

Becoming a “*Language-Aware*” Content Teacher: Content and Language Integrated Learning (CLIL) Teacher Professional Development as a Collaborative, Dynamic, Dialogic Process

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Building on and extending the frameworks of Teacher Language Awareness (TLA) in second/foreign language education and content-based/CLIL education (Andrews, 2007; Lindahl & Watkins, 2015; Andrews & Lin, 2017), this paper argues that effective teaching of academic content in an L2 requires a special kind of teacher knowledge that goes beyond simple addition of content knowledge and Knowledge About Language (KAL). Through an ethnographic case study, the researchers investigated the development of a science teacher’s TLA and teacher identity through her participation in a school-university collaborative project. Based on analysis of data from classroom observations, interviews, and lesson video stimulated commentaries, the researchers have developed a model focusing on CLIL teacher professional development as a collaborative, dynamic and dialogic process, where both teachers and teacher educators (TEs) are co-developing their knowledge and expertise in CLIL.

Key words: CLIL teacher education; teacher language awareness; teacher identity; knowledge about language; pedagogical content knowledge; school-university partnership

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1. Introduction

The expanding population of English learners worldwide has increased demands for content and language integrated learning (CLIL) in school education. Although literature about CLIL theory and practice has been burgeoning in recent decades, research on CLIL teacher education remains scarce. Previous studies indicate that teachers have encountered various challenges in implementing **CLIL/immersion/content-based instruction (CBI) programs** (Banegas, 2012; Cammarata, 2009; Lindahl, Baecher & Tomas, 2013; Lyster & Ballinger, 2011). How can researchers and teacher educators address these challenges in CLIL? What knowledge base should content teachers be equipped **with** to become confident CLIL teachers? Teacher Language Awareness (TLA) plays a crucial role in teacher education (Andrews, 2007; Andrews & Lin, 2017; Tsui, 2003). Drawing on TLA (Andrews, 2007) as a heuristic lens, this paper examines how a science teacher became a language-aware CLIL teacher through participating in a school-university collaborative project in a secondary school in Hong Kong.

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In the following sections, key concepts related to TLA development will be reviewed to establish a conceptual framework of CLIL TLA development. The sociocultural context and the details of the study will then be discussed. The article concludes with a model of CLIL TLA professional development based on the analysis of the study.

2. CLIL TLA development in boundary-crossing communities of practice (COP)

TLA is an essential construct in teacher education which focuses on the interaction between teachers' knowledge about language and their pedagogical practice (Andrews & Svalberg, 2017). This relationship is represented in Andrews' (2007) **framework of TLA, language proficiency and pedagogical content knowledge (PCK)**: On one hand, TLA forms a bridge between language proficiency, subject matter cognitions (SMC) and knowledge of learners, with SMC being a broader heading for both subject matter knowledge (SMK) and beliefs; on

the other hand, TLA is closely related to PCK (Shulman, 1987), an overarching knowledge base which incorporates TLA as one subset and other integral components including SMC, knowledge of learners, knowledge of context, knowledge of curriculum and knowledge of pedagogy. The interrelatedness between TLA and PCK is demonstrated by two shared components: SMC and knowledge of learners, both of which represent the overlapping subsets of the two interlinked constructs (Andrews, 2007, p. 31).

Important conceptual contributions to TLA development have been made in second language (L2) teacher education. For example, Edge (1988) proposed three essential teacher roles (language *user*, language *analyst* and language *teacher*). Wright and Bolitho (1993) conceptualized the interrelationships between *user*, *analyst* and *teacher* of language and highlighted the mediating role of language awareness among the three. These three TLA domains were later reconceptualized (Lindahl, 2013) and further applied to teacher education in CBI/CLIL contexts (Lindahl, Baecher, & Tomas, 2013; Lindahl & Watkins, 2015). In the reconceptualized framework, the TLA domains are presented as three overlapping circles constituting a composite known as language teacher cognition: The *User* domain highlights language proficiency and implicit and procedural knowledge of how to use language in content/discipline-specific ways. The *Analyst* domain stresses knowledge about language (KAL) and explicit, declarative, metalinguistic knowledge about the language of the disciplines. The *Teacher* domain emphasizes PCK, general pedagogical knowledge, L2 theory knowledge, as well as empathy with learner experience. While Lindahl's (2013) framework seems to provide "a better fit" approach (p. 38) to re-conceptualizing TLA development, **it represents a relatively static model for CLIL teacher education.**

CLIL requires a content teacher to be language-aware and a language teacher to be content-aware. Effective teaching of academic content in an L2 requires a special kind of teacher knowledge and awareness that goes beyond simple addition of content knowledge and

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KAL (Lin, 2016). Hence, TLA development in CLIL needs to be participative, reflective and collaborative (Andrews, 2007; Andrews & Lin, 2017; Wright 2002). Content teachers or language teachers, though both may have acquired SMK and pedagogical knowledge of their own subject, may participate in university CLIL teacher knowledge development courses to learn about the CLIL knowledge and skills, and then further participate in CLIL engaged practice in schools to try out what they have acquired in the university courses. CLIL TLA develops when the teachers reflect on both the CLIL courses and their own CLIL classroom practices. As Andrews (2007) emphasised, “a combination of language-related self-reflection and focused collaborative activity of the sort described represents the most effective way of helping L2 teachers to achieve enhanced levels of language awareness and the development of pedagogical strategies for dealing with language that are of direct relevance to their specific teaching context” (p. 189). The enhanced CLIL TLA in turn facilitates the development of the teachers’ competences and the transformation of identities from *user*, to *analyst* and further to *teacher*. CLIL TLA development also needs to be dynamic and dialogic in collective co-learning activities (Wright, 2002). As Andrews (2007) argued, teacher knowledge about language needs to be co-constructed and consolidated through mutual engagement in negotiation of meaning in university- or school-based “discussion groups or networks” as he cited “communities of practice (COP)” (Wenger, 1998; Wenger, 2004). Judging from the special knowledge base of CLIL (i.e., 2-in-1) teachers and the complex interrelationship between TLA and PCK, the development of CLIL TLA cannot be separated from the contexts of teaching and learning practices which are embedded in the larger sociocultural context. In this sense, the notions of “community of practice” and “boundary-crossing” provide the theoretical underpinning to explore the identity transformation of CLIL teachers through participating in COP (Wenger, 1998). Expansive learning in school-university collaborative COP is “boundary-crossing” during which trainee teachers’ and TEs’ mutual engagement and

negotiation are indispensable for the co-development of TLA in both parties, and scaffolding novice CLIL teachers may be transformed into learning for all participants including students, student teachers, and TEs in both schools and universities (Tsui & Law, 2007).

