A Vygotskyan sociocultural perspective on the role of L1 in target language learning

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Although there have been an increasing number of empirical studies written about the use of the first language (L1) in pedagogical approaches over the past few decades (e.g. Turnbull, 2001; Lo, 2015; Lee, 2018), to date little has undressed the role of the L1 from a theoretical perspective for informing practitioners of theory-supported teaching practices. In this article, I discuss five key constructs (mediation, trans/languaging, the cognition/emotion relationship, zone of proximal development and scaffolding) that are central to a Vygotskian sociocultural theory of mind perspective on target language learning and teaching. Each discussion of a theoretical construct is followed by a review of two or more recent studies from task-based language teaching (TBLT) and content and language integrated learning (CLIL) whose findings I highlight or re-interpret with the Vygotskyan sociocultural lens. The discussion points to the multifaceted nature of L1, which I argue is dynamic per se and ought to be positioned within a wider classroom discourse. Such a re-conceptualization aims not only to (re-)acknowledge the mediating role of the L1 but also to help educators make research-informed decisions about their language use choices in classroom.

Keywords: Vygostskyan sociocultural theory of mind; L1 use in target language teaching and learning; meditation; translanguaging; cognition and emotion; zone of proximal development and scaffolding

Introduction

The recent decades have witnessed a debate over the use of first language (L1) in teaching a target language (TL). Early research (e.g. Auerbach, 1993) considered L1 use as a "problem" to be avoided in language learning classrooms, grounded by second language acquisition (SLA) theories. Although acknowledging the potential positive impacts of L1, behaviourists (e.g. Brooks, 1960) place more emphasis on negative transfer from the existing mother tongue habits, leading to Lado's (1957) proposal of Contrastive Analysis to deter L1 interference. Moving one step beyond error analysis on non-target like structures, developmentalists (e.g. Gass & Selinker, 1983) view the learner system as a whole but still believe that L1 impedes interlanguage development. Similarly, cognitive processing theorists' multicompetence model (e.g. Cummins, 1981, 2007) reconceptualizes language learners as bi-/multi-lingual users who can access more than one language repertoire, though whether positive or negative transfer arises depends on learners' effectiveness in coordinating learning strategies across languages. The role of the L1 is further downplayed in Krashen's (1982) Comprehensive Input Hypothesis, which excludes the students' native language in the classroom but concentrates on the communicative functions of the TL as in the Natural Approach and Communicative Language Teaching (CLT). Complementing these SLA theoretical perspectives, language learning classrooms have experienced a shift in pedagogical approaches from the heavily L1-reliant Grammar Translation Method to the strongly L1-prohibited Direct method and Audiolingual Method to the diminished- or in some cases unacknowledged - role of the L1 in CLT. Largely the SLA perspectives and related pedagogies discuss the L1 use in TL learning in relation to human cognition, leaving no room to elucidate the role of the L1 in processes of (co-)construction of knowledge at both social and psychological levels of the human mind. This

void can be effectively addressed through the lens of Vygotskyan sociocultural theory of mind (e.g. Lantolf, 2000; Swain & Lapkin, 2000).

Sociocultural theory provides a particularly effective framework for critically evaluating the role of the L1 in learning a TL because its chief enquiry also concerns how language mediates human activity both on the intrapsychological and interpsychological planes. To socioculturalists (e.g. Lantolf & Thorne, 2007), L1 is a crucial and often indispensible semiotic device that mediates the learning process, even when what is being learnt is a TL. This portrayal is based on the tenet that language (a cultural artefact) is the primary cognitive tool that organizes or regulates our thinking (Vygotsky, 1978). When the regulating function a language serves moves from intermental (object-/other-regulation) to intramental functioning (self-regulation), a qualitative leap happens (Lantolf & Thorne, 2006). By then language can mediate one's higher mental functions such as focusing attention and organizing. The language faculty would have been transformed qualitatively. Therefore, based on Vygotsky's (1986) ideas, it could be claimed that when learning a new language, one would not return to the immediate world of objects nor repeat past linguistic developments, but uses the internalized L1 as a mediator between the world of objects and the TL (p.161). However, such a theoretically complementary use of the L1 in TL learning conflicts with a belief that language teaching should be mostly or entirely TL-based in certain approaches such as the Direct Method (as an extreme example) and CLT (to varying extents) (though some approaches allow for an explicit role for the L1. Such distinction depends in part of whether the method is in nature deductive or inductive; for a review, see Ellis & Shintani, 2014).

The present paper will focus on two pedagogical approaches under the general umbrella of CLT, namely, task-based language teaching (TBLT) and content and language integrated learning (CLIL). TBLT aims to develop students' communicative competence by involving them in meaning-focused communication while performing tasks (Nunan, 2004). The term "communicative proficiency" denotes fluency in the communicative process, linguistic (attention to language forms) and interactional competence (use of TL to participate in discourse). These competences enable students to achieve the task goal. Thus, learning is evident as long as students can (1) construct and comprehend messages in spoken and written forms, (2) attend to the TL forms, and/or (3) fulfil the task goal. CLIL is a dual-focused approach which gives equal attention to content and language (Dalton-Puffer, 2011). Curricular content is taught through the medium of the TL, so that students can articulate the academic concepts using academic language. To claim that learning takes place, students should demonstrate development in (1) academic language and (2) content knowledge. If the use of any mediational means helps achieve these pedagogical aims in both approaches, they should not be precluded.

