Independence	'Language partners can be quite useful. You might have an Arabic speaker that's been bilingual since birth, and then you might, you know, is it a good idea to sit him next to a pupil that has just come into your classroom with no English but is an Arabic speaker? I think there's two ways of looking at it, you know, it could be a benefit or it could be a hindrance. Naturally you might think, 'ah good pairing, will be able to explain', but then sometimes, could be counterproductive because it could be too, too much of a – too easy! […] It's not teaching good independence, so, you know, there's a combination of, varying your approaches is a big part of this as well' (Bob, UK teacher). 'Because I guess with EAL, it's better to immerse them in the language instead of help them, over-support them' (Harry, UK teacher)
Emergent language needs	'They need to be independent. But you just think, oh they can't, they can't do it, they can't speak. Yes, but – and they will get things wrong, and it's fine. But if they never try? It's just giving that opportunity. But give them something, or model, like I put that cloze activity. You know you don't need a paragraph, it could be a sentence or two. Or they match, it means they understood the new words, understood what you meant. […] Can they use the same sentence construction to formulate their own ideas? So I think is just when you choose, you just need to think what is the purpose? What do I need out of this? How would they help them to build up their language skills? 'Again, the books – if they're new to English, I don't want to see any writing because I know they would copy. I would rather see a photograph and an observation like what we do in foundation stage with the little ones, or the words they use, or, or the instructions they were able to follow rather than copying someone else's writing. So very much early years. That's, you know, the emerging language. Lots of hands on activities. […] Yeah because the pressure is to get it done in the books to have that evidence. But if it's copied, no use for them. So lots of pictures, lots of discussion, making things, that's how they will learn' (Karolina, UK teacher).
Multilingual development	'Yes, because from Year 5 [age 8–9] you really need to start working on those content knowledge goals, and the core knowledge. We always used to do the IPC [International Primary Curriculum] in English, completely, but now you encounter this problem in Year 5. Yes, it's all nice and well you want to do it in English, but the Dutch vocabulary also needs to be developed. That is also important. So really spend time on that, on figuring out how we are going to that, how we're going to give shape to that' (Els, Dutch teacher). 'And again, it depends on the learner because if they don't have the language, if they don't have – because it depends on how – so if we're thinking really subject specific, if they haven't perhaps had any formal education or perhaps they haven't been taught science, for example, then the scientific vocabulary in their home language, or their first language I should say, I suppose isn't going to be beneficial' (Becky, UK teacher).

Where CLIL learners' psychological needs are concerned, teachers' practical knowledge revealed that CLIL teachers face not just the challenge of balancing content and language goals, but also of any *threat to learners' confidence* that learning in an additional language may pose, with CLIL learners' need to become *linguistically independent* participants in content classrooms. In other words, CLIL learners simultaneously require a safer learning environment and to be challenged more than non-CLIL learners to achieve the task of integrated learning.

These psychological needs were found to overlap with CLIL learners' need for opportunities in building up their emergent language skills. In fact, *learners' existing and emergent knowledge* of both the language needed for content learning and of languages seemed to be the primary driver of teachers' integrated practices. Specifically, the teachers were very aware of the importance of giving children opportunities to make language their own, as argued for convincingly by Karolina in Table 2 (see also Janneke's point earlier on the importance of starting CLIL teaching from the input of the children). They were also aware, as Karolina's reflections testify, that achieving a balance between content learning goals and learners' emergent language needs requires adapting instruction in a way that reduces the linguistic demands on learners, yet maintains key content learning as well as opportunities to be exposed to, and learn to use, the more challenging and technical language in which this content is most accurately encoded (a point we will take up again in the *how* of language integration).

Els' and Becky's reflections, in turn, remind us that in primary CLIL classrooms, *learners' emergent language relates to both the target language and their first or home languages.* Their reflections highlight, first, that while the inclusion of learners' first languages may perhaps seem more immediately relevant to learning in multilingual classrooms with high linguistic diversity, it is in fact relevant to CLIL as a learning space in general, which by virtue of its focus on additional language learning is multilingual in nature. This applies perhaps even more so to young CLIL learners, whose home languages are also still emerging, and who thus need to be taught as emergent multilinguals rather than as learners of a second language after their first (see, for example, Duarte & Günther-van der Meij, 2018; May, 2013 for further work on the importance of this distinction for language learning and teaching).

Moreover, as Becky explains, the focus on learners' academic language development at the core of CLIL learning requires a more fine-grained understanding of young learners' emergent languages, involving not only both everyday and more technical academic language skills, but also both oral and written competencies (Cummins, 2007a), complex constellations of which will exist across the languages that CLIL learners know and are developing. In other words, young CLIL learners are emergent multilingual learners, this adding a layer of complexity to decisions about language integration (including the use of supporting languages) in primary CLIL that secondary CLIL teachers perhaps to a lesser extent have to contend with because their learners' first languages tend to be more developed.

The successful integration of language in the content area thus requires, as Becky's opening reflection affirms, a strong child-centred focus and 'almost clinical skills' on behalf of the teacher, who needs to be able to distinguish learners' problems in understanding from the difficulties they experience in expressing their understanding in a language they have not yet mastered. This was found to require familiarity with the linguistic and academic backgrounds of CLIL learners in both English and their first or home languages (Lucas & Villegas, 2013; Lucas, Villegas & Freedson-Gonzalez, 2008). Moreover, in both English teaching contexts, teachers confirmed the importance of seeing errors as developmental, a vital teacher belief for effective content teaching to additional language learners (Harper & Jong, 2004). In doing so, the teachers highlighted how language teaching in the content area goes beyond a focus on knowledge articulation and the balancing of content and language goals, to include a focus on CLIL learners and their need for inclusion in learning processes in safe, yet challenging ways. This, in turn, requires the careful balancing of threat and dependence as well as both learner and curricular needs.

3.3 The WHEN of language integration: Considering the educational context for optimal CLIL learning

Besides the learner-centred rationales for teachers' decisions about how to integrate *languages* in the content area, teachers' decisions were found to be influenced by their understanding of the opportunities and challenges for CLIL learning within their educational contexts, as relating to both the content classroom and the wider school community. While this reveals that a one-size-fits-all approach to CLIL does not exist and that implementation will inevitably vary between English language teaching contexts and between schools, teachers' practical knowledge did foreground five key contextual factors that affected *when* they integrated languages in the content area (see Table 3).