Based on the above conceptual framework, this study attempts to understand and theorize the development of a science teacher's TLA and the transformation of her teacher identity (first as a content teacher and language *user*, then a content teacher and language *analyst*, and finally a CLIL *teacher*) through collaborating with a university teacher educator/researcher (TE/R, the first author) in a CLIL project for a semester. The following three research questions were addressed:

1. What trajectory of TLA development and identity formation did the science teacher undergo during Teacher-TE CLIL collaboration?
2. How did TLA domains interact to facilitate the teacher's identity transformation at different stages of collaboration?
3. How did the Teacher-TE collaboration impact the teacher's CLIL TLA development?

3. Research Design

This study is part of a school-university collaborative CLIL project (funded by Hong Kong Quality Education Fund) with the aim to build up teacher capacity in providing language support to South Asian (SA) minority students learning science in EMI (English Medium-of-Instruction) classes in a Hong Kong secondary school. Miss Yip (pseudonym) was one of the teacher participants in the project. She teaches Biology, Integrated Science (IS) and other subjects in both EMI and CMI (Chinese Medium-of-Instruction) classes. When the research project entered its second stage in the collaborative school, Miss Yip had just completed a CLIL/LAC Master of Education (MEd) course in the collaborative university, and she volunteered to participate in the project after attending a Language Across the Curriculum

(LAC) workshop given to school teachers by the project researchers from the university. Two of Miss Yip's Secondary 3 (Grade 9) EMI classes were selected as focal student-participants: Class A had 14 students and Class B had 25.

3.1 Context of the study

Miss Yip grew up in a Cantonese family in Hong Kong, a British colony before its sovereignty was returned to Mainland China in 1997. Although both Chinese and English are official languages, English has long been the language of socioeconomic advancement and the much sought-after medium of instruction (MOI) among parents. Cantonese is a regional variety of Chinese spoken by most people in Hong Kong, but English is the “only MOI” in the EMI classes of the school where Miss Yip teaches. The students in Miss Yip's EMI classes were from SA ethnic minority communities who spoke various languages (e.g., Nepalese, Urdu, and Hindi) at home. Due to cultural and linguistic diversities, Miss Yip who speaks Cantonese does not share a common L1 with the SA students, but the MOI required by the school is English which is an additional language to all (i.e., L2 for Miss Yip, L3 for the students who also learn Chinese as a second language). Complicating the situation is the learning diversity and the lack of language awareness in the students. According to the school teachers, although the SA students could communicate in basic English in regular school activities, most of them were language-unaware (i.e., having little awareness of the linguistic features of language) and struggling to learn science in English.

3.2 Data collection and analysis

An ethnographic case study research design (Merriam, 1998) was adopted to investigate the process during which Miss Yip collaborated with the university TEs to help the students tackle the content and language demands in their science lessons. Both authors are TEs from the university, and they gained access to the school through the second author's former student who was an English language teacher in the school. The first author acted as teaching consultant

and collaborated with Miss Yip for a semester providing CLIL support. She had pre-lesson meetings with Miss Yip to prepare for the CLIL activities and then observed and videotaped her IS lessons for Classes A and B. After each lesson, she had a debriefing with Miss Yip during which the teacher reflected on the lesson together with the researcher. Field notes were made during the lesson observations and teacher-TE meetings. Stimulated recalled interviews and informal semi-structured interviews were also regularly conducted to explore the teacher's comments on her own lessons and the students' performances. Focus group interviews were conducted with sample student-participants at the end of the semester to investigate their feedback on the CLIL activities. Curriculum materials including textbooks, lesson plans and student-work samples were collected for analysis. A total of 26 videotaped science lessons (13 Class A and 13 Class B, about 70 minutes each) and around 250 minutes of audiotaped data (180 minutes of teacher interviews including three semi-structured interviews and two stimulated recall interviews; and two focus group interviews with students of Class A and Class B respectively, around 35 minutes each) were collected. To facilitate expression of opinions, the interviews were conducted in the languages usually used when the researcher had daily conversations with the informants; i.e., Cantonese in the teacher interviews and English in the student interviews.

Data analysis was conducted during data collection following an inductive coding method (Miles & Huberman, 1994). The researchers made initial coding by reviewing all data of lesson observations, interviews and documents (e.g., teaching materials) in an open-minded and context-sensitive manner, trying to avoid hasty conclusions by taking into consideration the sociocultural backgrounds of both the SA students and the teacher as well as the needs of CLIL lessons. The categories and codes emerged formed a chronological description of Miss Yip's teaching and reflection at different teacher-TE collaboration stages. Following the constant comparative method (Glaser & Strauss, 1967), the different data sources were then

compared reiteratively to classify, match and revise codes. The recursive categories and codes were further associated with the key constructs in the conceptual framework (e.g., domains of TLA and TLA development in CLIL boundary-crossing COPs) until themes emerged to answer the research questions. Based on the pattern of codes inferred from different levels of data analysis, the framework was reconceptualized by incorporating new constructs derived from the data.

As Miss Yip had just completed her CLIL/LAC MEd courses in the university where both the TEs are course development members, she volunteered to participate in the project and was eager to try out her CLIL knowledge and share her reflection with the TEs. The teacher-TE discussions focused on how to improve both content knowledge and academic language knowledge of the students whose learning background the teacher was more familiar with. The teacher-TE relationship thus remained collaborative rather than hierarchical. The long-term observation and collaboration not only helped establish mutual trust between the teacher and the TE, but also allowed the researchers to collect rich data which enabled triangulation between multiple data sources. The trustworthiness of the research was also ensured by peer examinations (Merriam, 1998) between multiple members of the project team (e.g. the two authors of this article and the project consultant) through ongoing discussions on the research findings. After data analysis, the transcription of lesson excerpts and interviews as well as the data analysis went through member check (ibid) during meetings with Miss Yip after the project.

4. Findings

We shall address the research questions through an analysis of Miss Yip's TLA development documenting the trajectory of her identity transformation from a "content teacher + science language *user* (of English as an L2)", to a "content teacher + language *analyst*", and further to

a “CLIL *teacher*” with emerging TLA at the early collaborative stages and more advanced TLA at the later stages.

