

科技部補助專題研究計畫報告

國民中學學科與語言整合學習教師的教學策略與觀點

報告類別：成果報告
計畫類別：個別型計畫
計畫編號：MOST 109-2410-H-003-118-
執行期間：109年08月01日至110年07月31日
執行單位：國立臺灣師範大學英語學系（所）

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本研究具有政策應用參考價值：否 是，建議提供機關教育部
(勾選「是」者，請列舉建議可提供施政參考之業務主管機關)
本研究具影響公共利益之重大發現：否 是

中華民國 110 年 08 月 30 日

中文摘要：當高等教育日漸走向國際化時，學科與語言整合學習也被受重視。即使此教學法在高教的框架下已被廣泛的研究，學科與語言整合教學至今尚未被國內初等與中等教育系統廣泛的應用及研究。本計畫探討台南市許多成功實行多年的國中來了解教師如何運用教學策略與其觀點來看待學科與語言整合教學。我藉由現象分析法來分析質性的資料，並且運用觀課與分組訪談來收集相關的資料。研究結果提供教育體系及政府機關更多的教育方針，以便在未來語言政策的制定與實行上能有更多的參考。當台灣正走上雙語教育系統的同時，國中教師的教學與觀點將會提供未來更多的教師有用的資訊。

中文關鍵詞：學科與語言整合教學
國民中學
應用語言學
雙語教育
第二語言習得

英文摘要：With the internationalization of higher education these days, Content and Language Integrated Learning (CLIL) has become a popular instructional method to enhance language learners' content and language development. While studies on CLIL can be found in the literature based on the tertiary setting globally, an examination of the literature reveals that less attention has been paid to other educational settings such as elementary and high schools. This study thus intends to broaden our views on how CLIL is implemented in several successful programs in Tainan City, Taiwan where it is famous for its CLIL based on teachers' perspectives and their strategy use in the junior high classroom. Focus group semi-structured interviews and audio-recorded classroom observations were conducted to unravel their teaching trajectory and experience after years of implementation in junior high school. Phenomenology was used to analyze the data for the themes to emerge predicated on the participants' theory and practice underpinning their teaching of CLIL. Our findings reveal CLIL is conceptualized and underpinned based on teachers' bilingual adaptation, students' background knowledge correlation and both of their L1 application for effective instruction. The results have a multitude of pedagogical implications that can be used as a reference to guide more CLIL teachers in the future in today's globalized world.

英文關鍵詞：CLIL

Junior high school

Applied linguistics Bilingual education Teaching trajectory

Second language acquisition

How to make Content and Language Integrated Learning (CLIL) more effective? Instructors' strategy use in junior high school

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With the internationalization of higher education these days, Content and Language Integrated Learning (CLIL) has become a popular instructional method to enhance language learners' content and language development. While studies on CLIL can be found in the literature based on the tertiary setting globally, an examination of the literature reveals that less attention has been paid to other educational settings such as elementary and high schools. This study thus intends to broaden our views on how CLIL is implemented in several successful programs in Tainan City, Taiwan where it is famous for its CLIL based on teachers' perspectives and their strategy use in the junior high classroom. Focus group semi-structured interviews and audio-recorded classroom observations were conducted to unravel their teaching trajectory and experience after years of implementation in junior high school. Phenomenology was used to analyze the data for the themes to emerge predicated on the participants' theory and practice underpinning their teaching of CLIL. Our findings reveal CLIL is conceptualized and underpinned based on teachers' bilingual adaptation, students' background knowledge correlation and both of their L1 application for effective instruction. The results have a multitude of pedagogical implications that can be used as a reference to guide more CLIL teachers in the future in today's globalized world.

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Defining CLIL

CLIL refers to the contexts in which language is used as a medium for learning content, and the content is used as a resource for learning that language. As we have discussed earlier, while EMI and CLIL are similar with regard to their central principles, some scholars have opined the differences between these two while EMI uses English to carry out any purpose for content to be taught, CLIL somehow places more emphasis on the combination of content and language for both of them to be learned at the same time (see Coyle, 2005; Shohamy, 2006 for more discussion). Given the dual focus of content and language based on the current EFL context in Taiwan, this proposed project will use CLIL as a framework to explore junior high school teachers' strategy use and perspective on their CLIL practice.

