

Co-Learning in Hong Kong English Medium Instruction Mathematics Secondary Classrooms: A Translanguaging Perspective

Recent studies on classroom discourse have challenged the traditional classroom role set and emphasized equal contributions from the participants and emergence of knowledge through active participation. Co-learning emphasizes the process in which teacher and students attempt to adapt to one another's behaviour and learn from each other in order to produce desirable learning outcomes. Current research has paid little attention to the ways in which content teachers and students jointly negotiate new knowledge in bi/multilingual classrooms. Based on data collected from a linguistic ethnography in Hong Kong English-Medium-Instruction secondary mathematics classrooms, this paper uses translanguaging as an analytical perspective to analyse how the EMI teacher and students co-learn in the classroom. The data are analysed using Multimodal Conversation Analysis and triangulated with the video-stimulated-recall-interviews which are analysed using Interpretative Phenomenological Analysis. The paper argues that translanguaging creates a safe space for co-learning that emphasises equity in knowledge construction and challenges the hierarchical relationship between the teacher and the learner.

Keywords: Translanguaging, English Medium Instruction, Co-learning; Mathematics, Hong Kong

1. Introduction

Classroom-based learning traditionally involves a role set where the teacher serves as the source provider of knowledge and the student the recipient of information. The teacher is also expected to validate the student's knowledge and provides appropriate feedback (Lawrence, 1996). Research on L2 classroom interaction shows that teacher-fronted teaching tends to allow little space for the students to interact amongst themselves since it is the teacher who decides who can speak, when and about what (Greenleaf and Freedman, 1993; Walsh, 2006). Van Lier (1996: 184-185) argues that teacher-fronted teaching has several consequences including 'reduced student's participation, less expressive language use, a loss of contingency [...] and limitations on the students' employment of initiative and self-determination'. Critics of the traditional classroom role set

emphasize the importance of active participation of the students in classroom interaction and the role of such participation in knowledge construction (e.g. Baynham, 2006; Jacknick, 2011; Waring, 2011; Author, 2018). This article examines examples of a teacher's strategies to encourage and facilitate the student's active participation in classroom interaction in an English-medium-Instruction (EMI) class in Hong Kong (HK). We invoke the concept of co-learning (Brantmeier, 2013. To be defined in the next section) to show that the teacher benefits just as much as the students from the process, and this important aspect of knowledge construction needs to be studied more systematically in the future. A key strategy that the teacher uses in facilitating co-learning is translanguaging (see further in section 4), which seems to go against the EMI policy that is practised in the school. We demonstrate how translanguaging creates a space for co-learning.

2. Co-Learning in the classroom

The concept of 'co-learning', as discussed in Li Wei (2014a), has been used in a range of disciplines from artificial intelligence and computer simulation, to global security systems and business information management. 'In essence, co-learning is a process in which several agents simultaneously try to adapt to one another's behaviour so as to produce desirable global outcomes that would be shared by the contributing agents' (p. 169). The emphasis here is on mutual understanding, mutual benefits, and mutual growth amongst the different agents rather than differentiated power structures and relationships. Brantmeier (2013) uses the concept of co-learning to develop his approach to a pedagogy of vulnerability which seeks to relieve the teacher from the burden of knowing all the right answers, and take risks '– risks of self-disclosure, risks of change, risks of not knowing, risks of failing – to deepen learning' (p. 96). 'Co-learning changes the role sets of teachers and students from dispensers and receptacles of knowledge to joint sojourner on the quest for knowledge, understanding, and wisdom' (p. 97). The concept of co-learning does not simply entail the teacher in deploying strategies for promoting equal participations for all students; co-learning challenges the power relationship between the so-called expert (teacher) and the novice (students) and denies the privileging of one knowledge over another (Curry and Cunningham, 2000).