However, when it comes to using the L1 as a mediational tool, incongruence exists between the theories and practices of TBLT and CLIL. In theory, both, in conjunction with Krashen's (1982) Comprehensive Input Hypothesis, exclude the use of L1 and aim to maximize students' exposure to TL input to promote TL learning. TBLT and CLIL teachers are expected to use the TL more or less exclusively when performing teaching activities and classroom management. Neither is L1 use by students desirable. Ur (1996), for instance, warned teachers about the danger of learners' over-using L1 when performing communicative tasks in small group work. In practice, however, teachers and students' lapses into the L1 are not uncommon. Ellis and Shintani (2014) noted that in TBLT classrooms students often become so focused on achieving a task's goal that they frequently resort to L1 to resolve communication problems. Lo (2015) reported her observations in CLIL classrooms where teachers code-switched to L1 because TL

abstract content knowledge and academic language-imposed difficulties on learners. Both descriptions point to the same quandary: the over-application of the maximum input hypothesis makes the input incomprehensible, contradicting the ultimate rationale of any pedagogical approach: to promote learning.

It is against this backdrop that this paper reaffirms the mediating role of the L1 in TL learning with particular attention to TBLT and CLIL classrooms. This role will be illustrated with three constructs, namely cognitive, affective and interactional factors, that are central to Vygotskyan sociocultural theory perspective on TL learning and teaching. Tellingly, using L1 is not always helpful or essential in certain situations. To balance the whole discussion, promoting and, where appropriate, prohibiting effects of and mediating variables related to the L1 use will be addressed with reference to four empirical studies. These are selected either for their sociocultural orientations or isolated instances and findings appropriate for explication of the tripartite mediating role played by the L1. What follows flows from intra- to inter-psychological planes, making the role of L1 appear segmented and linear. It is in reality more dynamic because language internalization is a process subject to interactions with social and psychological variables (Leont'ev, 1981).

Cognitive mediator

This section explores the use of the L1 for cognitive mediation. This premise is based on the Vygotskyan notion that language is a "tool for thought" that mediates the human mind, that is, to focus attention of, structure and organize our thinking (Lantolf, 2000; Luria, 1982). Through language, mediation can be verbalized. The development of verbal mediation is evidenced in one using self-directed language, that is private speech, to accompany and regulate behaviour (Vygotsky, 1978). More recent forms of verbal mediation include languaging (which also includes private speech as a sub-form) (e.g. Maschler, 2009) and translanguaging (e.g. Li, 2011, 2016). The following evaluates how L1 serves as a cognitive mediator for regulating language and thought with relevance to two studies: one in terms of the translanguaging as a pedagogical approach in a CLIL classroom, and another in terms of private speech in a TBLT classroom.

Translanguaging posits that bi-/multi-lingual language users possess one linguistic repertoire from which they strategically choose features for effective communication (Li, 2017). A fuller definition in García and Li (2014) points to three connections between translanguaging and sociocultural theory. Both see language as a socially constructed symbolic artefact which individuals use in the process of cognitive transformation and that of interaction with and within the world. Both treat language as an activity. In particular, translanguaging entails dynamic bilingualism, in which language learners choose features from "a single array of disaggregated features that is always active" (p.15). Both also concern multidisciplinary.

Translanguaging as a pedagogical approach often occurs in CLIL classrooms where the medium-of-instruction tends to differ from the students' L1. Williams (1996) specified translanguaging in classrooms as the planned and systemic use of one language in input (listening/reading) and another language in the output (writing/speaking). Whether by teachers or by students, the integral and coherent use of the two languages helps manage and facilitate the mental process of learning. Expanding this, García (2009) defined translanguaging as multiple discursive practices that bi-/multilinguals are involved in so as to make sense of their

bi-/multilingual worlds (p. 45). Her emphasis is thus on engaging the audience to gain understanding and knowledge through the integration of their multiple linguistic repertories.

Although not explicitly framed within the sociocultural perspective, Lin and Lo's (2017) study aimed to understand how students and teachers co-construct content in CLIL through translanguaging in English-medium science lessons. Classroom observations were conducted in two schools in Hong Kong where the L1 of most students was Cantonese. School A had been using the TL, English, for instruction since its establishment, whereas School B had recently switched to English-medium at all levels and subjects. Another major difference lay in the years of experience of the two teachers being observed: twenty years for Mr B from School A and seven years for Miss A from School B, though they underwent similar science teacher professional training. Two of their Grade 10 lessons were analysed and presented in the article. The following extract from Mr B's lesson on the functions of protein stands out:

Table 1

An Excerpt from Lin & Lo (2017, p.36)	
1. Mr B:	Can you tell me which parts of your body are made up of protein?
2. S2:	Bones
3. Mr B:	Well, okay. Part of bones, right? I would like to say bones, bones also contain a lot of minerals. Okay? So part of bones. Anything else?
4. S2:	Hair.
5. Mr B:	Hair, okay, yes. Hair. And _____?
6. S2:	手指甲 (nails)
7. Mr B:	手指甲 (nails). Okay, actually hair, the nail. Anything else? (pause) How about animals? Animals have _____?
8. S3:	Horn
9. Mr B:	Horns, yes, horns. Actually they belong to the same class of proteins called keratin. 角,角,角,叫角質層呀 (Horns, horns, horns, (they are) called keratin). Okay? And also our skin, you know, skin. They all contain the same type of protein. So next time when you 食鹿茸 (eat antlers) [antlers as expressed in the term of Chinese medicine], you know, 鹿茸 (antlers), when you don't have the money to buy 鹿茸(antlers), what can you do? (pause) You bite your nail. Okay? Just bite your nail. It's the same protein. Okay? [Ss laughed] (pause) So anything else?