To ensure its effectiveness, government officials have surveyed the practice of CLIL since 2001 in several European countries and it was found that both parents and students think CLIL is beneficial when it comes to promoting multilingualism from students' effort to learn foreign languages for their future endeavors (98%). In addition, CLIL was also discovered to boost one's motivation to learn at least two foreign languages in many European contexts. English was found as one of the most important languages in the context of CLIL from a survey conducted by the EU in 2012. The trend of CLIL has also spread to other countries to further stimulate more policy reforms and initiatives, thus creating many models that indicate the similarity and difference of the original CLIL framework for content and language to be learned at the same time (Lo & Jeong, 2018). For the past decade, the trend of CLIL has also spread to Asia in which the popularity of English learning has reached its peak. We will hence focus our objective on language education and unravel how CLIL can be a rich and self-sustaining framework in applied linguistics and TESOL.

Based on the dual focus approach that CLIL entails, it has been utilized in various ways in school since the 1990s even though teaching and learning an L2 was not the aim at that time (Coyle, 2007). Since the instruction of learning content through an L2 could be found in many multilingual communities before CLIL became popular, the new insight that CLIL brought to us includes a multidimensional approach that links different goals and objectives from the same theoretical framework. As Coyle, Holmes and King (2009) have propounded, CLIL consists of

four crucial dimensions, making it different from other approaches. The 4C framework has been proposed by them to highlight the centrality of CLIL in the field:

1. To integrate content from across the curriculum through high quality language interaction (content)
2. To engage learners through creativity, high order thinking, and knowledge processing (cognition)
3. To use language to learn and mediate ideas, thoughts and values (communication)
4. To interpret and understand the significance of content and language and their contribution to identity and citizenship (culture)

(Coyle, Holmes and King, 2009; p.12)

Theoretical underpinnings of CLIL

Furthermore, CLIL as an instructional method has also been considered compatible with a few theoretical frameworks in applied linguistics and TESOL. For starters, the Monitor Model proposed by Krashen (1985) in which L2 learners constantly monitor the L2 input during the process of its acquisition, the Interaction Hypothesis Model proposed by Coyle (2005) in which L2 learners benefit from the linguistic interaction during the process of their L2 input and output, Focus on Form Model proposed by Doughty and Williams (1998) where learners are directed to more attention on the grammatical form of an L2 for effective communication, and the Models of Basic Interpersonal Communication Skills (BICS) as well as Cognitive Academic Language Proficiency (CALP) proposed by Cummins (2003) based on L2 learners' language use and development. Among the models used to conceptualize CLIL, the salience of appropriate comprehensible input is stressed for effective L2 acquisition in a natural context in which that L2 is acquired. These proposed theoretical assumptions underlie the theoretical foundation of CLIL in which both learners' BICS and CALP are essential during learners' learning trajectory for content and language to be learned seamlessly. During this process, the CLIL approach can not merely integrate both content and form, but also scaffold learners' interlanguage competence (Coyle, 2005). As research has indicated, this induces L2 learners ample opportunities to reflect and digest their L2 comprehension, awareness and productive mechanisms to negotiate content knowledge more cognitively (Coyle, Holmes & King, 2009). These theoretical underpinnings have established CLIL as a sound theoretical construct in applied linguistics and TESOL, making

it a fertile ground of research for the past decade. We will, therefore, direct our attention to the recent literature on CLIL in the field for more discussion.

Coyle et al., (2010) indicated that while CLIL has complementary value based on the dual focus of its nature, several challenges remain as to how to enable learners to make judicious decisions of both areas in and out of the classroom. Many classrooms are, therefore, found to rely too much on either content or language that renders the proposed CLIL framework uneven for both teachers and learners. The authors suggest that instructors are advised to be made aware of learners' background knowledge of both content and language for instruction to be more effective in the future. This work provides us, teacher educators, more ideas on how to make our CLIL more balanced so learners' BICS and CALP can be developed more holistically. Heras and Lasagabaster (2015) explored the bilingual vocational secondary education in the Netherlands, and the data show that CLIL teachers, students, and school administrators motivational change both positively and negatively. That is, the opportunities offered from CLIL have given them higher vocational language proficiency and vocational literacy in their respective fields; however, this experience can also be challenging during the process of learning and instruction, making CLIL less motivating at the beginning for students to understand its nature. The authors hence call for more awareness of CLIL instructors to know the learning trajectory of L2 learners to make teaching and learning more engaging and motivating so the CLIL experience can be more positive as a result. In the context of Asia, CLIL has not always viewed positively as March et al., (2000) have pointed out that learners' content learning seemed to be lacking compared with language in Hong Kong. Despite English is considered a privileged language in Hong Kong, students' subject knowledge such as Math, Geography, History and Sciences was discovered to be weak coupled with their low learning motivation. These studies showcase that many CLIL teachers are not properly trained with low English proficiency who could not deliver content classes effectively in which English is not used as a language off school. This phenomenon has led to the oversimplification of the content materials used in class that may undermine the proposed CLIL framework that should nurture students' content and language development. The authors further argued that late immersion that CLIL provides may not be as effective as early immersion for L2 learners' content and language proficiency. Dafouz (2011), nevertheless, claimed that the integration of content and language in the classroom can enable