Teachers' decisions about integrating languages and when to do so were always influenced by locally and nationally set *curricular goals for both content and language.* Teachers' knowledge of curricular goals includes, as Lena explains, knowledge of local differences in priorities pertaining to oracy and literacy development as differentially affecting CLIL implementation in an EAL/ESL context from that in an EFL context. This is not to say that teachers in both contexts did not consider both speaking and writing in their CLIL practice. In fact, the teachers in both contexts were aware that integrating all four language skills (i.e. listening, reading, speaking and writing) and working along the 'mode continuum' from more spoken-like texts to more written-like texts (Gibbons, 2002) is an important component of achieving the high linguistic challenge characteristic of dual-focused classrooms.

Teachers' knowledge of curricular goals also relates to their awareness of local age-appropriate curricular standards, and the importance of working towards these standards while simultaneously keeping in mind learners' specific linguistic, cognitive and affective needs, as exemplified by Karolina's first reflection in Table 3. Her reflection also reveals that meeting both curricular and learner needs can be achieved through the planning of lesson cycles that incorporate both communicatively enriched instruction and scaffolded (and where relevant differentiated) activities in which learners can apply and consolidate new content and language knowledge.

Table 3: Teachers' contextual and situated integration knowledge for CLIL

Contextual factor	Teachers' situated integration knowledge	Teacher reflection
Curricular goals for content and language	Teachers decide **when** to focus on language based on: a. the centrality of specific language *skills* in local curricula (alongside *linguistic diversity* in local classrooms) b. age-appropriate curricular expectations (alongside *linguistic diversity* in local classrooms).	'Because with foreign languages, usually it's the communication, speaking. Over here, writing is such a huge deal and it is so difficult and you've got children who are from Korea and China and use different scripts' (Lena, UK teacher). 'You just need to plan for your lessons, so it's the whole class teaching of course is majority of them so you will need to expose, and they need to be exposed, but if it's a small group work you just have to adapt it and tailor to their needs so they benefit something' (Karolina, UK teacher).
Linguistic diversity	Teachers decide **when** to use learners' first or home language based on: a. the language pairing options in the classroom b. their awareness of how additional language learners obtain language knowledge from their environment.	'So again […] if I can pair them up with somebody who is same home language I would. If I can't, I will sit them with children who are good models of English and then I would support that child as well, I'll make sure they've got other resources to support them' (Mary, UK teacher). 'It definitely is a balance, because I would try when they first join a class to be sat with someone who is same home language, so it's not intimidating, it's not overwhelming. But I would aim not to sit them with that child every day, every lesson. Because, a. it's not healthy for both of them, but also […] if they're always with that same child, they're always listening to that home language, they're never really going to even attempt to think about what's happening around them or listening into what's happening around them. […] And I suppose, once you've started being able to focus on vocabulary with them, when you're actually doing the sentence stems then moving that support away, and getting them to think about it independently a bit more, it sort of builds up from there. But it would hugely depend on what we were doing, so if it's a brand-new subject or a brand new concept in science for example, I probably would give them that language support so they can at least discuss what they know with somebody else' (Mary, UK teacher).
Teachers' own language and language teaching skills	Teachers decide **when** to focus on language based on: a. the extent of their knowledge of language development and teaching across the age groups b. the extent of their knowledge of language development and teaching across the subjects.	'I think having a good understanding of the grammar and vocabulary objectives, and potentially spelling objectives of the year group, but also the teachers being able to confidently look back at […] Yeah for, for a Year 6 teacher, for example, to be able to look back at the year one objectives […] I think it's a big part of it, so I suppose for teachers to understand how, to understand where to look to find the next objective for that pupil' (Bob, UK teacher). 'Yeah, definitely. You see, my advantage is that I teach them English in the morning, so I know what I can expect from the children in, in terms of vocabulary and grammar, and which sentences they can and cannot write or understand. That is quite a bit harder for my colleagues' (Fleur, Dutch teacher).
Further language learning opportunities and support	Teachers decide **when** to focus on language based on: a. whether and how English features in learners' home language use b. the extent of learners' exposure to English outside of school through, for example, technology and media.	'Because some of the children, it's interesting, they still translate in their heads. Some of them, they still write – it depends how dominant that English language is, and how often they use, do they use it at home? Some more mixed families, they tend to use just pure Lithuanian or their home language at home. So that can affect the quality of writing' (Karolina, UK teacher). 'Because if they can just name numbers up to 12 in their language, would you expect that in English? Could be, because they watch lots of YouTube you know, and playing games online, but academically? […] So I think just understanding the background of the child, academic and social, is very important' (Karolina, UK teacher).

The teachers' decision making was further influenced by their knowledge of the *linguistic diversity* in their classrooms, revealing the linguistic typology (i.e. how similar or different they are) of the supporting and target languages to be a key factor to consider within the supplementation and modification of texts and the scaffolding of CLIL tasks.

The linguistic backgrounds of the learners were also found to be a major factor affecting the teachers' decisions about when to use learners' other languages to support the learning of content and/or language. As Mary's reflection reveals (see Table 3), this is not a straightforward decision, given that CLIL learners also need sufficient opportunities to be exposed to and practise the target language (Ellis, 2005), an understanding similarly expressed by Karolina when she states that all learners 'need to be exposed' to the appropriate curricular standards. As such, a balance between the target language and other language use in support of both content and language learning needs to be established in a systematic and intentional way.

Mary's practical knowledge highlights that the strategic use of learners' other languages needs to be considered not only as part of instructional and verbal scaffolding, but also as procedural scaffolding (Echevarria, Vogt & Short, 2017), whereby supporting languages are used purposefully during specific phases or activities in the lesson to support deeper processing of challenging subject content and more meaningful language production. Both Karolina's and Mary's reflections thus foreground that knowing *when* different types of instructional techniques are appropriate is an integral part of knowing *how* best to teach CLIL learners.

Lastly, in both the UK and Dutch contexts, the teachers frequently commented on *teachers' own language (teaching) skills and any further language learning opportunities and support* available to learners outside the CLIL classroom as deciding factors in their integrated teaching practices. While in the UK EAL context, the challenge relating to teachers' own skills mainly concerned whether they had had training as English language specialists or not, in the Dutch EFL context, this issue was further confounded by teachers' own English proficiency as also affecting *when* teachers focus on language in topic lessons. Despite these differences, teachers in both contexts recognised the role of specialist language knowledge in CLIL teaching, whether this originated from training as an English language teacher, as exemplified by Fleur, or from being a class teacher with knowledge of language development across the year groups, as exemplified by Bob (see Table 3).

This contextual knowledge of language across the curriculum relates to knowing how to build on, integrate and reinforce language developed in other subject or language classes, but conversely also to knowing what aspects of language receive sufficient attention in other learning spaces, meaning less time can be spent on them within an already packed CLIL lesson. By extension, teachers' contextual knowledge of the language learning opportunities beyond the CLIL classroom also went beyond the school, and included an understanding of whether and how English featured in learners' home language use and their exposure to English through technology and the media.