Co-learning has the following principles (Li Wei, 2014a: 170):

- Trust and respect in each other as people and co-learners;
- Reciprocal value of knowledge sharers: all co-learners have their 'funds of knowledge' (Moll et al., 1992: 133) - 'historically accumulated and culturally developed bodies of knowledge and skills essential for households and individual functioning and well-being';
- All knowledge is valuable and should be valued.

For co-learning to happen, the classroom environment needs to have the following characteristics (Li Wei, 2014a: 170):

- Shared power amongst co-learners;
- Collective and individual meaning-making and identity exploration;
- Situated learning in a community of practice;
- Real-world engagement and action

We will examine examples of co-learning in an EMI classroom in a HK secondary school to the kinds of knowledge that can be gained by the teacher, as well as by the students and the pedagogical strategies that are used to facilitate co-learning.

3. Medium-of-Instruction in Hong Kong

The choice of medium-of-instruction in the educational system has been a highly controversial issue in HK, where the majority of the citizens speak Cantonese as their first language (L1). After the handover in 1997, the Hong Kong government adopted the “biliterate and trilingual” policy. Under this policy, both Chinese and English are acknowledged as official languages, with Cantonese being acknowledged as the de facto official spoken variety of Chinese in Hong Kong, while also accepting Mandarin/Putonghua. The ultimate language goal of the new policy is to achieve trilingualism to facilitate exchange and communication with the Mainland and the outside world (Poon, 2010). The school curriculum was revised in 1998 to make Putonghua a compulsory subject in all primary and secondary schools, while Cantonese is used as the medium of instruction for teaching content subjects in Chinese-as-Medium-of-Instruction (CMI) primary and secondary schools. Starting from 2001, Putonghua teachers, like English teachers, are required to take the Benchmark Test. Since then, Cantonese has been associated with enhanced student learning, and has taken the place of English as the regular and formal language in government and in the public sector; Putonghua has been given increased attention in the school curriculum, and has a role to play in government, law and social activities.

In general, the majority of primary schools in HK adopt Chinese-Medium-Instruction (CMI) for most content subjects and English is taught as a separate core subject (which typically involves six to ten 40-minute lessons per week). This is believed to develop students’ L1 learning and cognitive development while offering exposure to English. Universities in HK use EMI due to the need to align with international tertiary education and cater for a large proportion of international students. Nevertheless, medium-of-instruction policy at secondary level has undergone significant changes

in recent years. HK has witnessed three key stages in the development of the medium-of-instruction policies including the colonial government's laissez-faire policy prior to 1994, the compulsory CMI policy during 1998-2010 and the fine-tuning medium-of-instruction policy since the 2010-2011 academic year.

Before the handover of sovereignty in 1997, the HK colonial government adopted a laissez-faire medium-of-instruction policy which allowed secondary schools to decide their own medium-of-instruction. With the belief that EMI could better facilitate English acquisition, the colonial and international language, over 90% of the secondary schools claimed to be EMI schools in order to respond to the demand by parents and other stakeholders (Falvey, 1998). However, research studies have revealed that the use of mixed Cantonese and English was prevalent in these EMI schools since many students struggled to learn content subjects through English due to their limited English standards, and code-switching was deemed to impede students' L1 and English proficiencies by the Education Department (1997). Shortly after the handover in 1998, the Education Department promoted the mandatory mother-tongue policy, mandating the use of CMI from primary one to secondary three. Exceptions were granted to 114 schools who had fulfilled certain criteria in terms of school support measures, teacher capacity and student ability to remain as EMI schools. This policy has led to severe criticisms from the public since it was perceived as a way for the government to enhance HK citizen's national identity and their patriotic sentiments (Tsui, 2004). Many stakeholders, including parents, the business sector, viewed English as the language of international commerce and they perceived that mother-tongue education have blocked the path to the successful future for future generations (Kwok, 1998; Lai and Byram, 2003). As a result, the clear-cut CMI/EMI distinction constructed a labelling effect, in that only the 'elite' students could study in EMI schools, whereas CMI schools were seen as second class. Together with the public's impression that CMI education contributed to the decline of students' English proficiency in HK (Poon, 2013), the government succumbed to political pressure and decided to 'fine-tune' the mother-tongue policy by eliminating the classification of schools into CMI and EMI. Secondary schools are allowed to offer EMI classes, partial-English-Medium classes (i.e. one or two subjects conducted in EMI) and/or CMI classes. CMI schools have the autonomy in selecting their medium-of-instruction for content subjects if they have met certain criteria (Education Bureau, 2009). The emergence of this policy reflects the fact that schools are no longer classified into EMI and CMI schools and it ironically contradicts with the government's long-standing belief in the value of promoting CMI education.