instructors to be more sensible of the salience of language used as a tool from CLIL's dual nature. This instructional approach thus induces teachers to be more aware of their language proficiency before their CLIL instruction. This realization will not only encourage teachers to be more reflective, but also practical to make their teaching more effective and engaging so learners' autonomy can be nurtured during this process. Dalton-Puffer et al., (2010) and Nikula (2010) examined the CLIL contexts in Austria and Finland respectively and found that CLIL teachers' pragmatic use in class was less varied compared with the instruction in their L1. The authors all found that teachers' limited L2 proficiency has restricted their content instruction in various ways, making them deem CLIL less relaxing and full of stress with low teaching motivation. Likewise, as all the authors have indicated, students' participation seemed to decrease in the CLIL setting due to their limited L2 proficiency. This further makes their CLIL instruction less interactive between teachers and learners before they can communicate with each other in their L2 more pragmatically in their daily lives. These studies indicate the challenges of CLIL in some EFL contexts in which English proficiency may not be identical from various educational settings, hence calling for more effort for teachers' L2 to be more mature before CLIL can indeed deliver its original goal both for content and language to be merged.

The effects of CLIL for EFL learners

Recent literature in applied linguistics and TESOL also informs us of the effect of CLIL on EFL learners' language learning. Aguilar and Rodriguez (2012) investigated EFL learners' experience of CLIL and the data reveal that they were found to deem CLIL positively with regard to their L2 acquisition (vocabulary, listening and speaking). CLIL was also reported as a tool that enables them to enhance the L2 comprehension of their content knowledge effectively. Heras and Lasagabaster (2015) researched EFL learners' learning motivation and found that CLIL can be a factor that mediates their gender difference for their L2 learning. That is, both genders seem to benefit from CLIL when learning English vocabulary from the dual approach that entails both content and language. Catalan and Llach (2017) also reported that EFL learners' L2 vocabulary seemed to improve more from CLIL compared with those who did not learn from CLIL. The authors indicated that the integration of content and language equips learners with more chances to process their L2 more appropriately in the school setting. These studies further reveal how L2

learners internalize an L2 from CLIL that renders their more sophisticated cognitive processing during the process of L2 acquisition. Yang's (2017) inquiry analyzed the relationship between CLIL and EFL learners' learning strategy use, and the findings show that they appeared to excel in metacognitive awareness that contributed to their enhanced language performance from CLIL. This seems to indicate the positive effect of CLIL for EFL learners' language development and awareness that underpin their effective L2 acquisition. Lo and Jeong (2018) explored young EFL learners' L2 writing skills and found that CLIL enhanced their writing performance greatly when it comes to argumentative essays with clearer coherence and accuracy. CLIL appears to provide L2 learners with a more solid foundation for their L2 development when content is incorporated into the curriculum. Forey and Chung's (2019) work showcases physical education teachers' transition to appreciate the role of language for effective communication from CLIL, and this also resulted in students' better L2 writing performance and content exams at the end of the instruction. From the recent literature we discussed, it is clear to witness the benefits of CLIL in the field from various perspectives that underpin L2 learners' effective language acquisition.

The study

From the literature reviewed, it is clear to see that CLIL has become a popular instructional method in the field for the past decade. Research has also been conducted and published with a few issues identified to better our understanding to make it more relevant to our teaching. However, as many scholars have clearly indicated, CLIL is still a relatively new concept in many EFL contexts, especially in Asia since English is not used for daily communication. It is hence challenging for schools at various levels to implement it due to teachers and students' English proficiency for content instruction. From our discussion about Taiwan's CLIL context, we can see that most research seems to be focused on the university setting in which a clear difference of content and language can be found with learners' more mature English proficiency after years of English learning in junior and senior high schools (Yang, 2015; Yang, 2016). Little is known about junior high school teachers' perspectives on CLIL and their actual practice given that CLIL has not been implemented at this level island-wide in Taiwan. However, owing to the new policy of our government in which CLIL should go under the university setting to promote bilingualism educationally, it is time for us to unravel practitioners' view and teaching on CLIL

to serve as a reference for policymakers and school administrators in the near future. This will provide more insight into how teachers at this level can benefit from CLIL that seems to be effective in the university setting as we have discussed earlier. To fill this gap, this study will explore CLIL practitioners in the junior high school setting in Tainan City where many successful CLIL programs are already in place established by the City Government. This will be served as a reference before other cities (schools) can initiate the same (or similar) program in the next few years that has the same teaching objectives. We believe this study will be valuable when CLIL appears to be the trend in Taiwan, yet little seems to be known about how to teach content through English. From our discussion, the research question will hence be:

What instructional strategies do CLIL teachers use to express linguistic meaning appropriately and deliver the course effectively in the junior high school in Taiwan?