Knowing *when* to teach language in the content area was thus found to be a key part of effective CLIL teaching, alongside knowing *what* aspect of language to focus on (i.e. understanding the language demands of the CLIL classroom) and knowing *who* is doing the learning (i.e. understanding the academic and linguistic backgrounds of CLIL learners in English and their other languages). This knowledge, in turn, was found to require a thorough understanding of the contextual affordances and constraints of the CLIL learning environment at both the classroom level and beyond, as well as a heightened awareness of how additional language learners obtain content and language knowledge from that environment. The *when* of integrated language teaching relates to the integration of these knowledges, reflecting a situated integration knowledge that is fundamental to effective CLIL implementation.

3.4 The HOW of language integration: Language teaching for learner participation, knowledge articulation and learner progression

How the teachers approached language teaching in the content area and what instructional techniques they used was found to be informed by the *what, who* and *when* of CLIL teaching, set within the school and community contexts (see Figure 1).

From working with the teachers, we came to learn that three pillars of language teaching in the content area were equally vital to addressing learners' needs, and form the basis of the triangle in Figure 1, namely:

1. **language teaching for learner participation** to increase learners' opportunities to participate safely and fully in the learning process, as informed in particular by teachers' knowledge of the talk types making up pedagogical content-language and the diverse academic and linguistic backgrounds of their learners

2. **language teaching for knowledge articulation** to ensure learners receive sufficient opportunities to be exposed to and apply subject-specific language knowledge, as predominantly informed by teachers' knowledge of the multidimensional nature of content-language or expert talk

3. **language teaching for learner progression** to address the need for learners to progress in line with both child-specific and year group-appropriate expectations, as influenced by teachers' contextual knowledge of the curriculum, of learners' exposure to language learning outside of the CLIL classroom, as well as the diverse linguistic needs of CLIL learners.

Each of these integrated language teaching pillars were found to come with their own specific challenge:

a. the balancing of *threat* and *dependence* to ensure full participation in learning

b. the balancing of *content* and *languages* to meet curricular goals

c. the balancing of *curricular* and *learner needs* to ensure all learners have opportunities for meaningful learning as they progress towards age and grade-appropriate content and language skills.

Figure 1: The WHAT, WHO, WHEN and HOW of teacher knowledge for language integration in the content area
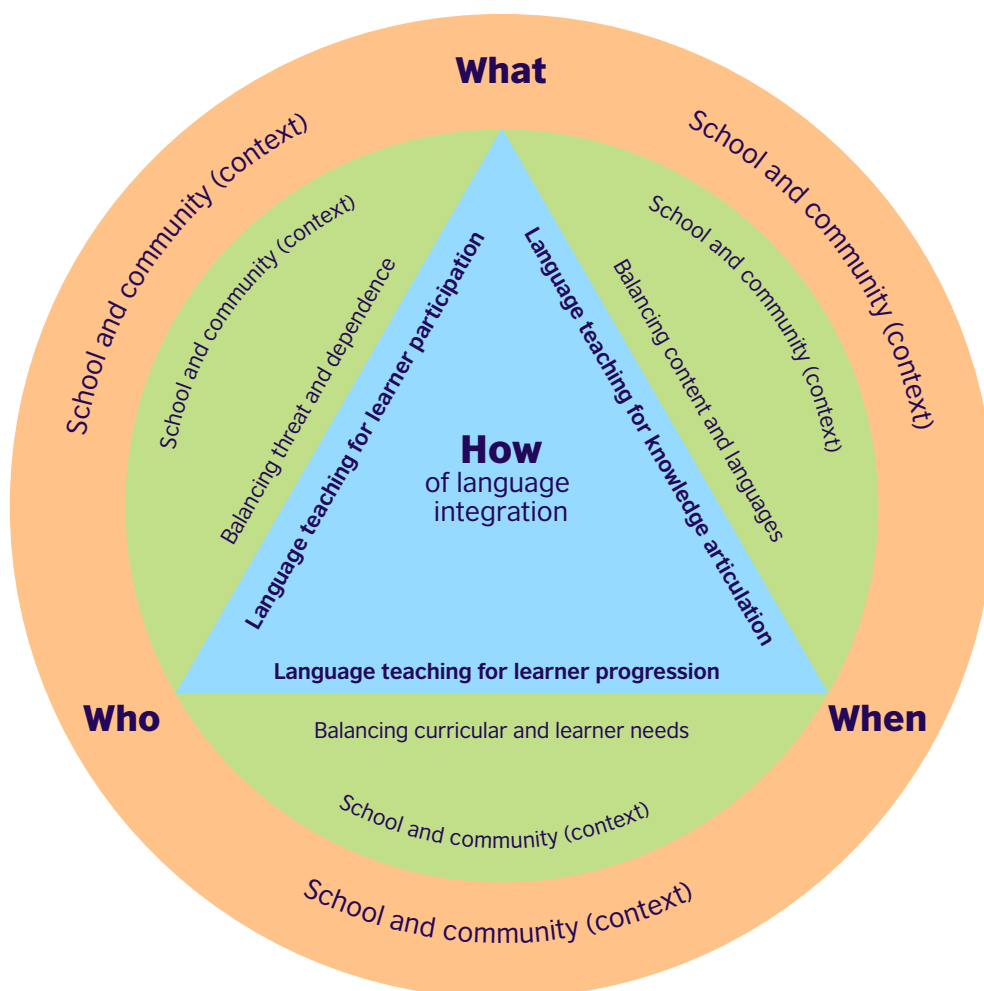
The inter-relation of the four key dimensions of teacher knowledge for CLIL (i.e. the *what, who, when* and *how*) and the three integrated language teaching goals and challenges of CLIL teaching in multilingual settings is shown in our practice-based framework presented in Figure 1, and we will discuss its unfolding within the *how* of language teaching in the content area below. We will discuss each of the three integrated language teaching pillars individually, and in doing so will detail eight CLIL teaching tasks that emerged from the approaches used by the teachers to address learners' needs. For practitioners who would like further inspiration for their own practice, we have included detailed examples of good practice in relation to the CLIL pillars and teaching tasks in the Appendix.

3.4.1 Language teaching for learner participation

The teachers' knowledge of language teaching approaches for CLIL learner participation were found to centre on three teaching tasks, namely:

1. giving context to new content and language

2. stimulating and supporting interaction for equal participation

3. providing learners with the means and strategies to be(come) linguistically independent.