4.1 Pre-collaboration stage: a content teacher and science language *user*

Miss Yip graduated from an EMI secondary school in Hong Kong. She had been teaching as a qualified EMI teacher for three years and her “English-for-teaching” (Freeman, Katsumi, Gomez, & Burns, 2015) allowed her to communicate the teaching materials, manage the classroom, assess and provide feedback to her EMI classes fluently and proficiently. However, although Miss Yip’s language expressions and communication strategies (Andrews, 2007) in the EMI lessons showed that she was a competent English language *user*, she was not confident about the language-related aspects of her EMI science teaching; above all, she could not find suitable pedagogical strategies for integrating content and language teaching, especially when most of her SA students had difficulty learning science in English. During her collaboration with the TE, Miss Yip had expressed several times her disappointment about the lack of language support from her own EMI school teachers. She believed that if the content teachers in her EMI school had “taught her explicitly” how to integrate language learning with content learning rather than just leaving her to “grope for her own way to tackle the language problems”, she “could have learned the subjects more effectively.” This seemed to have had a critical influence on Miss Yip’s teacher belief (Borg, 2011) that knowledge about the English language will benefit her students in content learning. With such a belief, Miss Yip wanted to help her EMI students improve content learning by raising their academic language awareness. Attracted by some teaching examples (based on a genre-based approach to academic literacies development) in an initial LAC seminar given by the second author, Miss Yip enrolled for a MEd Programme in the collaborative university where she attended lectures on CLIL/LAC theories, genre-based pedagogy and academic literacies.

4.2 Early collaboration: a content teacher and language *analyst*

In early collaboration, the TE played a key role as a pedagogy designer, material supplier and feedback provider. As the structure of texts in the science textbooks looked fragmented with diagrams and tables inserted randomly, she adapted them into coherent texts (e.g., descriptive reports) and provided detailed teacher notes on text analysis; e.g., describing the genre, register, and the stages and phases of the descriptive report, designing sentence-making tables¹ for learning the sentence patterns of some recurrent academic functions such as *classifying* and *defining*, and highlighting different kinds of academic vocabulary (i.e., subject-specific words, general academic words, and logical connectors). These text analysis notes were also designed as PowerPoint slides and worksheets so that the teacher could present the language features explicitly and help students follow her text analysis step by step.

Upon receiving the teaching materials, Miss Yip seemed to be excited as the text analysis looked consistent with the CLIL/LAC strategies that she had learned in the university MEd courses. She also agreed with the TE to try out a *detailed reading* lesson (i.e., one key stage in the *Reading to Learn (R2L) Curriculum Cycles*; see Rose & Martin, 2012) to guide her students to recognize the academic language features in the science text. With good English language proficiency and the CLIL/LAC strategies she had acquired, Miss Yip understood the TE's design very quickly, and it did not take her long to incorporate the materials into her lessons. Below is an excerpt illustrating how Miss Yip guided her students to analyse the genre structure of a science text:

[T pointed to the relevant parts in the text on the PowerPoint.]

T: So, this part actually is a description...

Ss: Of the teeth.

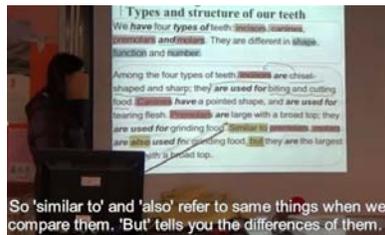
T: Of your teeth. That's right. How about this part?

¹"Sentence-making tables" refer to sentence-analysis tables which highlight the structure of sentence patterns that are useful in doing certain functions; e.g. a sentence pattern useful in doing *classifying* is presented as: "X can be classified into N types: A, B and C".

S3: Introduction.

T: It's an introduction. But actually it also introduces the classification, of your teeth. You can mark it down in your passage. So, the first paragraph is the classification. Then from the second to the last paragraph, they are the description.

Although it was the first time Miss Yip had tried out the CLIL materials, she did not have much difficulty delivering the lesson. For example, she managed to introduce the language features following the **genre-egg** framework (Lin, 2016). She guided the students to deconstruct the text layer by layer: starting from the genre structure, followed by the key academic functions expressed by the sentence patterns in the sentence-making tables, and then moving onto academic vocabulary learning strategies such as word formation by prefixes and roots. She even highlighted a language point—how to identify the anaphoric reference of a pronoun in a sentence, which the TE had not prepared but she believed to be an important strategy that she had regrettably missed in her secondary school days. For more than 22 minutes in the first try-out lesson, Miss Yip kept on explaining different language features which she reminded the students to highlight on their worksheets (Picture1).



Picture1

Nevertheless, Miss Yip's emerging competence as a language *analyst* did not seem to have increased her confidence in integrating content and language teaching. On the contrary, during presentation, she could sense the boredom in her students as she heard one student talking to her peer, "Oh, it's so boring!" Although Miss Yip tried to continue explaining the language

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points, when she guided the students to search for the correct referent of the pronoun in a sentence, one student suddenly asked a question which interrupted her presentation:

S: Miss, you are teaching us English?

T: Yes, of course. Because you need to learn about...how to do it.

S: We know it.

T: If you know it, let's try in this way.

S: Okay.

Miss Yip's lengthy presentation of the language features during the science lesson seemed to have aroused discontent in the students. She found it difficult to continue her words after the student talked back, "*We know it*" as she felt like hard-selling something to her students.

After her first try-out of the CLIL materials, Miss Yip and the TE had co-reflection through a lesson video stimulated recall session. The teacher seemed to feel somewhat excited about her being able to cover all the language features highlighted; but she also seemed a bit dissatisfied about some scenarios which she found boring. The following episode is one of those scenarios:

T: So, we know that there are...How many types of teeth?

Ss: Four.

T: Four types. What are they?

Ss: Incisors.

T: Incisors.

Ss: Canines.

T: Canines.

Ss: Premolars.

T: Premolars and...

T/Ss: And molars.

T: So, can you use your red pen? Your red pen for this one? Underline it or you just mark it down. Okay, because these words are very specific to Biology, so you won't use these words much in other subjects. Okay let's read these together. The first one is...

The tedious presentation of language points, mechanical parroting of technical words, and simple highlighting, underlining and copying notes—all these, according to the teacher, were contrary to her teacher belief that “students’ learning motivation should be aroused first before anything else.” Although Miss Yip believed that the language points she introduced in the lesson were useful for the students, she seemed to realise that her teaching pedagogy was not so suitable for the class, as she told the TE during the co-reflection session:

T: Maybe I was not doing well. I mean, perhaps mainly about, how to teach them. Because, in fact, I was able to get your point. I fully understood what you wanted me to do once I got your materials and read them.

R: You got it, didn't you?

T: Yeah, I did. Like, what you, how you want me to teach, what to explain to the students. But, actually during the lessons, it seemed that it was me talking, talking and talking while the students kept writing on and on and on. And so, it became kind of...

R: Highlighting, underlining, or noting down something?

T: Right. They got bored somehow, and then even I myself felt it. They were bored actually. So, perhaps, I mean, I still need some support in terms of teaching pedagogy. Especially, maybe English teachers are teaching their English lessons, while what I am actually teaching is science. For the teaching of language, like strategies, I think I need more support.