Methodology

Context and the participants

For the participants, we recruited 18 in-service teachers of CLIL from Tainan City where it is touted as 1st city in Taiwan to initiate its bilingual education from as early as elementary school (<http://tnetrc.dcs.tn.edu.tw/?cat=34>) where subjects are taught in English in many bilingual programs based on the CLIL framework. Six junior high schools have been targeted in Tainan City that have been using CLIL as part of the curriculum. The recruited teachers from these schools were categorized into 6 groups for our interviews for the proposed research questions under investigation. We conducted weekly classroom observations from fall 2020 until winter 2021 in these six targeted schools (three schools per week for a whole class period from each school; three hours weekly totally; sixty hours in total for one school semester). During this time, the teachers were interviewed and contacted until spring 2021 in Tainan for data analysis. To unravel teachers' detailed teaching practice, qualitative approaches were used for this study to answer the proposed research questions. To unravel their actual teaching practice, we conducted audio-recorded classroom observations for one school semester (4 months). The findings from this were compared with the interview data to unveil the participants' view and practice of CLIL in junior high school that was conducted at the end of our observations when the school ended.

We used focus group interviews to understand the participants' teaching practice. To make our data more comparable, we ensured that the participants were of similar sociocultural, sociohistorical and socioeconomic backgrounds to make the issues under investigation more meaningful from the pre-interview with the potential teachers to know their demographics more clearly.

According to Norton and McKinney (2011), interviews that are framed in a semi-structured manner not merely give researchers more room to explore the researched, but also provide more opportunities for the researchers themselves to reflect on their own practices during the research to capture the participants' view more accurately. The focus group interviews were formed in a semi-structured manner to gauge the participants' practice of CLIL that could be complex yet insightful. This has complemented the data collected from both methods (observations and interviews) to make the overall results more sound at the end.

During the interviews and audio-recorded classroom observations, I kept a researcher journal for all the salient interactions and discourses that the participants had with us. This ensured all the data were recorded and incorporated into our analysis for it to be more complete. We also recorded all the facial expressions and gestures from the participants during the interviews to back up their responses that were recorded for further analysis. My researcher journal was served as a useful tool for us to detail all the verbal and non-verbal clues that underpinned the participants' complex teaching trajectory that could be elusive and transient as research has suggested. This has helped us to be more attuned to the direction that my participants were heading in regard to their experiences that were complicated to explore.

Instrument

As for the interview items used for this study, they have been constructed based on an examination of the literature that we have discussed previously. We utilized the observation tool proposed by Graaff et al., (2007) for secondary CLIL classrooms to gauge teachers' pedagogy and practice. Since this observation tool has several essential indicators that examine secondary CLIL teachers' teaching performance that facilitates EFL learners' language development and proficiency, it is deemed suitable to use it as a guideline to explore Taiwanese CLIL teachers'

practice and strategy to inform future policymaking (Lo, 2019). The observation tool published by Graaff et al., (2007) could hence serve as a good reference for us in Taiwan as she suggested. From the conceptualization propounded by Graaff et al., (2007) of effective CLIL, five broad features containing functional communication, simultaneous attention to form and meaning, and type of corrective feedback underpin the exposure, use and the motivation of content and language learning.

Based on this observation tool, teachers would facilitate exposure to input at a challenging level (A) consisting of *text selection in advance, text adaptation in advance, adaptation of teacher talk in advance, text adaptation during teaching and fine-tuning of teacher talk* (Graaff et al., 2007; p.608). Then, teachers would facilitate meaning-focused processing (B) by *stimulating meaning identification, checking meaning identification, emphasizing correct and relevant identification of meaning, and being able to do exercises on correct and relevant identification of meaning* (Graaff et al., 2007; p.608) when learners' working memory and connecting knowledge are connected for further retrieval. Next, teachers would facilitate form-focused processing (C) by *facilitating noticing of problematic and relevant language forms, giving examples of correct and relevant language forms, explaining problematic and relevant language forms (giving rules), and having students give peer feedback* (Graaff et al., 2007; p.609). This will raise the awareness of both language and content during CLIL. After this process, teachers would facilitate opportunities for output production by (D) *asking for reactions, asking for interaction, letting students communicate, stimulating the use of the target language, giving feedback (focusing on corrected output), and organizing written practice* (Graaff et al., 2007; p.609). According to the authors, this process induces the role of output production that is situated within the output hypothesis proposed by Swain (1995) to facilitate students' pushed output for CLIL to be more effective at the end of their learning. Lastly, teachers would facilitate the use of strategies by (E) *eliciting receptive compensation strategies, productive compensation strategies, reflection on strategy use and scaffolding their effective strategy use* (Graaff et al., 2007; p.610). During this process, teachers can help learners to overcome their content and language comprehension and communication problems by constructing a repertoire of receptive and productive compensatory and communication strategies for CLIL to be implemented.