These teaching tasks brought together the teachers' knowledge of the different talk types in CLIL classrooms, with their knowledge of CLIL learners' need to be actively and safely involved in those discourse spaces to meet the challenging dual learning task.

1. Giving context to new content and language:
To engage learners meaningfully in the highly challenging dual-focused learning process, new information should be explored in relation to existing knowledge, personal experience and social relevance (Hilberg, Doherty, Epaloose & Tharp, 2010), as Karolina explains:

It's the topic as well, you know, like I said earlier with the ancient Egyptians. They've never been in Egypt, they've never watched a programme, never spoken about this at home. How will they know what like, pharaohs are? What is a pharaoh these days? Doesn't exist, does it, here? So, it is the same as the Queen! The Queen? In so many countries there is a president, not even a Queen. Or a prime minister. It's the subject knowledge as well, it plays a huge role.

That's why I think hands-on, where you put it in a context, where you take them to the castle. Show them the castle, show them the knight. They've never seen them! They never watched a movie. Never read a book. What is a knight for them?

Karolina, UK teacher

Karolina's reflection reveals, in particular, that teachers working in multilingual CLIL classrooms cannot assume the existence of prior or shared language or cultural knowledge in which to integrate new knowledge as well as the new language in which this knowledge is encoded.

The teachers' instructional techniques revealed that contextualising content and language often goes hand-in-hand, with practical examples, hands-on activities, visuals and home languages being applied to simultaneously contextualise new content and language knowledge. Nevertheless, they also revealed that providing context for CLIL learning is a deliberate and intentional process that also considers how learners can be pushed towards more language learning within and through context-setting, as exemplified here by Bob:

So at the start of a unit creating a vocabulary list of the vocabulary that we'll be covering in a unit of work. And then, children create posters visualising what those vocabulary words mean. […] Also, to label the picture in the home language, translate to English, and then create sentences. Yeah. To build vocabulary, and consolidate learning through the use of sentences. […] I think this is my go-to activity. Labelling pictures and translating, and then creating sentences. That's, it's done me well over ten years – it's got EAL pupils up to age-appropriate levels.

Bob, UK teacher

The teachers were found to set context by incorporating a focus on word meaning, form and use (Nation, 2001) in exploratory talk and tasks by placing, or asking learners to place, words in sentences, or by focusing on word stems, definitions, synonyms and antonyms, all as part of 'background-building' (Echevarria et al., 2017) or 'activating' (Dale, van der Es & Tanner, 2010) for CLIL. Other techniques included reviewing not just the learning objectives, but also the language of the learning objectives with learners.

The teachers' practical knowledge also revealed that, while the intentional contextualising of new content and language knowledge may naturally fit within exploratory phases of a CLIL lesson and for the teaching of more abstract expert talk, additional language learners will need contextualisation of language throughout the lesson. Moreover, sometimes it is not about contextualising unfamiliar language, but rather about re-contextualising familiar language previously acquired in a different context (Aukerman, 2007), as Els explains:

Yes, place words in a different context for understanding. Like today during the lesson, then it was a 'sting'. A stonefish stings. Well, that may be, but yeah, just like a bee or wasp, and in the moment of placing the word in a slightly different context, then you notice that there is deeper understanding because they can link it to something else.

Els, Dutch teacher

Both contextualising unfamiliar and re-contextualising familiar language are fundamental to enhancing learners' participation in the learning.

2. Stimulating and supporting interaction for equal participation: Establishing collaborative learning in CLIL classrooms comes with specific challenges, as teachers not only have to 'creat[e] classrooms where students will "talk to learn", [but also consider] how students will "learn to talk"' (de Jong & Harper, 2005, p. 102). Moreover, ensuring the equal participation of linguistic minority learners and of learners with different English proficiencies can be a particular challenge (de Jong & Howard, 2009). This requires consideration of how best to use metatalk, and adapt social and exploratory talk to stimulate learners' contributions and language output and create a 'space for learning' (Walsh & Li, 2013). Specific interaction-stimulating and supporting strategies mentioned by the teachers included encouraging learners to listen to and help each other (i.e. an example of metatalk – see Karen's reflection in Table 1), finding ways to increase and extend randomly allocated learner turns and normalising the making of mistakes, as justified here by Karen and Harry:

Oh yeah I also think 'no hands up'. I try not to have too many hands up because then they've all gotta listen. So some classes have got little jars with lollipop sticks in it, and you know who gets a turn […] so they've all got to think about it, they don't know who I'm gonna ask.

Karen, Dutch teacher

That high-challenge, low-threatening environment is all about making sure everybody can take part, they feel like they have the confidence to get to the next level, I think that's what I'm thinking, so then – then with that distribute turns. It's testing that that they feel that they can do it, testing if they make mistakes it doesn't matter […]

I've not mentioned this one yet but, sort of, a teacher making mistakes, it shows what learning is, encourages that growth mindset, but then it gives them that confidence to get on with their learning and not be afraid to make those mistakes, 'cos there's that higher probability that EAL just will make more mistakes and they should be comfortable with that. It's part of the journey.

Harry, UK teacher

Further strategies related to considering groupings and language partnering, and the use of innovative approaches that simultaneously encourage talk-in-interaction and deep processing of content, such as the use of joint picture ordering tasks and appropriate teacher questioning that encourage comprehensible output relating to content (see Appendix for details). Moreover, as Lena explains below, stimulating and supporting learner participation provides a clear rationale for the use of learners' other languages, whereby consideration should be given to whether we should demand that learners do 'everything' in English in all discourse spaces:

I think that a massive problem is that, in many schools, it's still a very traditional conservative feeling that if you are in an English-speaking school you can only use your English language. Which I think is wrong because that stops them from developing their own opinions, and then somehow they feel lonely. […] And, you know, if there are adults who tell them use only English, but they do not feel that confident to talk about EVERYTHING in that language, they will never really flourish and feel great about themselves.

Lena, UK teacher

3. Providing learners with the means and strategies to be(come) linguistically independent: This was deemed to not only be vital to the successful implementation of CLIL lessons, but also to learners' involvement in the long-term language-learning process across the curriculum and the lifespan. Modelling and teaching learners how to learn language was considered an important component of the metatalk of CLIL classrooms, where learners' needs go beyond immersion in language and include fostering and maintaining their interest in learning language. Other strategies, such as the use of visual success criteria or visual timetables, address both the learner's and the teacher's need for learner participation in linguistically independent ways. These not only scaffold learners' access to expert talk and the organisational talk of classroom activities, but also enable learners to self-assess for learning, as explained by Mary:

> *Last year I reintroduced [visual success criteria] in science as part of my subject leader role, and I created a bank of visual success criteria [...] so for measuring skill, there would be a little picture that was measuring using a ruler [...] and I think that was really important because [...] if they weren't quite sure about the vocabulary in the success criteria, they could look at the pictures and think 'oh it is that', especially if it's something that was going through a series of lessons, if they could link it back to the previous lesson and go 'oh I remember that picture from the previous lesson, it was referring to this', they then are still able to see what they've learned, they can say yes I can do this, yes I can measure using a ruler properly.*

Mary, UK teacher

Thus, while providing learners with the means and strategies to be(come) linguistically independent is principally about including learners in a high-challenge content-learning environment, it also addresses learners' long-term engagement with language learning as vital to their progression not just within their content lessons, but in schooling more broadly, including the development of a growth mindset.