By using Cantonese phrases within the English language explanation, Mr B was integrating the two languages in a communicative unity to mediate students' understanding of the scientific concepts and language. Although being able to name the everyday examples of proteins, students grappled with finding a precise subject-specific word to generalize their answers. Mr. B supplied the term kertain. To mediate his students' understanding, he provided the L1 translation 角質層, that student might have encountered, for instance, in hair products advertisements in everyday life. He further expanded students' scientific knowledge by providing an example. This time, he mentioned the Chinese tradition of having antlers as medicine, that is, 食鹿茸 (eat antlers). This produced an "Aha!" moment among students, as

indicated by their laughter. Both students and the teacher were on the same page and the class discussion could move forward, thanks to the coherent act of translanguaging that helped clarify the complex academic language and concepts by drawing on students' L1 everyday language and knowledge. Learning, in terms of the CLIL principles (i.e. learn academic concepts and language), was taking place.

Such use of translanguaging can be expounded in cognitive terms. Kern (1994) described that L1 requires less attention than TL to decode words because it enables a synthesis of the semantic meaning that can be retained for a sufficient amount of time in the working memory. Cognitive load is lessened, facilitating processing and consolidating semantic meaning. This applies much to CLIL classrooms, where most subject-specific words and concepts in TL are too academic to have been encountered in daily life. Students need to have the unfamiliar TL knowledge translated for mapping with the equivalence in their more familiar L1 knowledge. This explains why Mr B used translation to connect the new scientific concept (external capital) to students' local funds of knowledge. Similar cognitive benefits with using L1 have been hinted at in other studies (e.g. Hilda et al., 2016), though to the best of my knowledge no research has empirically investigated the actual cognitive gains by students with the use of L1 in translanguaging in CLIL classrooms.

While translanguaging helps mediate thoughts in CLIL classrooms, a usual form of verbal mediation in TBLT classrooms as suggested by previous studies (e.g. Anton & Dicamilla, 1999) is private speech. It is an externalized verbal attempt to gain self-regulation during cognitively demanding tasks (Lantolf & Throne, 2006). While it is communicative in appearance given its genesis in social speech, the discourse created by private speech is more directed to the person who speaks rather than to the person who listens. Fernández Dobao (2014) captured episodes of how intermediate-level learners of Spanish as a foreign language at a US university used their L1, English, to language their lexical knowledge in TBLT classrooms, although the study did not aim to explicitly investigate L1 use nor associated cognitive processes.

The study, from a sociocultural perspective, aimed to investigate the opportunities that dyadic and small group work provide for peer collaboration and TL vocabulary learning. It focused on lexical language-related episodes (LREs) and compared the performance of the same collaborative writing task by students working in pairs or groups of four. Individuals were also assessed on their vocabulary learning gains from the LREs by comparing their performance in a vocabulary pre-test and an individual writing post-test. Results revealed that group interaction produced significantly more LREs and subsequently more occurrences of TL vocabulary learning compared to dyadic interaction. Of interest here is the languages used during the learning process. What follows illustrates the use of L1 to language thoughts when the group was brainstorming the Spanish word for meet.

Table 2

An Excerpt from Fernández Dobao (2014, p.509)
1. Mary: *deben:* meet *allí, no sé la palabra para* meet?   (they should meet there, I don't know the word for meet?)
2. Jason: uh like *encontrar*, no, that's to find, right?   (to find)
3. David: uh: es heh … *creo que es saber* um   (it's, I think it's to know)

Jason made use of L1 private speech to regulate his misunderstanding and regain self-regulation in face of the difficult TL vocabulary. The interjection uh seemed to encode his intermental search for a Spanish equivalence of the verb meet, and thus the whole sentence served to externalize for his own sake what he was thinking. He first provided "encontrar" yet instantly realized that was not suitable for use in that discourse. The subsequent self-explanation focused his attention. The ending question "right" was rhetorical, in that Jason did not seek an answer but self-confirmation. By then, Jason appeared to have his understanding of the TL word "encontrar" crystallized and consolidated. Reinforcement of existing knowledge is also part of the learning process (Storch, 2008). Learning (in terms of the second TBLT principle: attend to the TL forms) took place, with using the L1 private speech as the medium to control and organize his thinking process when struggling to select the correct TL vocabulary. Similar use of L1 as a cognitive mediator can be found in most other episodes (p.506, 508), despite students being instructed to use only Spanish.

Although the frequent use of L1 was not addressed for it was not Fernández Dobao's (2014) focus, one plausible explanation relates to the task type. The collaborative writing task here could be categorized as a focused task (as opposed to unfocused task) because it demanded the use of a certain range of vocabulary and grammatical structures (p.502), and the coding system LREs attended exclusively to the lexes (p.501). Focus tasks tend to result in more language talk, which often involves externalization of metacognition through a stronger language (Brooks & Donato, 1994). This explains the students' resort to their L1 for mediating thinking about the language in the study. Put differently, task types determine the associated cognitive requirements and in turn affects students' language choice for overcoming the cognitive challenges. This issue of task effect has also been attested in previous studies, yet with specific attention to other categorizations, for example, task operations (e.g. problem-solving, exchanging information, creating) (e.g. Hancook, 1997) and task-modality (e.g. speaking, writing versus speaking) (e.g. Adams, 2006).