These five crucial principles are argued by the authors for teaching and learning CLIL to be

effective that further form the basis for our interview items that would be used after our classroom observations to compare and complement the data. Items were adapted from the inventories discussed concerning the participants' language learning strategies, CLIL teaching and learning, and the CLIL practice in many EFL contexts. After two rounds of discussion with two scholars in applied linguistics and TESOL, ten interview items have been finalized. Both scholars' comments and perspectives have been incorporated into the revision to enhance the comprehensibility of the wording and issues under investigation more accurately. Meanwhile, five open-ended questions have been constructed after three rounds of discussion with the same scholars that could be used as a tool for us to know the participants before the interviews took place about their demographics. These questions were sent to the participants via email and returned to us after completion before the interviews for us to fine-tune our semi-structured interviews based on the needs of each participant if needed. From our discussion, more expert validity was gained for item construction that has made our data more meaningful and informative.

For data analysis, phenomenology was used to explore the intricate relationships between the participants' practice of CLIL qualitatively. Phenomenology is a conceptual framework in qualitative research that is utilized to record all the consciousness, emotion, experience, and attention based on the phenomena observed (Liamputtong, 2010). It is also used to explore the social world from its natural themes and occurrences that underpin the participants' perspectives as they emerge in response to the research questions under investigation. Phenomenology has been used by qualitative researchers to unravel the complicated and delicate nature of students' learning trajectories and teaching beliefs in applied linguistics (Pavlenko & Norton, 2007). From the natural phenomena observed during the process, it will thus render more meaningful and in-depth data that quantitative research cannot usually investigate when it comes to exploring teachers' complex teaching trajectories on which this project intends to focus. To paint a clearer picture as to how phenomenology was used to analyze our data, we used the data from the classroom observations to examine the themes from the interview data derived from phenomenology based on the participants' perceived awareness and practice of CLIL from their actual experience. Several broad categories emerged from the phenomena observed before several sub-categories were analyzed after the data were further explored and observed regarding teachers' CLIL practice. Triangulation was achieved to make the "phenomena" identified more

convincing and insightful for data interpretation.

For instance, we classified the participants' teaching experience into different stages (years of teaching CLIL; a broad category) and see what phenomenon could be derived from different times during their teaching careers, and how this might change their perspectives on CLIL in the context of junior high school in Taiwan's EFL education (a small category). Meanwhile, we ensured that the data talked by themselves during this process while we remained objective as qualitative researchers in this study. We transcribed and coded the audio recorded data individually first line by line to allow the phenomena to emerge before they were compared and coded further together. During the dual coding process, disparity was resolved through discussion to reach high inter-coder reliability (Pavlenko & Norton, 2007). We were reflective throughout until the data have reached saturation from our dual coding approach to ensure that all the phenomena either micro (small categories) or macro (broad categories) have been fully identified before we continue with more analyses from the salient issues emerged.

Discussion and conclusion

From the data analyzed, a multitude of phenomena emerged including bilingual adaptation, background knowledge correlation and L1 application.

Bilingual adaptation

From the data analyzed, almost all participants (16 out of 18) reported how they utilized bilingual teaching materials to facilitate and enhance their CLIL instruction from various perspectives. For them, it is of paramount importance to ensure students' understanding from the materials that can be used as a reference in their CLIL classrooms. As the majority of time was spent teaching content areas in English, it became essential for teachers to walk them through the process of learning and understanding the conceptual knowledge in their L2. As one of the teachers illustrated during the interview: Students need help to know what is taught in class in English, so I need to make sure that there is some sort of assistance to let them have a clearer picture in my science class when explaining how to conduct an experiment using different solutions (teacher 2: 11/20/).