3.4.2 Language teaching for knowledge articulation

> *I think that understanding, it just is the first thing you have to work on in a CLIL lesson, because when they do not understand, you cannot expect any language production. But you can then also promote language production. And how do you do that? That is that extra layer on top.*

Els, Dutch teacher

CLIL teaching differs from conventional foreign or second language teaching in that learners do not merely need to acquire specific language forms, but rather subject-specific language competencies (Clegg, 2007; Gibbons, 1998; Ünsal, Jakobson, Molander & Wickman, 2017). This foregrounds expert talk – both in oral and written form – as a core and further skill that integrated language teaching needs to both provide access to and develop. Knowing how to 'do that extra layer on top' of promoting subject-specific language production while also establishing understanding requires a thorough understanding of pedagogic talk, as designed to help learners bridge the gap between their cognitive and linguistic abilities and between the everyday and technical discourses of content lessons, both within the instruction that learners are exposed to and in their knowledge application activities. Language teaching for knowledge articulation therefore centres on the following two further CLIL teaching tasks:

4. adapting instruction for access to content and language

5. guiding knowledge articulation as knowledge application.

4. Adapting instruction for access to content and language: The instructional enhancements and adaptations that teachers used to provide access to content and language firstly confirmed the central importance of using visuals and other extra linguistic support alongside content-language (Dale et al., 2010; Echevarria et al., 2017; Hajer, 2000; Lucas & Villegas, 2011). This included using not only pictures and videos but also graphic organisers to help learners understand relationships between concepts, events and processes. Moreover, going beyond the use of gestures, facial expressions and intonation to accompany their own instruction, teachers mentioned using roleplaying and drama as an innovative way to portray new key words for a deeper, embodied understanding of content concepts and content-language.

The teachers further emphasised the importance of making language visible to the learner in explicit ways (Lightbown & Spada, 1990; Schleppegrell, 2012, 2013), and that doing so in an integrated way does not require content teachers 'to become experts on language' (Lucas et al., 2008, p. 365), but rather for them to intentionally and actively ask learners to engage with the language of the content subject through, for example, the guided reading of texts that have been enhanced with visuals, headings and subheadings, and glossaries, as well as through translating words to the home language, writing down key language features or leaving blanks in a text that learners need to match or listen out for (see Appendix for further suggestions).

Lastly, the teachers emphasised the importance of carefully considering their own language use, adapting and supplementing this in various ways to make the input more comprehensible to learners (Echevarria et al., 2017; Loschky, 1994). This included avoiding complex structures and idioms for beginner learners as a temporary form of scaffolding, as Karolina justifies here:

I think maybe the teacher could be very consistent in the language they use – I know the whole class need to be exposed and it's fine, it's just doing it at the right time and the right [...] purpose. So you know when they say, 'sit on a mat', then suddenly becomes 'sit on the rug'. They get so confused, 'what is a rug?' and 'what is a mat?' when they don't understand. Or when the teacher start using phrasal verbs. For them to take and take off, or take away is so different. Or using idioms, you know raining cats and dogs. What on earth's happening you know?

So you just need to think if it's the right time to use it [...] And sometimes I'm thinking this is a completely wrong word I use, but think if they can understand for now, it's okay, because I want them to understand and then I – you will teach, build it up.

Karolina, UK teacher

However, the teachers were aware that it is paramount to effective CLIL that they adapt written and oral language in a way that considers learners' access to challenging content and language (Hajer & Meestringa, 2015). Any temporary lowering of the linguistic demands of teachers' speech to aid understanding needs to be counterbalanced by also drawing learners' attention to the high linguistic demands, as Bob explains:

When you're delivering a lesson in language, you know, repetition of the same vocabulary. If you, and then just getting the whole class to repeat it.

If you're trying to get them to understand evaporation, getting them to actually repeat the word evaporation over and over again, say it again, say it again. Spell it out for me, e-v-a-p-o you know and all the rest of it, giving them a visual, this is what this is, going back to it. How does evaporation work? Explain the process. Go back to it. [...] Yeah, repetition of the key vocab, you know. It's a big word. And you have to be the language model in that sense.

Bob, UK teacher

Thus, we again see how adapting instruction to give access to content and language requires the delicate balancing of curricular and learner needs, with instructional adaptations needing to be made – as Karolina puts it – 'at the right time' and 'for the right purpose' within specific local educational contexts.

5. Guiding knowledge articulation as knowledge application: The teachers were found to achieve this through pedagogic talk that simultaneously set clear expectations for learners' expression of understanding, and provided high language support (Hammond, 2006) so learners could meet these high expectations, as Karolina explains:

Okay, so, one of them is sentence stems. We are all expected to encourage children to speak in full sentences. So, sentence stems across the subjects.

Karolina, UK teacher

The teachers set expectations and shared the language goals with learners in explicit and implicit ways. Implicitly, they focused learners' attention on subject-specific language through asking them to reformulate or expand their answers and through the use of different question types that move from more descriptive to more evaluative and reasoning questions across a lesson or unit of work. Nonetheless, the teachers stressed the importance of also drawing learners' attention to language in explicit ways, including across the year groups and curriculum, as Sean explains:

We use something called learning ladders. You can see here that the writing strands have been broken down into grammar, handwriting, organisation of text, purpose of text, spelling, and vocabulary. Then on the top you have Year 1, Year 2, Year 3 [etc. ...] So even in geography or history or religious education, they know that the target for them is to use this and in their sentences. And the teacher also knows it, and it's empowering for the pupil, I think in a big way. Getting them to choose their own target is key, and I think you need to show them the expectation, you need to show them the steps.

Sean, UK teacher

Language support for knowledge articulation consisted of a range of techniques – such as word mats, cloze activities, substitution tables, and sentence stems and frames – to model content-language use and support learners' clarification and justification of ideas in oral and written activities. It further included providing learners with opportunities for rehearsal both individually and in purposefully organised pairs or groups, before being asked to present or write in English (i.e. use social and exploratory talk as a scaffold towards expert talk).