Miss Yip seemed to feel confident about her KAL, but was uncertain about how to teach the language points to the students in a way that would not be demotivating. It seemed that while she was confident about her role as a language *analyst*, she lacked the strategies and flexibility to integrate the teaching of language features into science teaching. In other words, Miss Yip

seemed unsure about her identity as a CLIL *teacher*, who, according to Lindahl and Baecher (2016) should have the “pedagogical content knowledge”, “general pedagogical knowledge” and “expertise” about how to teach the L2 in the lesson (p. 32), as she told the TE, “*I think I need some time to digest the language items and how to teach them.*”

Although Miss Yip could not figure out a solution for the teaching problems during the reflection, after mutual sharing and negotiation, the teacher and the TE agreed on some key aspects: First, the students should be explicitly informed of the project objectives so that they could understand the teaching arrangements. Second, interest and motivation should remain the key teaching principle of lesson design. The CLIL materials and pedagogy should address learner diversity in terms of both cognitive and linguistic abilities. Third, academic language knowledge should be incorporated into science teaching, and the teaching of the language features should take into account appropriate content, method, timing, amount, and diverse student needs; namely, the basic questions of “what to teach”, “how to teach it”, “when”, “how much” and “to whom”. All these cannot be pre-specified in a teacher education course/seminar and they are likely to develop as part of the teacher’s practical knowledge in situated practice (Tsui, 2011). This development was, however, enhanced in Miss Yip’s dialogic collaboration with the TE, which we shall describe in the next section.

4.3 Mid-term collaborations: A CLIL *teacher* with emerging TLA

Before collaborating on a new topic, both the teacher and the TE had brainstormed together several times to co-develop the CLIL teaching materials. The material design involved a process of dynamic and dialogic mutual engagement including suggestions, amendments and improvements with one building on another:

First, Miss Yip suggested using a jigsaw reading activity and a graphic organizer (concept map) completion task to teach the science topic “Human Digestive System.” Since the text was relatively long, Miss Yip tried to allow her students to learn the text through the

“completing concept map” jigsaw reading activity, which she believed may motivate the students and encourage them to learn through challenging tasks (i.e., retrieving information from the texts and transferring text information to the graphic organizers).

Second, the TE supported Miss Yip’s plan of the jigsaw reading activity and suggested that besides the reading practice, some writing practice would also be needed as answering long structured questions in exams was a challenge for most students. She offered Miss Yip a “joint-construction” (Rose & Martin, 2012) writing template and asked for her opinion about the design of a writing task with scaffolding provided more at the beginning but gradually reduced at later stages.

Third, Miss Yip agreed with the TE’s suggestion but was worried that due to relatively low language proficiency, most of her students might not be able to finish the writing. Besides, from the students’ assignments, she found that most of them did not care about grammar due to the long-term absence of grammar teaching in their previous English lessons. As there would be many sentences in passive voice, Miss Yip presumed that this grammar point needed to be reinforced before the writing task.

Fourth, the TE took Miss Yip’s worry into consideration and made another suggestion, i.e. instead of requiring students to write a short passage right away, the science teacher may allow them to practise “filling in the missing words” at sentence level first. After they had completed the graphic organisers, they transferred the graphic information in the concept maps back to texts at sentence level (i.e., complete the sentences with the missing words), and then further linked up the completed sentences into a coherent passage. As there would be many sentences describing the functions and actions of different organs, students needed to search for the key subject-specific words (e.g., names of digestive organs) as hints to group and sequence the sentences before they used cohesive devices to link up the sentences. This made the task more challenging but interesting. Another suggestion made by the TE was the LAC

support provided by the new English language teacher who would teach the classes some relevant grammar points (e.g., passive voice) in the English language lessons before the “jigsaw reading” and “rearranging sentences into passage” tasks took place in Miss Yip’s science lesson.

Miss Yip agreed with the TE’s design and they started to prepare for the teaching materials. The teacher designed the concept maps and the sentence-level “fill in the blanks” exercises. She then sent the materials to the TE for feedback. The TE provided feedback to Miss Yip’s materials and also designed a worksheet for the English language teacher so that she could help the students smooth away some language difficulties before Miss Yip’s science lesson.

The activities of jigsaw-reading and completing concept maps went smoothly in Miss Yip’s science classes including Class B students who were not only less proficient in English but also less disciplined. Unlike her previous lesson during which she explained the language features for more than 22 minutes, this time Miss Yip did not “hard-sell” the language points in a teacher-centred manner, but provided spontaneous scaffolding (Lin, 2016) according to the specific needs of students at different activities (e.g., highlighting the special pronunciation of “oesophagus” for the whole class during presentation and guiding the less proficient students to deconstruct the texts during jigsaw reading). In other words, Miss Yip did not ignore academic language knowledge, but applied a more feasible method to integrate it into her science teaching. For example, by guiding students to do “jigsaw reading” and “rearranging sentences into paragraphs”, she raised students’ awareness of both academic content knowledge and academic language knowledge. When “completing sentences,” students became familiar with the sequence of different digestion stages, the functions of different digestive organs and the properties of different digestive juices. When students were rearranging sentences into paragraphs, the teacher encouraged them to add some logical connectors to make the text more coherent, and to use academic words such as “secrete” and

“neutralise” to enhance the academic technicality and conciseness of the text. By checking answers with the whole class, Miss Yip guided the students to read the sentences carefully, summarise the key features in the digestion process, and explain difficult points, such as “*How does bile emulsify fats and increase their surface area to speed up digestion?*” and “*What does ‘neutralisation’ mean?*” etc. While explaining content topics, Miss Yip also focused students’ attention on the language points; for example, words that are easily misspelled (e.g., “protein” and “neutralise”), grammar patterns that are typical in science writing (e.g., present tense and passive voice), and some useful sentence patterns that help students understand/express concepts more precisely (e.g., the defining relative clause “...which...”). She also reminded the students that “*paying attention to language features can help you learn the science subject better*”. The following lesson excerpt shows how Miss Yip guided the students to correct their language mistakes when completing sentences:

T: So the “mouth contains saliva which is secreted by the salivary glands”. All right class, here, I would like you to pay attention, the mouth contains, this is the, an active voice because the mouth itself got it, and we use present tense here because it’s always true. All right but afterwards, is secreted by...

Ss: Secreted by...

S5: The salivary glands.

T: The salivary glands, so saliva itself doesn’t come out itself, it is secreted, it is the salivary glands that secrete the saliva.

T: Okay, and also this one is active voice, this part is the passive voice.