As Tollefson and Tsui (2014) argue, the debate of adopting EMI in secondary schools ignores the

fact that such a monolingual rule offers limited opportunities for social interactions because teachers in EMI classes tend to adopt the lecture format to teach the content (e.g. Lo and Macaro, 2015). Although the government has provided specific criteria for schools to provide EMI classes, placing students into EMI classes does not mean that learning will take place in the classrooms automatically (Chan, 2014). Research studies have been conducted to investigate how the medium-of-instruction policy is implemented in the local level in order to resolve the difficulties that are currently facing by the teachers and students in teaching and learning through EMI (e.g. Lin, 2006; Chan, 2014; Lo, 2014; Author, 2020a; Author, 2020b).

4. Translanguaging and space for co-learning

Like co-learning, translanguaging has been used as both a conceptual and analytical concept and a pedagogical principle (Garcia and Li Wei, 2014). Essentially, translanguaging challenges a code-based approach to language systems and advocates language as a social practice and as an assemblage of meaning-making resources (Li Wei, 2011; 2018). The latter goes beyond the traditional conceptualization of language in terms of speech and writing to encompass what has been conventionally regarded as paralinguistic or non-linguistic semiotic cues such as gesture, drawing, emoji, etc. As a pedagogical principle, translanguaging promotes flexible use of all named languages as well as other meaning-making resources in learning. It is noted that the code-switching analysis follows a functional analysis in order to identify how different named languages are switched back and forward to construct a coherent unit as well as the purposes of switching from one language to another at a particular point of classroom interaction. Recent scholars have been advocating future research to adopt translanguaging as an analytical perspective (Li Wei, 2020; Author, 2020a; Author 2020b). This allows researchers to understand translanguaging as an enabling and empowering strategy in bilingual and multilingual education where all participants, learners and teachers, are encouraged and supported to make use and share their own funds of knowledge, including but not limited to the knowledge of different languages, in collective and collaborative learning. In other words, translanguaging creates a space for co-learning. Hansen-Thomas et al. (2020), for example, demonstrate how monolingual teachers enacted a translanguaging pedagogy in a US high school classroom where English language acquisition is the focus. Amongst all the resources the teachers use, the students themselves and their knowledge and social experiences are the most important. They also invoke the notion of co-learning to argue that teachers' willingness to participate as co-learners with the students is crucial in learning gains. Noda and Zhu (under review) examine interactions in an *eikaiwa* (English conversation) classroom in Japan and show that when the teacher reverses his role from a language authority to a cultural novice and encourages the learners to use their own funds of knowledge through embodied and

multimodal interaction, *eikaiwa* becomes a much more enjoyable and beneficial experience. In the present paper, we will demonstrate how translanguaging creates a space for co-learning in an EMI classroom in HK.