Importantly, many of the language-supporting strategies mentioned were applied and understood sequentially as part of an integrated learning and teaching cycle that involved the temporary lowering of linguistic demands while working towards independent language production that more precisely expresses content knowledge, thereby addressing both learners' need for comprehensible input (Echevarria et al., 2017; Loschky, 1994) and for sustained opportunities to develop and apply the language of content lessons (de Bot, 1996; Swain & Lapkin, 1995). This was deemed to be particularly important for eliciting meaningful language production; that is to say, oral and written language that reflects children's emergent language skills and *their* understanding of the topic.

3.4.3 Language teaching for learner progression

I think it's, you have to think about the series of lessons, because it isn't all going to happen in one. […] You would think about where you want them to be at the end, what are the steps to get there, what can you take away each day to make sure it is independent at the end?

One of the key things that we learned was something called a language line, so it's a range of language vocabulary increasing in complexity, so – oh let me think of an example, eh, you might have 'I think', would then become 'I predict', would then become, eh, 'I hypothesise' or something like that. Yes, but it would move along in complexity, so children who perhaps don't have that grasp of English, they can start with the 'I think', and it can move through the complexity of that.

Mary, UK teacher

In addition to concern for additional language learners' full participation in, and accurate expression of their content learning, the teachers' instructional approaches included a strong concern for CLIL learners' progression, both within and across lessons. The teachers were found to safeguard learner progression through:

6. ongoing integrated assessments

7. differentiation for language as well as content

8. the sequencing of learning for language as well as content.

They did so by organising instruction and activities along a 'language line' that connects learners' emergent language skills with those of the curriculum.

6. Ongoing integrated assessment: Ensuring learner progression in dual-focused classrooms was found to require more rigorous and ongoing monitoring of learner output than is commonly required in content lessons taught in the learners' first language (Massler, 2011). The teachers' practices emphasised the importance of using instructional techniques that enable the accurate 'diagnosis' (matching the vocabulary use here to 'the clinical skills' that Becky mentioned earlier) of learners' level of understanding in spite of their more limited, emergent linguistic abilities (Lucas et al., 2008), and doing so while also working towards content and language goals. Using hands-on activities and visual tasks whereby learners are asked to express their understanding in non-linguistic means alongside articulating it, were deemed vital for achieving this diagnosis. The teachers also mentioned the value of incorporating peer-assessment within these integrated activities.

Other instructional techniques for learning about the academic and linguistic backgrounds of learners included bilingual tests (i.e. asking learners to translate to their home language) and dialogic interactions (i.e. using different question types) as ways to accurately assess learners' levels of understanding while also stimulating their language use. These dialogic interactions included simple integrated literacy checks, as Karolina explains:

It could be that you could give them three words, and say find me the odd one out. Which one is the pyramid? Which one starts with a p? Check their reading skills. Is the word familiar? Can they read, can they apply the phonics, can they decode pyramid?

Karolina, UK teacher

The monitoring and assessment procedures referred to here concern integrated forms of assessment *for* learning, as happening alongside the formal assessment *of* learning (Barbero, 2012), and were used to inform what 'interventions' or differentiation may need to be applied for each pupil to progress towards age-appropriate curricular goals in a meaningful way.

7. Differentiation for language as well as content: Despite differentiation featuring more strongly in the integrated teaching practices of the UK EAL teachers, who had both 'new-to-English' learners and native English speakers in their classrooms, it occurred in both CLIL contexts. Differentiation for CLIL was found to be a particularly challenging task, requiring the simultaneous balancing of content and languages to maintain content learning and the balancing of learner and curricular needs for language. In both the UK and Dutch contexts, differentiation for language was therefore considered carefully, and applied only as part of a sequence of activities that gradually increased the complexity of language, or after other options of scaffolding that maintained a higher linguistic challenge were first considered, as exemplified by Els:

> *No, they are not all at the same language level, but the materials I offer and the activities I do are the same for everyone. Everybody participates in everything; I do not have separate instruction groups. […] But I do try, during my instruction, to serve the different levels. Through the kind of questions I ask, or offering a slightly different context to those children that didn't get it first time around, in-depth questions for those that are a little further. In these ways, I do try to incorporate that in my practice. But no, not that I have thought of other activities for some groups of children. Also, so that they get there together, that they can help each other.*
>
> Els, Dutch teacher

Els describes how differentiation approaches for CLIL need to both consider how to adapt what you expect each learner to produce, and provide opportunities for learners to be exposed to and 'pushed' towards more and more accurate expressions of content knowledge. Importantly, the notion of 'pushed output' (Swain, 2000) underlying Els' reflection is one that is achieved through exploratory talk in interaction with more skilful peers and the teacher. This provides the scaffolding needed to access challenging content and language, rather than automatically opting to lower the task demands through differentiation for language. Els' observation again reveals that teacher knowledge for effective CLIL teaching it not just a question of *how* but also of *when* to differentiate. This in turn requires knowledge of how learners obtain new language from the environment (Costa & Coleman, 2012; Gibbons, 1998).

8. Sequencing learning for language as well as content: The teachers' knowledge of how learners acquire new language from the content classroom environment included the notion of planning and implementing CLIL lessons along the mode continuum (Gibbons, 2002) or language line (as Mary puts it) that moves from images to words, from spoken to written text, and from the everyday to the more academic registers of content learning.

The teachers' sequenced approaches included consistently moving back and forth between everyday and technical, specialist registers as vital to meaningful engagement with content area knowledge (Blair, 2016; Bunch, 2006, 2009, 2014; Dalton-Puffer, 2013; Gibbons, 2006), achieving this through pedagogic talk involving features such as more accessible synonyms, descriptions and paraphrasing. Other sequenced approaches included incorporating all language skills within content-oriented teaching-and-learning cycles, moving from listening and reading and the scaffolded exposure to content-language, through to speaking and oral rehearsal within the teacher- and peer-scaffolded exploration of new content and content-language knowledge, and finally on to independent knowledge articulation in presenting or writing as knowledge application (Banks, 2000; Dalton-Puffer, 2013; Echevarria et al., 2017).

We are also reminded of Bob's earlier reflection on the importance of looking back at the language objectives of earlier year groups as helpful knowledge when setting the next objective for each pupil. Looking back was, however, always counterbalanced with intentionally and explicitly looking forward, including by raising learners' awareness of the language objectives, showing them expectations and steps not only the for the lessons but also across lesson sequences and goals for the school year(s) (as Sean's earlier reflection on the use of learning ladders testifies). Visual success criteria, in turn, contribute to making these language expectations accessible to CLIL learners.