[Writing “A.V.” and “P.V.” next to the corresponding parts in the sentences on the blackboard]

T: All right, saliva contains enzymes which help speed up the digestion of starch. All right, E-N-Z-Y-M-E-S. Okay, here, saliva itself actively got the enzymes, and for the enzymes, they actively help speed up the digestion of starch. Okay?

T: All right, number five, this one. Moisten and lubricate food. All right, any problems here?

S1: I think moist.

S2: S.

T: Okay. First of all, Rebecca (pseudonym) said it should be moist rather than moisten. All right, and Kelly (pseudonym) said there should be an "s". Where should be the "s"?

S1: After...

S2: After...

S3: Moistens.

T: Moistens.

S4: Yeah.

T: How about lubricate?

S1: And lubricates.

S2: S.

S3: S.

T: Lubricates.

... ..

T: So you should add an "s" for this. All right, but also refer to Rebecca's question. Should it be "moist"...

S3: No.

T: Or "moistens"?

S1: Moistens.

T: Why?

S1: I don't know.

T: All right, so the point is, moist...

S2: Because it's English.

T: Moist is the adjective. [writing “adj.” next to “moist” and “v.” next to “moisten” on blackboard]

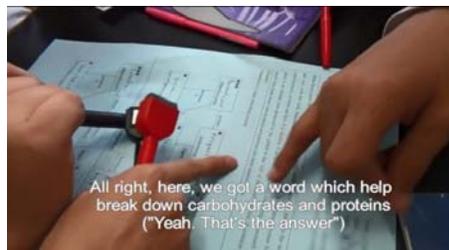
Ss: Moist.

T: Moisten is the verb. Okay? All right remember, for this “saliva” is uncountable, so if you talk about it in active voice, you need to add an “s” for it...

With growing TLA in Miss Yip, the LA in her students seemed to be also developing: rather than yelling “*It’s so boring!*”, Class A students seemed to be more engaged with language points such as passive voice, subject-verb agreement and academic vocabulary (e.g., “secrete” and “neutralise”; see Picture 2) while Class B were motivated by the “completing concept map” activity and they actively asked Miss Yip to guide them to search for the answers through co-deconstructing the text (Picture3). Further co-development of LA in both teacher and students can be seen in subsequent teacher-TE collaborations.



Picture2



Picture3

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4.4 Later collaborations: A CLIL *teacher* with advanced TLA

In later collaborations, Miss Yip seemed to have more confidence in using CLIL resources while the TE’s scaffolding was decreasing. Although she agreed with the text analysis suggested by the TE and appreciated the materials provided, she was able to re-organise the materials and adjust the amount of scaffolding according to the students’ needs in different

classes. For example, Miss Yip was provided with CLIL materials including an adapted text with key academic functions highlighted, PPT slides analysing the genre structure, and a cloze worksheet (“complete the lyrics”) on an English song about the science topic. However, instead of presenting all language features in the text handout by herself, Miss Yip redesigned the guided-reading task into self-directed and collaborative learning tasks. Before conducting text-level Q&A using materials designed by the TE, Miss Yip prepared two concept-vocabulary matching games which guided students to tackle the difficulties in learning the conceptual terms and their spellings. These two activities laid a good foundation for applying the materials designed by the TE. In addition, based on her knowledge of students’ learning needs, Miss Yip provided them with different scaffolding in different activities to encourage greater student participation. For the Q&A materials designed by the TE, Miss Yip did not just follow the question guides in the teacher notes, but made flexible adaptations to engage her students in discussion of the language functions highlighted in the text handout. For example, as students in Class B were less-motivated and linguistically less proficient, Miss Yip used multimodalities such as PowerPoint slides and blackboard sketches to facilitate understanding of the language functions (e.g., defining, expressing parts and whole, classifying and describing; See Picture 4); she also turned the Q&A into a competition to motivate the less-motivated students; while in more self-disciplined Class A, she did not guide them to read the whole text together, but selected language functions in the first paragraph as examples, and then encouraged students to do reciprocal questioning based on the functions of the language features highlighted in the handout (Picture5). When students were gradually mastering the skills of questioning and searching for answers according to the highlighted language functions, Miss Yip encouraged them to adopt the questioning strategy to do self-directed learning at home:

T: [walking to one group] Okay, ask questions to each other.

S1: Yeah. She asks me.

S2: *I don't know and she explains to me.*

T: *Okay, yes, that's right. So when she's asking about "consist of", those words that help you are "contain", "include".*

S2: *Consist of.*

T: *All right, how to spell "consist"?*

S1: [Correcting the typo in her notes] *Consists. hehehe...*

T: *Yes, consists. Then with all these words, you will be able to find out the answers.*

[moving to another group]

T: *All right, what questions did you ask?*

Ss: *We asked that....*

S3: *What do red blood cell contains and what is the functions of white blood...*

T: *White blood?*

S3: *Cells.*

T: *Cells. All right, so when you talk about functions, you will find it easier.*

S3: *Protect.*

T: *All right, and then for "consist of"*

S3: *Contain.*

T: *The word "contain".*

S3: *Yeah, haemoglobin and pigment.*

T: *That's right. Now, in this way, you can, actually, when you are doing your revision, you don't have your classmates with you, but you can always ask yourself questions like these.*

S3: *Here, like.*

T: *When you read this, you ask yourself, okay, what is the function of red blood cells? Ahhh...*

S4: [Turning to S5] *So let's start asking like...*

T: *So in this case, in this case.*

S5: *Opposite, opposite.*

T: *Then you can start understanding which part will be the more important parts that you need to refer to.*

S3: *It's so good!*

T: *So good?*

Ss: *Yeah.*

S4: *Very useful.*

S5: *Helpful for us.*

S3: *Thank you. Miss.*

S4: *Helpful for the exams also.*

S5: *Yeah.*

T: *That's right.*

S4: *We know what it means. Easy to understand.*

T: *That's right. So, with this, you see there are words that are underlined.*

S3: *Yeah.*

T: *Actually these words help you to understand the meaning like whether they are referring to the composition, or they are referring to the function. In this way, that's why if you look at all these, classifications, like "There are three types...".*

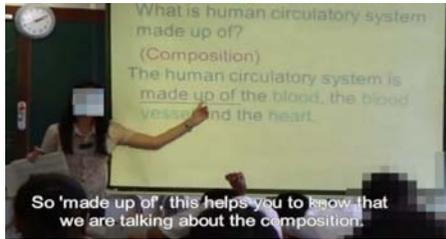
S4: *Types.*

T: *With these words, you will know, okay, arteries, veins, capillaries, these are all blood vessels.*

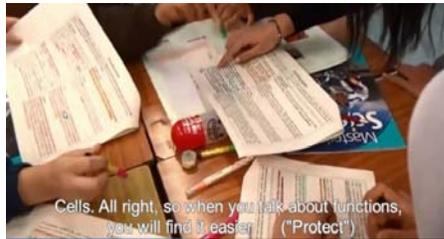
S3: *Yeah.*

S5: *These are the types of vessels.*

T: *Yes.*



Picture4



Picture5

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From the conversation between Miss Yip and the students, we can see that the students became more language-aware about the functions of different language features in the science texts and started to make use of the language scaffolding to review the lesson and consolidate the science knowledge through collaborative learning and self-directed learning. The planning, implementation and management of the lessons in later collaborations all seemed to demonstrate that Miss Yip was more active and playing a leading role in the teacher-TE collaboration. She became more confident and flexible about her own teaching and was able to make spontaneous decisions about CLIL according to the classroom situation.