A comparison between the above two examples points to the differences in functions and relative importance of the L1 as a cognitive mediator in CLIL and TBLT classrooms in relation to the selected studies. In TBLT classrooms, L1 is used for mediating everyday language/concepts. In CLIL classrooms, L1 is more frequently used for regulating academic concepts, which are understood and expressed only in words and more abstract than everyday concepts which are both experienced and expressed in words (Vygotsky, 1986). Since most scientific concepts have parallel everyday referents, it follows logically that bi-/multilinguals capitalize and transform the contextual richness of everyday thought to comprehend and acquire academic concepts. As Cummins (2008) would agree, if language learners' prior knowledge is encoded in their L1, their L1 will unavoidably be implicated in their TL learning. After all, CLIL classrooms are about learning concepts in the TL, and concepts are in nature cognitive. Therefore, the L1 cognitive mediator seems to be more indispensible in activating students' prior knowledge and relating background knowledge to the TL learning in CLIL classrooms than in TBLT classrooms.

Affective mediator

If the L1 is a cognitive mediator, it must also be an affective mediator based on the Vygotskyan (1987) notion of "a unity of affective and intellectual processes" (p.50). Feeling and thinking are interwoven, with the volitional and affective orientation being implicated in the thinking

process itself. Emotions inform one's decision on what to think and how to behave afterwards. The behavior then generates new emotions and thoughts (e.g. anxiety/motivation). Emotion, cognition, and behavior magnify, diminish and redirect one another. Recognizing this totality of thinking-feeling-acting enables us to go beyond the language forms, and to recognize the affective functions that the chosen language serves.

One behavior that captures this unity of emotions and cognition is private speech, which is "the result of stress that can accompany the task of constructing meaning in L1 and TL" (Lantolf, 2000, p.31). The dual functions of private speech for regulating thoughts (discussed above) and emotions (discussed below) reinforce the intricate cognition/affect relationship. What follows are two examples of private speech - one each from TBLT and CLIL classrooms - to illustrate the cognition/affect unity. The focus will then be solely on affect and its co-constructing relations with the L1.

The TBLT example comes from Moore (2017). It has been chosen because of its sporadic mention of some sociocultural factors, self-identified focus on task-based instruction, and inclusion of instances of private speech during which students used their L1 to regulate feelings and thinking. The study aimed to explore the perspectives of Japanese learners of lower-intermediate English proficiency on the use of their L1 Japan during an oral presentation task in their TL English. For the task, the ten first-year undergraduates formed five pairs to share their experience and prepare a presentation on "The Great Wall of China" with reference to seven picture prompts. Their interactions were video- and audio-recorded for identifying L1 functions, and stimulated recalls were conducted for eliciting the learners' perceptions on the principled use of L1 in TL interaction and learning. Echoing previous studies (e.g. Moore, 2013) on the use of existing linguistic resources in task-based interaction, this study discovered variant uses of L1 by students for cognitive and social purposes. The focus here is on the students' emotive utterances such as:

Table 3

An Excerpt from Moore (2017, p.308)	
1. Haruka:	へ(huh) three hundred yen
2. Mika:	It's so…reasonable!
3. Haruka:	Yes! (laughs)
	......
1. Mika:	how to… あの(um) … how to access
2. Haruka:	access access

While contemplating the cognitively demanding tasks, the two learners unconsciously used a particular Japanese-styled back-channeling aizuchi to vent negative emotions so that the conversation could continue to move towards task completion. The hesitation and dashes suggested Mika and Haruka were not only talking to each other but also controlling their surprise (turn 1) and wondering (turn 5) during the thinking process. Mika and Haruka shared in the stimulated recall (p.314) that although they understood the importance of practicing the TL English, there were moments when English could not vividly convey their doubt (turn 1) and confusion (turn 5). Contrarily, these emotions could be well-captured in expressions in Japanese. Japanese became the only tool to mediate such emotional dissonance. Had Haruka and Mika not used L1, they would have stuck at those stages, let alone completing the task. Put differently, given the third TBLT guiding principle (i.e. fulfil the task goal), their use of

Japanese to regulate undesirable feelings while thinking so as to keep the English conversation going became explainable.

This study deserves praise for demonstrating the necessity of L1 when there is no direct equivalence in the TL to express the emotions being experienced. Those non-existing emotions in English are often negative or at least used to express negative emotions, which can otherwise create stress and "switch learning off" (Leont'ev, 1981). One may argue if there are any compensatory strategy, for example, using language-specific structures or other techniques in the TL to replace or avoid the use of L1 emotive words. This leads to another question as regards the teaching objectives of TBLT. TBLT seldom places emphasis on the vernacular language such as Japanese aizuchi in Moore's (2017) study, despite the fact that a task is theorized to achieve situational and interactional authenticity when the context resembles a real-life context promoting non-pedagogical conversation (Ellis, 2003). It is therefore often inevitable for students to switch back to their L1 when frustrated with the tasks because they are not taught the TL colloquialism to express their emotions. However, to date, no research has investigated into such potential correlation between the teaching focus and actual use of informal language by students to mediate feeling and thinking.