4

Where next?

4.1 Summary of key findings

Previous research on teacher knowledge for effective CLIL implementation has largely addressed this topic by presenting insights from second language acquisition theory, often assuming a straightforward application of these insights to CLIL classrooms. By working with teachers and by building our understanding of CLIL teaching from the practice up, we were able to establish a knowledge base of effective CLIL teaching in multilingual primary education that more accurately reflects the complexity of integrated teaching and that can inform decision-making in actual dual-focused classrooms.

Through our integrated endeavour, we learned that language teaching in the content area involves three main pillars and challenges, each being informed in differential ways by teachers' knowledge of WHAT aspect of language needs focusing on, WHO is doing the learning, and WHEN instructional techniques are appropriate given the context. These are:

1. **language teaching for learner participation**, as addressing the *balancing of threat and dependence* that learners may experience when learning content in an additional language, and as informed by teachers' knowledge of *all talk types of CLIL classrooms* (i.e. expert, social, exploratory, pedagogical, organisational and metatalk) and of CLIL learners' need to be involved both *safely and in a linguistically independent way* in challenging integrated learning environments

2. **language teaching for knowledge articulation,** as addressing the *balancing of content and languages* within dual-focused learning, and as informed by teachers' knowledge of *expert talk* and of the *context-specific curricular goals and linguistic diversity* (i.e. type of languages, abilities in both English and the first/home language, and further opportunities for language learning) of their classroom

3. **language teaching for learner progression,** as addressing the *balancing of curricular and learner needs* to ensure all learners have opportunities for meaningful learning while also working towards age- and grade-appropriate content and language skills, and as informed by teachers' knowledge of *CLIL learners and their emerging language needs* and *the language demands of their context-specific curricula.*

HOW teachers approached language teaching in the content area was informed by their understanding of the contextual affordances and constraints of the CLIL environment at the classroom level and beyond, as well as their knowledge of how multilingual language learners obtain content and language knowledge from that environment through social interaction, the scaffolded exposure to and use of the language of content lessons, and the systematic transfer of first or home languages skills and concepts. Specifically, teachers addressed the three integrated language teaching pillars and balancing challenges through eight CLIL teaching tasks.

1. *Giving context to new content and language knowledge,* as vital to bridging the gap between learners' linguistic and cognitive abilities, and involving CLIL learners in the learning process in meaningful ways.

2. *Stimulating and supporting interaction for equal participation,* as paramount to ensuring that additional language learners can participate safely and successfully in CLIL classroom learning.

3. *Providing learners with the means and strategies to be(come) linguistically independent,* as key to involving all learners in high-challenge learning environments and sustaining their efforts and motivation for language learning over time.

4. *Adapting instruction for access to content and language,* as central to establishing understanding for more meaningful language production.

5. *Guiding knowledge articulation as knowledge application,* as vital to pushing CLIL classrooms beyond comprehensible input and creating real (i.e. accessible) opportunities for the learning of challenging content-language.

6. *Ongoing integrated assessments,* to distinguish learners' problems in understanding from the difficulties that they experience in expressing their understanding, in order to decide on appropriate interventions for learner progression.

7. *Differentiation for language as well as content,* as key to safeguarding meaningful content and language learning for pupils of different academic and linguistic backgrounds.

8. *The sequencing of learning for language as well as content,* as key to helping learners move up along the language line that takes their learning from more everyday and interpersonal abilities to more technical and advanced forms of knowledge articulation.

4.2 Recommendations

The study uncovered several key domains of CLIL teacher knowledge that have so far received relatively little attention in the professional and research literature. While initial steps towards the theorisation of teacher knowledge for integrated teaching have been made (e.g. Morton, 2016, 2018), these have largely focused on teachers' knowledge of language for content and language integration and have done so primarily from a disciplinary perspective. Our model of the knowledge base of CLIL teaching in multilingual primary settings foregrounds the need for a broadening of our conceptualisation of language knowledge for CLIL to go beyond disciplinary language, and for our understanding of teacher knowledge for integrating content and language to go beyond knowledge of language. On the basis of our model and findings, we make the following recommendations for CLIL teacher professional development and research:

Recommendation 1: Teachers need to be supported in developing knowledge of, and the ability to identify, the language demands and learning opportunities in tasks that learners are to accomplish in CLIL classrooms.

While practitioners aiming to implement CLIL do not necessarily need to be trained as English language specialists to be effective CLIL teachers, specialist knowledge of language is required. The study found that effective CLIL teaching centres on understanding the language demands and learning opportunities of content lessons as more than knowledge of how language is used in good content teaching, and that understanding the language demands of content lessons also includes knowledge of the linguistic backgrounds of CLIL learners and their language learning needs. Both research and professional development should focus attention on this special integrated knowledge of language that is organised around concrete learning and teaching challenges faced in practice.

Recommendation 2: A better understanding of the relationship of CLIL to multilingual approaches to content and language teaching is needed.

While substantial knowledge and skill in the use of multilingual approaches was found among our teachers, particular challenges remain in understanding how to balance content and languages for the optimal learning of both content and the additional language. More research is needed, both with and by teachers, to understand what multilingual strategies are necessary or facilitative not just for the learning of content or language, but specifically for the learning of content and language. CLIL teachers will also need to be trained in what multilingual development looks like, and why and how it is important to their practice.

Recommendation 3: CLIL practice, professional development and research should include a focus on teachers' beliefs about CLIL learners and how to form new orientations.

The study revealed teacher knowledge of the psychological, academic and linguistic backgrounds of CLIL learners to be the starting point for most integrated teaching approaches, with the balancing of threat and dependence and of curricular and learner needs occupying much of the teachers' thinking. This knowledge included the belief that linguistic diversity should be valued and is of value to CLIL learning. Misconceptions or false beliefs about CLIL learners, which perhaps form more easily due to the language barriers that additional language learners face, are thus particularly detrimental to effective CLIL practice. We therefore call for more research into this area, and particularly into effective professional development activities that contribute to new orientations that facilitate the implementation of CLIL as a learner-centred practice.

Recommendation 4: Teachers need to be supported in developing the skills to research their own CLIL classrooms.

The study highlighted that, while CLIL includes key pedagogical principles that are shared across teaching contexts, successful CLIL implementation depends on teachers integrating these principles into their knowledge of the local educational context. CLIL teacher professional development will therefore also need to include a focus on context-specific content and language knowledge if we want to enhance teachers' decision making for successful CLIL at local levels. We consider equipping teachers with the skills to study CLIL teaching – both their own and that of colleagues – to be a particularly fruitful way of supporting teachers in transferring the general CLIL knowledge developed in teacher training to the concrete and specific reality of CLIL classrooms. We also call for more joint research between researchers and practitioners on local CLIL practices, both as a means to develop practitioners' action research skills and to develop a better understanding of how this transition from theory to practice can be optimised.