To be clear, three other teachers (4, 11 & 14) from different schools shared how they made their

teaching materials including posters and charts in Chinese to give students a good reference when learning the same topic in English during their CLIL instruction. This is served as a bridge to connect students' language gap between Chinese and English for more abstract and conceptual knowledge to be gained. From one of the teachers' experience:

I spent a lot of time making my teaching materials in Chinese so students can have more scaffolding...like learning in a bilingual way so they know how to connect all the dots to make what I teach more meaningful. (Teacher 4: 10/29)

From our class observations, it was clear to see that it was a common practice for more than half of the teachers (7 out of 12) to provide students with bilingual materials in the forms of a poster and chart including illustration and translation before the instruction. For example, the Biology class we observed in December, 2020 was deemed interesting and effective when the teacher posted several clear and colorful bilingual posters on the blackboard showing the factors of photosynthesis to enhance students' comprehension. Students were found to learn more effectively from these teaching aids from their reactions at the end of the instruction that ended with a round of discussion for the teacher to gauge students' understanding. As the teacher opined during the interview: It has worked for us when we spent lots of time thinking how to make what we teach based on students' language need...so it is important to sort of use our teaching aids to make learning more effective (Teacher 17: 12/3).

From the data analyzed, it is crucial for these teachers to make CLIL more "bilingual" by utilizing students' existing conceptual and language knowledge. This was found from the teaching aids and materials used in class to give students a clear guidance and reference on which they could base during the learning process. This bilingual adaption was propounded in Catalan and Llach's (2017) investigation in which learners' bilingual awareness contributed to their eventual and effective CLIL development in an EFL context, making it salient for teachers know the importance of students' bilingualism that can be commonly seen in today's global world. Similar to what Coyle (2010), Heras and Lasagabaster (2015) and Lo and Jeong (2018) have illustrated, EFL learners' bilingual capability should be taken into account when designing CLIL teaching materials as they bridge the gap between current and future goals both linguistically and conceptually for language and content to be integrated more coherently. This

was further identified in our context where little has been known to date given that CLIL has not been implemented fully in Taiwan.

Background knowledge correlation

From our data analyses, it is clear to find that approximately three quarters of the teachers (14 out of 18) tapped into students' existing background knowledge during their CLIL instruction. Doing so appears to enhance their learning development who grew up speaking Chinese and learning English in schools to somehow correlate the target content area in English. As Teacher 12 clearly explained during the interview:

I usually have a need analysis before class, sort of like a language teacher, to know where they are at because it is important for me to know if their background knowledge can be used to teach better from my Earth Sciences class. (Teacher 12: 10/2)

Specifically, when asked how to measure and use students' background knowledge for effective CLIL instruction, half of the teachers (9 out of 18) reported that they would have an one-on-one interview with every student before the instruction to have a clearer picture as to what they have learned before in elementary school. This is also a common practice encouraged by the schools for these teachers to know their students' previous learning progress. For instance, Teacher 8 shared with us her teaching experience by illustrating that: My school kind of asks us to talk to the students first before they take my class so it will be easier for me to design my lesson plans based on what they have known and what they don't at this point...which I think is very necessary and essential as an effective CLIL teacher (11/11). For these pre-instruction interviews to be more effective, almost all of the teachers (16 out of 18) opined that they would use Chinese to communicate with their potential students to ensure that they could explain what they have learned before from different elementary schools. This seems to lessen the burden for students to debrief their individual learning trajectory that can sometimes be conceptually challenging in junior high school when they know what CLIL will be the norm in the future. As Teacher 10 shared during the interview:

I always speak Chinese to interview my students and know their learning progress like what do you know so far about the water cycles with all the relevant details...and surprisingly, many of them don't know how to explain this in Chinese even though they have learned about the same thing in elementary school. It just shows how much we have to do as a Sciences teacher (10/24).

From our class observations, we found that although these teachers said to know students' background knowledge before instruction from the pre-instruction interviews, many students appeared to need more time to process and digest the content areas from half of the classes we observed (Biology, Earth Sciences, History, Math and Health Education). It was obvious that many students still need language support when learning new conceptual knowledge in English that they do not use after class from Taiwan's educational system on which Chinese is based for instruction. Students' perplexed looks and questions raised in class were clear evidence for which teachers might need more scaffolding to tap into their actual background conceptual knowledge. Similar to what Teacher 14 illustrated: We know it's still a long way to go since students are still young and unable to explain what they have learned clearly from our pre-instruction interviews. So we are constantly updating our teaching to better suit their needs as we teach (12/11).