Another example where L1 is used as an affective mediator comes from a CLIL classroom recorded in Tavares (2015). The study was not anchored by a particular theoretical perspective. Instead, endeavored to "visualise, concretise, theorise classroom interactional discourse" in mathematics lessons (p.322), the study adopted a grounded case study approach and reported on the use of L1 by an experienced bilingual teacher Miss Sitt in her mathematics English-medium (EMI) classroom, whereby the Grade 9 average-ability students spoke L1 Cantonese. It was the first year that the students had mathematics lessons in the TL, English. By analyzing video-recorded class interaction and semi-structured interview data, Tavares identified a list of classroom practices for other teachers to learn from. For now, let us consider an episode of one of the lessons during which students struggled with the trigonometric identities.

Table 4

An Excerpt from Tavares (2015, p.326)	
1. Jenny:	Err … Put the Cosine θ … *[Struggling to come up with a word, she looked at Miss Sitt and said in L1]* 即係 … (That means …)
2. Teacher:	Okay, you try to speak in Chinese first.
3. Jenny:	將個 Cosine θ … 另外除 … (Use Cosine θ … Divide it by…)
4. Teacher:	Example 9.11 … Are you sure?
5. Jenny:	唔係 … 即係 … 將佢地兩個都除返 Cosine θ (No … That means … Divide both of them by Cosine θ)
6. Teacher:	Very good! Okay, can you repeat again in English? Try. *[Jenny continued to look at her book and hesitated.]*

Here the L1 functioned simultaneously as an affective and cognitive mediator. In turn 1, Jenny was so anxious to structure and organize her thinking that she unconsciously switched to L1, Cantonese. This could be explained in Nation's (2003) words: "using the TL can be a source of embarrassment particularly shy learners and those who feel they are not very proficient in the TL" (p.2). After all, it was the first year that the students had mathematics lessons in the TL, English (Tavares, 2015, p.327). Apart from being affectively uncomfortable with English, Jenny was cognitively unfamiliar with the topic. Even when using Cantonese, she needed to

answer twice. This pointed to the necessity of L1 for Jenny to regulate her thinking in face of this cognitively/affectively difficult mathematics question. In her second attempt, she could finally formulate the correct solution in Cantonese. In fact, Tavares (2015) noted that after a few more interactional exchanges, Jenny could translate completely and correctly her L1 understanding into the TL, though the transcript was no provided. In this sense, with reference to both CLIL principles (i.e. learn both academic concepts and language), the use of L1 mediated both language and language anxiety and enabled learning.

A close examination exclusively on the aspect of affect yields more insights into the L1 functions. At a micro level, the use of the L1 as an affective mediator alleviated Jenny's pressure when encountering that particular mathematics question. At a macro level, allowing the use of L1 created a supportive atmosphere. To establish this, Miss Sitt deliberately built in the use of L1 during peer talks so that students felt less stressful and could first focus on the concept before attending to the language. She also made it clear that she did not expect students to use English entirely considering that English was a new medium of instruction. Her students appreciated the permission of using their L1. They believed that "otherwise, it would be really difficult to adapt [to the sudden shift in medium of instruction (MOI)]" (p.324). Although it may be an overstatement for Tavares (2015) to urge teachers "to hold a firm belief that the use of L1 will have a positive impact on student learning" since he did not provide statistical evidence to quantify the actual learning gains across subjects and levels due to the L1 (p.332), it appears that allowing the use of this L1 affective mediator can to a certain extent help students relieve pressure especially at early stages of using a TL as the MOI in CLIL classrooms.

A question remains as to the actual use of the L1 to create positive affect to mediate students' understanding of complex concepts. Tavares provided no examples, but one can be found when revisiting Lin and Lo (2017). In the latter half of the lesson discussed above, Mr B continued to expand students' conceptual understanding of the functions of proteins by hinting on the prevalent work-out phenomenon in Hong Kong, with which most students would have heard of in daily life.

Table 5

An Excerpt from Lin & Lo (2017, p.36)	
1. Mr B:	Muscles, exactly, muscles. So people who want to build their body, they actually have to take in extra protein, like kind of, er, like milk powder.有無見過呀? (Have you seen that?) 嗰啲,嗰啲,食嗰啲補充劑. (Those, those, eat those supplements.) 有無呀? (Have you?) (…) (a student's name), you have the potential. [Ss laugh] Can you show us your muscles?
2. S6:	我無呀(I don't (have any muscle)) (…)

That Mr B used the L1 to involve students in developing scientific knowledge created rapport. Rapport is a form of attending to emotions and can build confidence (Mahn & John-Steiner, 2002, p.49). Before these verbal exchanges, students were still puzzled with the concepts of proteins, as evident by their pauses and hesitations when being asked questions by Mr B (p.36). Only when Mr B shifted to the L1 and created a humorous atmosphere as in this example, students laughed and had their stress relieved. More importantly, this "aha!" moment and their laughter implied that they now had a clearer idea of the actual daily use of proteins. Having

their scientific repertoire expanded and extended to everyday situations is part of learning (as regards the second CLIL principle: learn academic concepts). Only after having grasped concepts could students subsequently translate their content knowledge into the TL. Put differently, learning was aided by the positive classroom atmosphere, and the atmosphere was established by using the L1 for "getting personal [with students]" - a tactic that aids CLIL learning (Lemke, 1990).