Recommendation 5: Further research into the eight CLIL teaching tasks and validation of our model is required.

While our study was able to provide certain insights into the nature of pedagogic integration, we argue for further empirical evidence to identify how integrated learning and teaching can be achieved at the school and classroom level. Specifically, we call for further research with similar populations but different data collection methods (such as observations and the analysis of teaching materials), as well as research with teaching professionals working at different educational levels (e.g. secondary and tertiary education), in order to test the validity of our model. We also invite further research that focuses in more detail on specific elements of the model, including the eight CLIL teaching tasks, in order to deepen our understanding of each of them. We recommend that this includes comparative research across CLIL contexts to further our understanding of the affordances and constraints that shape CLIL teaching in specific contexts, as well as research that incorporates the learner's perspective.

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Appendix: Good CLIL practice summary box

How do you teach language for learner participation in content lessons?

1. *Give context to new content and language knowledge*

- State your content objectives clearly and review these with learners, including for language (provide, for example, visual scaffolding where needed).

- Provide practical examples, and ask learners to provide examples.

- Use visuals and physical objects that learners can manipulate (hands-on activities).

- Plan activities/tasks to explore what learners already know and want to know about subject matter content and content-language, including:

  » using, and asking learners to use, visuals and visualisation of their knowledge

  » comparing target and home/everyday languages, cultures and concepts

  » a focus on word meaning, form and use, and on word stems, definitions, synonyms and antonyms in order to enhance depth of vocabulary learning alongside breadth (Hadley, Dickinson, Hirsh-Pasek & Golinkoff, 2019).

- Remember to place previously targeted vocabulary/language features in a new context for depth of learning, both within and across lessons.

2. *Stimulate interaction for equal participation in content lessons*

- Use variation in interaction (whole class/small group/individual).

- Set rules for collaborative work and for expert talk within it.

- Random turn distribution as part of the normal classroom routine (e.g. 'no hands-up'/lollipop sticks/deck of cards).

- Give learners time to plan and practise their answers.

- Encourage learners to ask questions and listen to each other.

- Allow learners to make mistakes by rewarding (imperfect) contributions through accepting, paraphrasing, repeating, asking other learners' attention for contributions, or the teacher making mistakes to show what learning is.

- Ask learners to reformulate, paraphrase or elaborate their answers.

- Extend learner turns, e.g. by avoiding closed questions and asking follow-up questions.

- Use joint picture matching and ordering tasks to create opportunities to talk (about content).

- Seat learners with good models in the home or target language depending on your objectives.

3. *Providing learners with the means and strategies to become linguistically independent*

- Use visual success criteria to help learners self-assess, connect learning across lessons, and develop a growth mindset.

- Use bilingual dictionaries, posters and signs, multilingual word walls and cognate charts, including learners' past language work.

- Model the use of dictionaries and thesauruses to foster a love of words.

How do you teach language for knowledge articulation in content lessons?

4. *Adapt instruction for access to content and language*

- Use clear and carefully worded objectives, explanations of task and questions.

- Use voice, intonation, facial expressions and actions to support understanding of verbal communication, including acting out key concepts.

- Clear pronunciation and slower rate of speech.

- Simplify sentence structures and avoid idioms for beginners. (Note: Temporary scaffold!)

- Use visuals to support learners' understanding of content knowledge and language.

- Use songs and drama to portray and help children remember key content and language features.

- Use matching and ordering activities to establish understanding of new content and language.

- Model the language of content area thinking and working, including consistent use of the same content-language features for consolidation of learning.

- Explore and highlight subject-specific language features (introduce them, use more accessible synonyms and paraphrasing, write them down, and repeat and model them).

- Stimulate children to translate to/from the home language to build understanding of content and language (alongside visuals).

- Enhance and adapt written text, by highlighting key words, adding headings and sub-headings, and using glossaries and study guides.

5. *Guide knowledge articulation as knowledge application*

- Provide clear targets and expectations for learners' expression of understanding (i.e. language objectives).

- Ask learners to reformulate and expand their ideas.

- Ask learners to report their answers, findings and thinking.

- Ask a variety of questions, moving from descriptive to evaluating and reasoning questions.

- Use word banks, cloze activities, substitution tables, and sentence stems and frames to model content-language use and support clarification and justification of ideas (oral and written).

- Use matching and ordering activities to stimulate talk (oral and written) about content and language.

- Incorporate oral rehearsal before writing, both in peer and whole-group activities.

- Ask learners to build sentences with new vocabulary to use words in (a new) context and consolidate learning.

- Seating learners with good models in the home or target language models depending on your objectives.

- Allow learners to research a topic in their home language(s) before presenting on it in English.

How do you teach language for learner progression in content lessons?

6. *Ongoing integrated assessment of language as well as content*

- Use hands-on, exploratory activities to observe and assess learner understanding alongside their linguistic expression of this understanding.

- Use drawing and the creative use of visuals (e.g. visual mind-maps, ordering of pictures or graphics) to allow learners to express their thinking and to diagnose their understanding before, for example, diagnosing literacy levels or any oral reflection or writing at different levels of complexity.

- Ask learners to translate to the home language, after or alongside asking them to describe a concept, to check understanding.

- Use a range of question types to establish whether understanding has been achieved.

- Encourage learners to self- and peer-assess for learning.

- Recommended: Joint monitoring of learners' work at year group level and between class teacher and language specialists.

7. *Differentiating for language as well as content*

- Differentiate content area interactions and task for language:
  - » from descriptive to interpretation and evaluative language
  - » from words to paragraphs
  - » from cloze activities and substitution tables to independent writing.

- Differentiate teacher questioning to push learners talk for thinking:
  - » use open questions and open tasks that allow learners to express knowledge at their own language level
  - » use a variety of questions (e.g. descriptive, organising, explaining, analysing, interpreting and evaluation questions).

8. *Sequencing learning for language as well as content*

- Be informed about the different stages of first and second language development to be able to draw on effective teaching techniques from earlier stages.

- Use display boards purposefully for (learners') past language work, for them to return to in future lessons.

- Analyse and plan interactions, texts and activities for increasing complexity of language, shuttling back and forth purposefully between everyday and technical content-language.

- Integrate different language skills (listening, reading, speaking, writing) through sequenced activities (e.g. from visual to oral to written) for depth of content and language learning.

- Raise learners' awareness of the language objectives for the lesson, unit and school year.