From the data analyzed, it appears that these teachers are aware of the salience of students' background knowledge for future target content to be correlated during the instruction. They have also been encouraged to tap into students' prior background knowledge for CLIL to be more effective. However, due to students' age and cognitively development in junior high school, it has not been easy for their teachers to measure their existing background knowledge for it to be used as an indicator for future teaching. Although the majority of them reported that they have measured students' background knowledge in Chinese to make it less cognitively challenging, our class observations still indicated that many students still need support in regard to content and language during the instruction. This finding is similar to what Dafouz (2011) and Forey and Cheung (2019) claimed that background knowledge is vital to CLIL learners' conceptual and linguistic development as it engages them through creativity, high order thinking, and knowledge processing from various ways, rendering a more coherent integration of content and language as a result. Nevertheless, the cognitive challenge that comes along given students'

young age deserves teachers' more standardized measurement to ease the tension of their learning gaps before CLIL is implemented more effectively. As Yang (2016) and (2017) have clearly indicated, more substantial and systematic measurement will benefit teachers when it comes to gauging students' background knowledge before the instruction, and transitioning them for CLIL with ease.

L1 application

The other essential theme that emerged during our data analysis is how students' L1 was deemed and utilized as an assisting tool by these teachers. Based on our interview data, it is clear to find that they regard students' L1 as an asset that should be emphasized and valued in an effective CLIL learning context. That is, more than three quarters of these teachers (14 out of 18) opined that they used students' L1 for meaning identification before their L2 was used for instruction, making it simpler for teaching and learning to take place. From their teaching experience, students' L1 can not only be applied in a classroom setting, but also ensure other relevant identifications of meaning. As Teacher 2 illustrated during the interview: I use my students' L1 constantly in class to make sure that they can follow me or they would be lost on many occasions...to put it simply, I would translate and explain some abstract concepts after teaching in English, their L2, first to make it easier for them to understand the whole picture (11/20). The other concrete example shared by Teacher 10 entailed how students' L1 was encouraged during the instruction for question raising and discussion as follows:

I always encourage my students to ask me questions both in class and off class in their L1 so they won't be afraid to reach out, and I think it works for us because they know they are allowed to use it as a tool to learn and understand all the ideas and thoughts in my Health Education class that has a lot of new terms and points. (interview: 10/23)

Likewise, Teacher 18 shared with us from her History class in which many instances occurred when she had to switch back and forth between students' L1 and L2 to enhance their learning trajectory, rendering it more likely for new concepts to be instilled in her CLIL class.

I mean, from my experience, it's essential for me to use students' L1 to teach a lot of events that happened in history...both western and eastern because a lot of my students have learned about them in their L1 so I had to make sure that there's a bridge for them to know what I was talking about for my class to be effective. It just doesn't work if I only spoke their L2 the whole time for more confusion. (interview: 11/13)

Additionally, students' L1 was utilized as a key to stimulating and exemplifying their interaction and peer feedback to make learning more student-centered. From more than half of the teachers' experience, it is clear to find that students seem to be more willing to share and participate during the instruction in their L1. This thus made it necessary and vital for them to cultivate students' willingness to communicate for content instruction as part of the class activities. As Teacher 1 reported from the interview: I found that students prefer to talk and discuss with one another in their L1 since it's more familiar and natural...they would be silent if I asked them to talk to each other in their L2 as they are not confident of their L2 for communication (11/12).

Meanwhile, L1 was used by Teacher 15 in her Biology class to elicit students' receptive and productive comprehension that can be challenging to assess.

I need to make sure that students know what they have learned in L2 when L1 is used for assistance...so L1 can be used during this time both for understanding and assessment when they need to explain what they have learned and understood in L1 as a comprehension check (interview: 11/11).

From our class observations, all of the teachers used students' L1 for various purposes such as comprehension checks, ice breakers and assessments to ensure their learning results. It was a common practice for these teachers to resort to students' L1 on several occasions in class to shorten the distance to make the instruction more student friendly. Similar to what they shared during the interviews, students' L1 was served as a tool to establish a bond to empower students' CLIL experience with more ownership when they were entitled to use the language that they were familiar with in a more holistic manner, which L2 would not be possible given their age. According to Teacher 4 during the interview: Students feel more at ease and comfortable to talk

about what they have learned in class in their L1...from my experience, it is because of the fact that they are encouraged and therefore allowed to use their own language when they are given the right to do so (10/13).

From the data gleaned, it is apparent that teachers indeed value the importance of L1 in regard to how it can be applied and further utilized to empower students' CLIL experience and development. This liberal mindset in which L1 is welcome and even encouraged seems to be different from what Liamputtong (2010) and Norton and McKinney (2011) indicated that L1 is usually viewed from a more negative perspective for many foreign language classrooms for teachers to provide students with more L2 input for effective language acquisition. However, this study, although conducted in Taiwan's English learning context, still sheds light on the differentiation between foreign language learning and CLIL in which content learning is also vital for learning to take shape. Similar to what Catalán and Llach (2017) propounded, CLIL sets itself apart from language learning in that students' cognitive development needs to be ready for more conceptually demanding content areas to be learned. In other words, their L1 should be valued and treasured to mirror their content learning from L1 to L2. This not only enhances their meaning identification between these two languages, but also ensures that they are stimulated and encouraged to tap into their own existing language repertoire for CLIL to be more holistic (Shohamy, 2006 & Yang, 2015).