The above three examples show that the L1 as an affective mediator can not only reduce language anxiety but also create affect. Normalized or positive emotionality enables one to engage in "externalization", that is, to be able to translate challenging task ideas or abstract thoughts in one's mind into a manageable form with the mediation of a cultural artefact - in this case, the L1 (Imai, 2010). Such an affective mechanism applies to both CLIL and TBLT classrooms, with slight differences. The creation of an emotional tone may be on the classroom level in CLIL classrooms, and on the student level in TBLT classrooms. Also, in task-based instruction, positive affect is often created in off-task talk when students are over-extending the topic to discuss something personal yet irrelevant to the task (e.g. Leeming, 2011). In fact, similar situations may arise in CLIL classrooms, if the teacher is building affect for the sake of, for example, simply getting personal. Put differently, while the L1 has the potential for mediating affect, be it negative or positive, this function may not necessarily promote but hinder learning. Whether the effect generated by the use of the L1 is conducive to TL learning largely depends on the ways teachers use the L1 in their own classrooms.

Interactional mediator

This section portrays L1 as an interactional mediator. The word "interactional" is chosen over "interpersonal" because the latter implies a dichotomy between interpersonal and intrapersonal (affect/cognition) or the mind-body dualism which Vygotsky (1978) argued against. Indeed, interaction enables intersubjectivity, an area within which interlocutors experience affective or cognitive transactions (Wertsch, 1985). For instance, in Mr B-led interaction (Tavares, 2015), all the use of the L1 Cantonese cultural-specific examples created "an emotional intersubjectivity". Within that, Mr B and his students were "feeling in common", allowing Mr B to mediate his students' emotions and cognition. Cognition, affect and interaction interlocked.

This notion that learning happens through intersubjectivity encounters are linked to two constructs about interaction, namely, zone of proximal development (ZPD) and scaffolding. These two will be presented below, followed by an illustration of how the L1 serves as an international mediator with two examples: one concerns peer scaffolding in a TBLT classroom and another regards teacher scaffolding in a CLIL classroom.

Originated from Vygotsky (1978), ZPD is "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p.86). ZPD is not simply a place but an activity during which an individual can achieve through mediation rather than working alone (Swain et al., 2015). Such an activity may take two forms: learner-learner interactions in pairs or groups, for instance Jason and his peers talked in L1 English to collaboratively work out the target Spanish word (Fernández Dodao, 2014); and, teacher-led interactions, for example Mr B used L1 to quote a shared experience to

extend students' conceptual thematic pattern about proteins (Tavares, 2015). During these ZPDs, affect and cognition formed a unified whole to mediate and subsequently drove learning.

An associated construct is scaffolding, a process that enables a novice to perform a task, solve a problem or achieve a goal which would otherwise exceed his own competence (Wood, Bruner & Ross, 1976). Scaffolding can occur between teacher-and-student or student-and-student, as long as there exists an inter-mental zone (ZPD) in which one scaffolds another leading to incremental improvements of the original state. Scaffolds can be tangible resources, gestures, or verbal interaction. It is the last form, particularly the L1, that this paper is focuses on. As Swain et al. (2015) suggested, ZPD and scaffolding support each other conceptually and syntactically. Thus, no distinction is made below.

The use of L1 for peer scaffolding during the ZPD often happens in TBLT classrooms. It is probably because tasks are designed to be slightly beyond an individual's unassisted efforts so that there exist communicative needs and purposes between individuals in groups, that is, to collaborate efforts to achieve the assigned goal. Therefore, studies on TBLT classrooms framed within sociocultural theory often zoom into learner-learner interactions for analysis. An example comes from Fernández Dodao (2014).

While working on the collaborative writing task, a group of students of same intermediate proficiency of TL, Spanish, encountered a lexical problem and could only use their L1, English, to scaffold entry into Spanish:

Table 6

An Excerpt from Fernández Dodao (2014, p.508)	
1.Pat:	um … cómo se dice take the train?
	(how do you say take the train?)
2.Alice:	andar en tren?
	(to walk by train?)
3.Chris:	Toma
	(he takes)
4.Pat:	Toma
	(he takes)
5.Pat:	to:maron un … un tren
	(they took a train)

The entire interaction here was initiated by Pat's use of L1. Alice's answer was modelled on the English phrase take the train and got the noun correct. Chris changed the verb but its form was not appropriate for describing the past events that happened in the pictures. In this way, the learners co-created a ZPD during which the three students scaffolded each other. Building on the noun and verb provided by her peers, Pat was able to generate the correct phrase. She even conjugated the verb, demonstrating her understanding of the grammatical rules behind. Evidently, learning (the first TBLT principle: construe messages) was achieved among these same-level learners. Put this consideration of TL language proficiency forth, the use of the L1 interactional mediator helped transcend the traditional definition of novice-expert relationship in peer scaffolding. With a certain amount of L1, even same-level learners can, as a group, achieve a performance level beyond each individual learner's competence level - a finding also corroborated in previous studies in the sociocultural line of research (e.g. Storch & Aldosari, 2010).