During co-reflection in later collaboration, Miss Yip told the TE about her try-out of the CLIL pedagogy in her Integrated Humanities (IH) lesson, which was not a subject in the CLIL project.

“When I first read the news clipping, it’s just for comprehension, and I understand the ideas. But when it’s time for lessons and I had to explain it to my students, I could make an analysis of the language features for them. I think, not only in science, even IH, it helps our students, especially in writing.”

From Miss Yip’s reflection on her IH lesson, we may find that the teacher was not only more language-aware and able to teach KAL to her students actively and flexibly, but also able to apply the CLIL strategy spontaneously in other subjects. This shows that Miss Yip was transforming her teacher identity to a CLIL *teacher* with advanced TLA. Such transformation

as reflected in the growing confidence, flexibility and spontaneity seemed to be all related to reiterative cycles of Miss Yip’s **continuous participation and reflection** in the dynamic dialogic collaborations with the TE. We shall further discuss this in the next section.

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5. Discussion

The research findings show that Miss Yip’s TLA developed at different stages of teacher-TE CLIL collaboration during which her teacher identity also transformed step by step following a trajectory from a “content teacher + language *user*” to a “content teacher + language *analyst*” and further to an experienced “CLIL *teacher*” first with emerging and later advanced TLA. Throughout this identity transformation journey, Miss Yip’s TLA development was constantly shaped by two inseparable parties: the students in her CLIL classroom and the TE as a CLIL collaborative supporter and partner. Table 1 summarises the LA development of Miss Yip and her students as well as the TE’s support at different collaboration stages.

Table 1: Summary of teacher and student language awareness development and teacher educator support

Stages	Teacher development LA	Student development LA	Teacher educator support
Pre-collaboration	content teacher, L2 <i>user</i> of recognised competence	language-unaware learner with limited L2 proficiency	CLIL teacher educator: teacher consultant, curriculum developer, feedback provider
Early collaboration	content teacher, L2 <i>analyst</i>	rejecting, uninterested in L2 learning	teaching consultant, pedagogy designer, material supplier, feedback provider
Mid-term collaboration	CLIL <i>teacher</i> with emerging LA	more motivated, engaged in L2 learning	scaffold provider material supplier, feedback provider
Later collaboration	CLIL <i>teacher</i> with advanced LA	increasingly language-aware, self-directed CLIL learner	Partner Feedback provider

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As Table 1 illustrates, with ongoing development of teacher-TE collaboration, the LA of both Miss Yip and her students were growing gradually while the TE was able to withdraw her scaffolding bit by bit. The intertwining of the three parties—the teacher, the students and the TE who embodied the CLIL support from the university, became crucial driving force for Miss Yip’s TLA development in the COP emerging in the school-university partnership context (Tsui & Law, 2007; Wenger, 1998). This is an important elaboration and extension of Andrews’ framework of TLA, language proficiency and PCK (Andrews, 2007) to the field of CLIL teacher professional development. According to Andrews (2007), TLA bridges between a teacher’s language proficiency, SMC, and knowledge of learners, and forms a key sub-component of the teacher’s PCK by interacting with the other sub-components: knowledge of context, knowledge of curriculum, and knowledge of pedagogy. In our analysis, the teacher’s language proficiency was a necessary initial condition for her transition from a language *user* to a language *analyst* after being exposed to the CLIL teacher knowledge development courses in the university, as she said “*I fully understood what you wanted me to do once I got your materials and read them.*” This initial condition facilitated her quick development of KAL (i.e., the forms and functions as well as the genre-based theory and pedagogy she learned in the university courses) and the “explicit declarative metalinguistic awareness” (Lindahl & Baecher, 2016, p. 32) leading to her ability and readiness to analyse and present the language features to her students as shown in the early collaboration stage. Nevertheless, we argue that language proficiency and KAL are only necessary but not sufficient conditions to engender effective “knowledge transfer”; i.e. turning declarative knowledge into the ability to make moment-to-moment decisions in the design and execution of teaching—a key challenge faced in teacher education (Andrews & Lin, 2017). This resonates with the research findings in CLIL teacher education that the increase of teacher’s declarative knowledge about language does not necessarily mean automatic integration of content and language teaching because teachers may

have difficulty transferring the KAL to their CLIL classroom practices (Lindahl, 2013). As exemplified in the early collaboration stage, Miss Yip’s lengthy explanation of language points in the science text actually bored her students who challenged her, “*Miss, you are teaching us English?*” This question, which implied “*You should be our science teacher, not English teacher!*” seemed to have aroused a sense of “identity crisis” in the teacher. The doubt of her own identity further led to the loss of confidence in her CLIL teaching, as she reflected, “*I still need some support in terms of teaching pedagogy. Maybe English teachers are teaching their English lessons, while what I am actually teaching is science.*”

To explore the trajectory of Miss Yip’s TLA development and identity transformation in later collaborations, it is necessary to discuss the two overlapping sub-components of both TLA and PCK in Andrews’ (2007) framework: i.e., “knowledge of learners” and “subject matter cognitions” which comprises two important categories---“teacher knowledge” and “teacher beliefs” (p. 31).