As the data reveal, students' receptive and productive comprehension of CLIL were strengthened when their L1 was appreciated and empowered for effective communication (Coyle, 2005). Teachers were also found to utilize various measurements based on students' L1 to ensure their learning progress such as comprehension checks, ice breakers and assessments. The process of giving them such as entitlement and ownership has shaped their more positive learning attitude for CLIL that for their willingness to communicate in their L1 for content discussion and question raising that is difficult in Taiwan's learning context in which silence appears to be the norm in a junior high school context. As Pavlenko and Norton (2007) pointed out, students are more willing to reciprocate when teachers are aware of their identity construction in a language classroom. This process of giving them the entitlement of owning and using their L1 for effective CLIL encourages them to value the reality of multilingualism and multiculturalism that are

common in today's globalized world, hence facilitating their learning trajectory in a more diverse perspective in which not just one single language is used for effective content learning (Lo & Jeong, 2018).

Our findings concord with what Coyle et al. (2009) indicated in which content, cognition, communication and culture underpin the centrality of effective CLIL. The teachers were found to integrate the curriculum based on students' bilingual need for content to be delivered with ease, which highlights their awareness to stimulate students' high order thinking and knowledge processing using their background knowledge into which their cognitive pool is tapped. During this time, teachers' use and encouragement of students' L1 has enabled meaning identification and mediation to empower the value of their own local language and culture for effective communication for class discussion and question raising, thus reconstructing their role and identity as effective CLIL learners who are entitled to use their individualized language repertoire as global citizens in which multilingualism and multiculturalism are valued.

To conclude, we used teachers' instructional strategies for effective teaching along with our class observations to validate how CLIL is conceptualized from these schools where they are touted as the trend setters in Taiwan. Meanwhile, it is important to acknowledge the limitations that future research should resolve including the amount of time and students' learning progress as well as their experience that can make the whole picture more complete from their voice. We, thus, call for more investigations to address these issues and hope that this study serves as a starting point to instigate more awareness given the complexity and multiplicity that CLIL entails.

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Appendices

Interview items

1. How do you select and adapt text in advance and during teaching?
2. How do you adapt and fine-tune your teaching before and after class?
3. How do you stimulate and ensure meaning identification during teaching?
4. How do you emphasize and exercise correct and relevant identifications of meaning during teaching?
5. How do you facilitate and exemplify noticing of correct and incorrect language forms?
6. How do you correct, explain and stimulate peer feedback during teaching?
7. How do you ask for reaction and interaction for effective communication during teaching?
8. How do you stimulate the use of L2 by focusing on corrected output?
9. How do you elicit receptive and productive compensation strategies during teaching?
10. How do you elicit reflection and scaffolding of strategy use?

Open-ended questions before the interviews

1. What are your educational background and experience of learning English in Taiwan?
2. What is or how has your experience of teaching CLIL been in Taiwan's EFL context?
3. What are your school's attitude and approach to CLIL?
4. What are parents and students' attitude and approach to CLIL in your school?
5. What is your general strategy use of CLIL before, during and after teaching?

109年度專題研究計畫成果彙整表

計畫主持人：孔繁偉		計畫編號：109-2410-H-003-118-			
計畫名稱：國民中學學科與語言整合學習教師的教學策略與觀點					
成果項目		量化	單位	質化 (說明：各成果項目請附佐證資料或細項說明，如期刊名稱、年份、卷期、起訖頁數、證號...等)	
國內	學術性論文	期刊論文	0	篇	
		研討會論文	0		
		專書	0	本	
		專書論文	0	章	
		技術報告	0	篇	
		其他	0	篇	
國外	學術性論文	期刊論文	0	篇	
		研討會論文	0		
		專書	0	本	
		專書論文	0	章	
		技術報告	0	篇	
		其他	0	篇	
參與計畫人力	本國籍	大專生	1	人次	BA
		碩士生	0		
		博士生	0		
		博士級研究人員	0		
		專任人員	0		
	非本國籍	大專生	0		
		碩士生	0		
		博士生	0		
		博士級研究人員	0		
		專任人員	0		
其他成果 (無法以量化表達之成果如辦理學術活動、獲得獎項、重要國際合作、研究成果國際影響力及其他協助產業技術發展之具體效益事項等，請以文字敘述填列。)					