While this study did not aim to investigate the role of L1 but the influence of number of participants on group interactions, this notion of grouping leads to a potential question as to whether there is a correlation between the L1 use and number of participants. Fernández Dodao (2014) suggested, from a sociocultural perspective, that the more participants, the more linguistic resources to be shared in the group since no two individuals share the same strengths and knowledge (p.514). Applying this claim to the above example may explain why the students of the same intermediate Spanish proficiency could still construe their messages entirely in Spanish with only three English words (but not more) as the trigger. It may not be that the three L1 words were sufficient alone, but that the three people (compared to two) pooled more individual knowledge together. In other words, one has reason to believe that although same-level peer scaffolding may still hold, the amount of L1 for negotiating language may increase as the number of participants decreases.

While most research on TBLT classes focus on peer interactions, studies on CLIL classes (e.g. Milne & Garcia, 2008) often focus primarily on teacher-student interactions. Although those studies seldom reason their partial research focus, one plausible explanation is that the typical challenges in CLIL classrooms are related to academic aspects of language and knowledge. To draw on multiple resources in the communicative repertoires (L1 everyday/ L1 academic/ L2 academic) easily exceeds student's cognitive and affective capacities. Thus, resolutions to these require assistance from a more capable other, and that person is often the teacher in the classroom. Interestingly, CLIL teachers often use one typical means to bridge the knowledge gap between every day and academic knowledge: the L1 (e.g. Lin, 2015). Teacher scaffolding with using this interactional mediator is therefore well-documented. Another episode from Tavares (2015) may exemplify this:

Table 7

An Excerpt from Tavares (2015, p.331)	
1. Teacher:	…replace Tangent θ by 2. Look at the board. replace Tangent θ by 2. *[writing 'replace by' on the blackboard and repeating the phrase]* *[looking at the class]* replace by 代替咗佢 (replace by), okay?
2. Teacher:	What about the second way? *[pausing for 2 seconds]* For this second way, what have they done here, Alice?
3. Alice:	At first he use the Sine θ over Cosine θ … err … equals Tangent θ
4. Teacher:	And then?
5. Alice:	And then … err … *[Alice's gestures suggesting uncertainty]*
6. Alice:	6 S3: That means change the Tangent θ equals Sino θ over Cosine θ
7. Teacher:	7 T: What happens on the third line?
8. Alice:	*[open-mouthed, remaining silent, looking at the teacher]*
9. Teacher:	The third line. Alternative solution. The third line. What have they done here?
10. Alice:	*[looking back at her book]* Err … he put the Cosine θ on the right. *[gestures to the right]*
11. Teacher:	Right! Put the Cosine θ on the right hand side. It becomes like that. How about the fourth line? What have they done?

12. Alice:	Err…Put the…Because Cosine θ equals 2.5 metre, so the 2.5 metre… *[inaudible] [her hand gesture suggesting that she was trying to come up with the word]*
13. Teacher:	to replace the…
14. Alice:	to replace the Sine θ
15. Teacher:	Very good! Okay? Now, therefore, afterwards …

Here the use of L1 served as a linguistic scaffold, foregrounding subsequent learning of academic language and higher-order concepts. In that lesson, being able to operate replacement in trigonometric questions was the major teaching objective. To ensure students understand the meaning of replacement, Miss Sitt provided parallel translation to the target verb replace with its Cantonese equivalence. This linguistic scaffolding was essential in that this activated Alice's subsequent higher-order thinking (turn 3) and formation of more academic English syntax with using replace (turn 14). Although by the end of the interaction, Alice could provide only partial explanations to the mathematics question, her language was more sophisticated moving towards the mathematics register. Seemingly, learning (both CLIL principles: learn academic language and concepts) was in progress, thanks to the ZPD enacted by Miss Sitt with using a tiny amount of L1 to scaffold Alice through the internalization of the academic vocabulary.

This example leads to questions as regards when and how much teachers should use the L1 interactional mediator in teacher-led interactions. Miss Sitt offered some ideas in her stimulated recall (p.327). She deliberately controlled herself to be using a little L1 only "at the beginning of class" when introducing concepts that students may have encountered in other subjects in L1. The "beginning" refers to the "initiation stage" in the three-move teacher-initiated Initiation-Response-Follow-up (IRF) model commonly found in CLIL lessons (for a discussion on the IRF model, see Sinclair & Coulthard, 1975). One may doubt if this is the best time to use the L1 - a question which has yet been answered in any quantitative or qualitative studies. However, Miss Sitt's teaching philosophy is worth mention here: "TL language use is the focus of output", and the use of L1 is only for eliciting students' prior knowledge foregrounding the progressive input in the TL (p.328). Largely what she was suggesting was that while the use of L1 can initiate and scaffold interaction, this interactional mediator is solely the means and should not be the ends in TL learning. As Lo (2015) suggested, there is no one-size-fits-all when it comes to the time and amount of L1 use. Whether it is used in initial or middle stages does not matter, as long as input in the TL increase gradually. After all, being able to operate concepts in the TL is the key learning objective in CLIL classrooms.

Although the two distinct forms of scaffolding in the above examples (TBLT: peer scaffolding; CLIL: teacher scaffolding) disallows a direct comparison between the two pedagogical approaches in terms of the use of L1 as an international mediator, the two examples point to one commonality. The concern ought not solely on the L1 per se, but the influence on this interactional mediating quality from factors in relation to the interlocutors (either peers or teachers) who are engaged in scaffolding during the ZPD. In task-based interactions, the level of language proficiency and number of participants may determine the amount and effectiveness of the L1 use. In CLIL teacher-led instructions, the strategic planning of the interactions and teacher's beliefs may impact the use and usefulness of the L1. Put differently, whether this L1 interactional mediator can realize its full potentials depends on variables in real practice. If used strategically, even a small amount of L1 can enact unexpectedly effective scaffolding functions during one's ZPD.