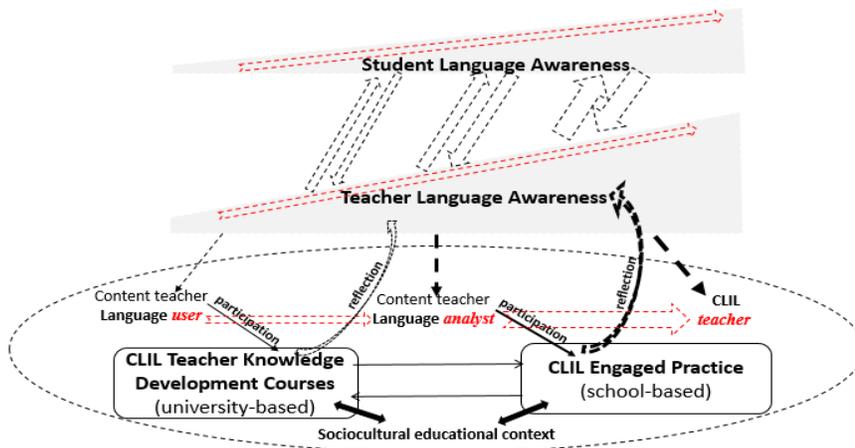


Figure 1. Framework of TLA Development in CLIL

In the reconceptualized “framework of TLA development in CLIL” (Figure 1), the interrelatedness of the integral components of TLA—language proficiency, SMC (teacher knowledge and teacher beliefs) and knowledge of learners are further incorporated. In

discussion of teacher knowledge, Tsui (2003) draws our attention to teacher “personal knowledge” (Clandinin & Connelly, 1987) and “knowledge of self” which includes teacher’s “personal beliefs and values” (Elbaz, 1983). In this research, Miss Yip’s personal experiences as an EMI student and later as an EMI science teacher had shaped her personal knowledge and beliefs including her teaching principle “motivation first, academic achievements second” and her values about the importance of teaching language for content learning, i.e. “knowledge about (English) language is important because it can help students learn the content better.” This echoes Lindahl (2013)’s finding that teacher beliefs about language not only influence teacher pedagogical behaviours but also affect their reflections on the language requirements and use as well as their empathy with students. It was such personal knowledge, teacher beliefs and values that motivated Miss Yip’s participation in the university-based CLIL Teacher Knowledge Development Courses which laid the knowledge foundation for her transition from a language *user* to a language *analyst* and further to a CLIL *teacher*. Drawing on Schön (1983), Tsui (2003) also emphasises the essential role of “knowing-in-action” and the characterization of “reflective practitioner,” both of which need to be core constructs in the framework of TLA development in CLIL. They highlight the indispensability of two factors: (1) that for declarative knowledge (e.g. KAL) to become practical knowledge it must be enacted in classroom practice—the importance of further participation in CLIL Engaged Practice in the school COP; and (2) the importance of teacher-TE collaborative reflection after applying teacher knowledge in engaged practice. In Miss Yip’s TLA development, her self-reflection was guided by the TE and was then further enhanced through the dynamic dialogic co-reflection in the post-lesson discussions.

The teacher-TE co-reflections had led to another critical force which contributed to Miss Yip’s transformation from a “content teacher + language *analyst*” gradually to a CLIL *teacher*—the interplay between teacher knowledge, teacher beliefs and knowledge of learners.

Miss Yip's TLA development had kept abreast with her students' LA development. To help her language-unaware students, Miss Yip believed that she must not "hard sell" her teacher knowledge, as in the lengthy language presentation in early collaboration. Rather, it is crucial that she takes into consideration the SA students' interests, motivation, linguistic and cognitive abilities, individual differences as well as their sociocultural background to design materials and activities that cater for the diverse student needs. As can be seen in later collaborations, Miss Yip no longer just taught the language features according to what had been prepared (e.g., the teacher notes in the handouts); she was able to anticipate the students' language difficulties (e.g., passive voice) and provide designed and spontaneous scaffolding (Lin, 2016) flexibly. She also guided her students to identify language errors together and encouraged them to find out the reasons rather than presenting the answers by herself. This shows that Miss Yip not only had competent language proficiency and a good command of the relevant KAL but also the readiness and aptness to provide timely and proper language support in her CLIL lessons. In light of this, Miss Yip started to move from a mere "content teacher + language *analyst*" to a CLIL *teacher* (Lindahl & Baecher, 2016).

It is worth noting that Miss Yip's TLA development was **correlated with** the successful conversion of her students' beliefs about KAL; that is, the changing attitudes of the language-unaware students from rejecting language learning (e.g., most of the students had a negative attitude towards grammar learning and some even yelled, "*Dump the grammar book!*"), to gradually being engaged in language learning (e.g., analysing the language functions in the science texts), and further to becoming motivated and self-directed learners with growing LA (e.g., Most of them later believed that language learning is helpful for content learning as some commented, "*It's so good!*" and "*Helpful for the exam also.*"). This reveals that Miss Yip was able to co-develop LA with her students by gradually changing their mindsets towards the **value** of language learning in their academic content learning. Revisiting Andrews' (2007)

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framework of TLA, we argue that Miss Yip's language proficiency, teacher knowledge, teacher beliefs and the knowledge of learners including Miss Yip's empathy for her students' language learning experience as English learners (Lindahl & Baecher, 2016) are all crucial factors which intertwine with other PCK components (Shulman, 1987)—knowledge of contexts, knowledge of curriculum, and knowledge of pedagogy, to trigger Miss Yip's TLA development and identity transformation to become a CLIL *teacher*. The interplay of the different kinds of knowledge in the teacher provided the conditions for the co-development (“教學相長”²) of TLA and student LA in the school-university collaborative context.

6. Conclusion: A lens for conceptualising CLIL Teacher Education as a Collaborative, Dynamic, Dialogic Process (CDDP)

What insights can CLIL teacher educators draw from Miss Yip's trajectory of TLA development and identity transformation? The teacher's TLA started to grow with her participation in CLIL practice in the school and then **enhanced** by further participation in the university CLIL teacher knowledge development courses (Cycle 1 in the “Model of CLIL Teacher Professional Development” in Figure 2). However, CLIL teacher development does not terminate at this cycle. As Miss Yip's case shows, the teacher went on pursuing her professional development even after the school-university collaborative project and re-enrolled in the university's short-term CLIL/LAC seminars for teachers, after which she participated in another collaboration with the research team. And she is likely to participate in other collaborations in the future (hence, from T1 to T2...Tn). This intimate association of CLIL teacher knowledge and practice in the COPs is sustained in the reiterative **cycles of participation** from cycle 1 to cycle N crossing both school-based and university-based COPs.

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² “教學相長”: An important teacher education principle in the Chinese cultural tradition, meaning “both the teacher and the students are benefiting and learning from each other”.

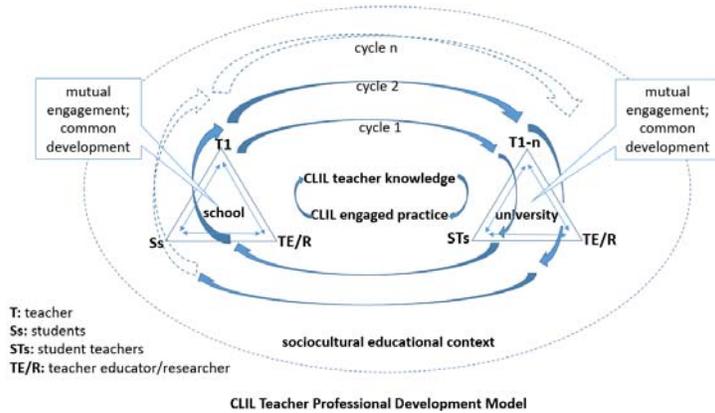


Figure 2. Model of CLIL Teacher Professional Development

Similarly, the university CLIL teacher education programme would also benefit from the reiterative revisions and improvements of the CLIL teacher knowledge base informed by CLIL engaged practice. This is mediated by the role of the TE as one of the critical driving forces for CLIL TLA development. Without the TE serving as teaching consultant and dialoguing partner in this research, the development of LA in Miss Yip and her students would be slow or uncertain. On the other hand, the TE as a partner and co-learner in the school COP can also learn from the CLIL practice of the teacher and students; for example, while Miss Yip and her students became increasingly “language-aware”, the TE (who was a language teacher) became increasingly “content-aware” through the collaborative, dynamic and dialogic process of co-planning lessons, co-developing materials, co-enacting CLIL curriculum, co-reflection on the lessons and co-organising school student CLIL workshops at the end of the project. This is another co-development (“教學相長”) between the TE and the teacher. All this has valuable implications for the development of a CLIL teacher professional development model. For instance, Miss Yip’s CLIL teaching materials and pedagogy were shared with student teachers (STs) in the university MED CLIL courses. Lesson video analysis based on classroom data from Miss Yip has also inspired the STs; for example, the feedback from the STs indicated that

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they liked Miss Yip's teaching designs and adapted them into their own mini-lesson planning. We would stress that the positioning of Ts, STs and TE/Rs in the CLIL teacher professional development model should not be hierarchical. As different parties hold different types of expertise which complement one another, they can better be seen as co-learners who are mutually engaged pursuing common professional development in both the school-based and university-based COPs (Tsui, 2007). We thus conclude our paper with the proposal of CLIL teacher professional development as a *Collaborative, Dynamic, Dialogic process* (CDDP) and call for future work in this direction.

References

- Andrews, S. J. (2007). *Teacher language awareness*. Cambridge: Cambridge University Press.
- Andrews, S. J., & Lin, A. M. Y. (2017). Language awareness and teacher development. In Peter Garrett & Josep Maria Cots (Eds.), *The Routledge Handbook of Language Awareness* (pp. 57–74). London: Routledge.
- Andrews, S. J., & Svalberg, A. M-L. (2017). Teacher language awareness. In J. Cenoz, D. Gorter and S. May (Eds.), *Language awareness and multilingualism* (pp. 219–231). New York: Springer.
- Banegas, D. L. (2012). Integrating content and language in English language teaching in secondary education: Models, benefits, and challenges. *Studies in Second Language Learning and Teaching*, 2(1), 111-136.
- Borg, S. (2011). The impact of in-service teacher education on language teachers' beliefs. *System*, 39(3), 370-380.
- Cammarata, L. (2009). Negotiating curricular transitions: Foreign language teachers' learning experience with content-based instruction. *The Canadian Modern Language Review/La Revue canadienne des la langues vivantes*, 65(4), 559-585.

- Clandinin, D.J., & Connelly, F. M. (1987). Teachers' personal knowledge: What counts as personal in studies of the personal. *Journal of Curriculum Studies*, 19, 487-500.
- Edge, J. (1988). Applying linguistics in English language teacher training for speakers of other languages. *ELT Journal*, 42(1), 9-13.
- Elbaz, F. (1983). *Teacher thinking: A study of practical knowledge*. London: Croom Helm.
- Freeman, D., Katz, A., Gomez, P. G., & Burns, A. (2015). English-for-Teaching: rethinking teacher proficiency in the classroom. *ELT Journal*, 69(2), 129-139.
- Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory*. Chicago: Aldine
- Lin, A. M. Y. (2016). *Language across the curriculum and CLIL in English as an Additional Language (EAL) contexts: theory and practice*. Singapore: Springer.
- Lindahl, K. M. (2013). *Exploring an invisible medium: Teacher language awareness among pre-service educators of English language learners*. Unpublished PhD thesis, University of Utah.
- Lindahl, K. M., & Baecher, L. (2016). Teacher language awareness in supervisory feedback cycles. *ELT Journal*, 70(1), 28-38.
- Lindahl, K. M., Baecher, L., & Tomas, Z. (2013). **Teacher language awareness in content-based activity design. *Journal of Immersion and Content-Based Language*, 1(2), 198–225.**
- Lindahl, K.M., & Watkins, N. M. (2015). Creating a culture of language awareness in content-based contexts. *TESOL Journal*, 6(4), 777-789.
- Lyster, R., & Ballinger, S. (2011). Content-based language teaching: Convergent concerns across divergent contexts. *Language Teaching Research*, 15(3), 279-288.
- Merriam, S. B. (1998). *Qualitative research and case study applications in Education*. San Francisco: Jossey-Bass Publishers

- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: an expanded sourcebook*. Thousand Oaks, California: Sage
- Rose, D., & Martin, J. R. (2012). *Learning to write, reading to learn: Genre, knowledge and pedagogy in the Sydney School*. Sheffield, UK: Equinox.
- Schön, D. A. (1983). *The reflective practitioner*. London: Basic Books.
- Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1-23.
- Tsui, A. B. M. (2003). *Understanding expertise in teaching: Case studies of second language teachers*. Cambridge: Cambridge University Press.
- Tsui, A. B. M., & Law, D. Y. K. (2007). Learning as boundary-crossing in school-university partnership. *Teaching and Teacher Education*, 23(8), 1289-1301.
- Tsui, A. B. M. (2011). Teacher Education and Teacher Development. In E. Hinkel (Ed.), *Handbook of Research in Second Language Teaching and Learning* (Vol. II) (pp. 21-39). New York: Routledge.
- Wenger, E. (1998). *Communities of Practice: learning, meaning and identity*. Cambridge: Cambridge University Press.
- Wenger, E. (2004). *Communities of practice: A brief introduction*. Downloaded on February 7th, 2018 from https://www.ohr.wisc.edu/cop/articles/communities_practice_intro_wenger.pdf
- Wright, T. (2002). Doing language awareness: Issues for language study in language teacher education. In H. Trappes-Lomax and G. Ferguson (Eds.). *Language in language teacher education* (pp. 113-130). Philadelphia: John Benjamins.
- Wright, T., & Bolitho, R. (1993). Language awareness: A missing link in language teacher education? *ELT Journal*, 47(4), 292-304.

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