Conclusion

From a sociocultural perspective, L1 serves as a cognitive, affective and interactional mediator in TL learning as illustrated in the above examples from TBLT and CLIL classrooms. The sociocultural lens allows us to redress the use of L1 not merely as an easier route to take but more importantly as a means for students and teachers to mediate language and thought, vent emotions and perform scaffolding in face of cognitively/emotionally challenging tasks, complex academic languages and abstract concepts.

These tradic dimensions are not as segmented as the way they are presented above. Rather, they interact and enhance each other to amplify the mediating function of L1 to the fullest than any one of them alone. As discussed above, in Lin and Lo (2017), Mr B used translanguaging as a pedagogical approach to scaffold students' understanding of the protein properties. This activity also established an emotional intersubjectivity, during which students had their emotional attachment aroused by the use of the cultural specific Chinese examples. Eventually, students moved through the ZPD and appropriated the scientific concepts. In other words, learning was achieved only through combining the cognitive, affective and interactional functions of L1. This multidimensional way of thinking may be captured as follows:
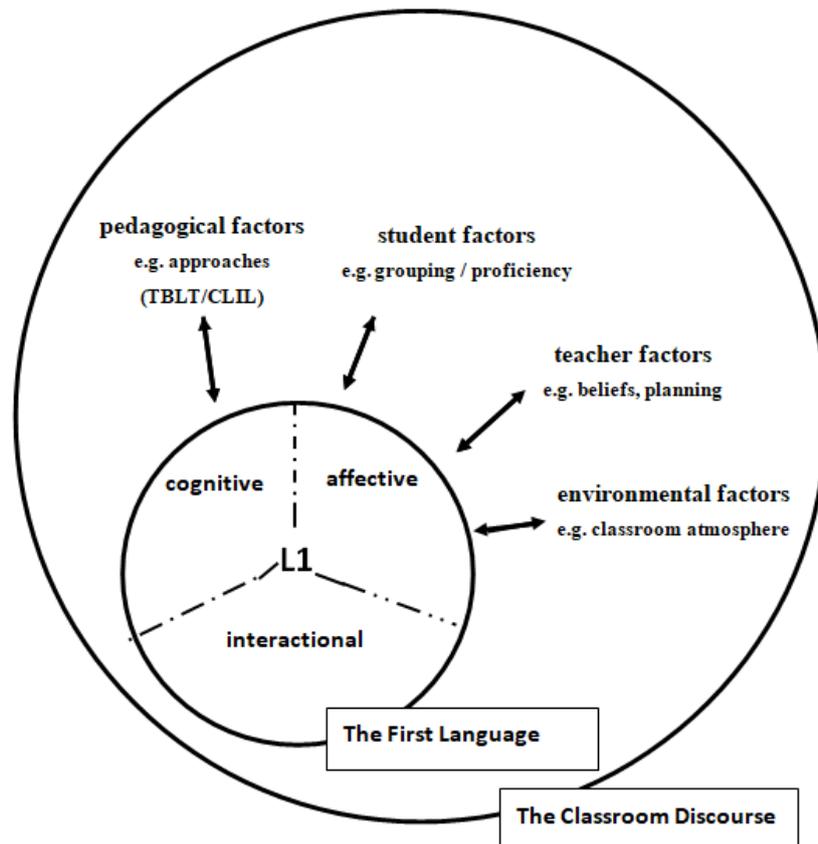

Figure 1. Conceptualization of the L1 as a mediational tool in the classroom

The role of the L1 needs to be considered in relation to a wider classroom context. A range of factors can determine, or in some cases pre-determine, the effects and effectiveness of the L1 as a mediational tool. These include teacher's beliefs, students' levels and features of pedagogical approaches. These factors may interact with the L1, as we have seen in Tavares's (2015) example that the L1 use changed the classroom atmosphere, mediating students cognitive and affective pressure during the new shift in MOI. In some cases, the use of L1 may

cause negative consequences, for example too much L1 may hamper the development of TL fluency in TBLT classrooms, leading to teachers' stigmatization of the L1 use or students' guilt when lapsing into their L1. While such bidirectional relationship between L1 and other factors appears intricate, this has remained an underexplored area to date.

Although focusing the discussion exclusively on L1, my intention is not to dichotomize L1 and TL but to identity a tool conducive to language learning. Learning a new language needs not be unlearning an existing language. Li's (2017) argument merits attention:
The actual purpose of learning new languages - to become bilingual and multilingual rather than to replace the learner's L1 to become another monolingual - often gets forgotten or neglected, and the bilingual, rather than monolingual, speaker is rarely used as the model for teaching and learning (p.8)

The intimate relationship between L1 and TL should therefore be acknowledged. Indeed, if the teacher and students can appropriately interweave the two together, L1 can yield many benefits in the language learning process. I end by hoping that the mediating value of L1 on TL learning at cognitive, affective and interactional levels discussed above respond to this call appropriately, providing teachers an integrated lens to recognize the facilitative role that L1 can play toward real multilingual language learning in classrooms.

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