Whilst translanguaging seems to go well with the principles of co-learning, the fact that it promotes the flexible use of multiple languages and other meaning-making resources seems to go against the basic premise of EMI. The reality though is that in many if not all EMI classes, the use of languages other than English is actually very common. This is similar in many ways to the situation that the originator of the concept of translanguaging, Cen Williams, observes in the Welsh-medium classes where the teacher, following the school policy, tries to teach in Welsh only, but most pupils respond in English. Rather than seeing it as a barrier to revitalising Welsh, Williams (1994) views translanguaging as a way to realise and maximise the pupils' learning potential. It is also similar to the complementary schools for the British-born Chinese children in Britain that has been studied extensively by Li Wei (e.g. 2014b) where he shows that flexible use of different varieties of Chinese (Cantonese and Mandarin/Putonghua) and English engage the pupils much more deeply in the learning of Chinese history, culture and literature as well as the Chinese language, despite the narrow policy focus on teaching Chinese literacy to the children. In the context similar to the present study, Lin and He (2017) investigate how an EMI science teacher in a HK school uses translanguaging to motivate South Asian ethnic minorities to draw upon their multilingual and multimodal repertoires. Their findings indicate that the teacher and learners' willingness to learn from one another is motivated by the space to use as much their linguistic repertoire as possible in classroom interaction. The present study aims to contribute to the current literature on translanguaging and EMI teaching and learning by demonstrating how EMI classroom can be a translanguaging space for the teacher and students to utilise multiple multilingual, multimodal and multisensory resources to co-learn new knowledge and jointly negotiate meaning with each other.

5. Data and Methodology

The present study is based on an ethnographic study of EMI in secondary school in HK. The main data collection was a two-week focused observation the mathematics classes. The observations were video-recorded and were accompanied with ample fieldnotes. They were followed up with ethnographic interviews with teachers and other stakeholders. We adopt translanguaging as the overall analytical perspective and focus on how the EMI teacher engages in learning with his students through translanguaging and becomes a co-learner in the classroom to create a democratic space for students to share their knowledge and experience, challenge norms and promote equity.

The classroom interaction data are transcribed using Jefferson's (2004) and Mondada's (2018) transcription conventions. MCA extends Conversation Analysis by incorporating and focusing on what had previously been regarded as non-verbal behaviour, which, as discussed above, the translanguaging perspective regards as integral to social interaction as verbal cues. In our analysis, we also include the use of space in the classroom and gaze, facial expression, gesture, and manipulation of objects. We use screenshots from the video recordings illuminate multimodal interactions in the classroom.

We also draw on the insights from Interpretative Phenomenological Analysis (IPA) in investigating how the mathematics teacher perceives his own translanguaging practices at specific moments in the interaction. IPA follows a dual interpretation process called 'double hermeneutic'. This requires the researcher to try to make sense of the participants trying to make sense of their world (Smith et al., 2013). By doing so, it allows researchers to take an emic approach in order to understand the participants' personal experience case-by-case.

5.1 Participants and Data Collection

The participating school is a prestigious EMI school in HK and the school is subsidised by the HK government. The school provides education from secondary one to six based on the curriculum guides set by the HK Education Bureau. The school uses EMI to deliver most of the lessons (except Chinese, liberal studies and Mandarin/Putonghua classes), and the school examinations are assessed through English. The school language policy places heavy emphasis on the use of English on the school campus. All morning assemblies and staff meetings are conducted in English. Moreover, English-for-all-days is held once a week when all teaching staff and students must use English for communication.

The mathematics teacher, who agreed to take part in this study, has at least eight years' experience in teaching mathematics in English. He is a native speaker of Cantonese and he previously attended an EMI school for his secondary education. His bachelor's degree in mathematics and IT education and an MSc in Mathematics were obtained from two top-ranked universities in HK. These universities also use English as the medium of instruction. He considers his English proficiency as adequate for teaching but admits that it is far from perfect. He understands Mandarin/Putonghua but has not studied it formally. He does not normally use it in his everyday communication.

A semi-structured interview, which lasted for an hour, was conducted with the teacher in order to understand the teacher's professional training, his linguistic knowledge, his perceptions of the best

practices and his attitudes towards using multiple languages in the EMI mathematics junior and senior forms classrooms. During the two-week focused observation, the first author observed two different mathematics classes (a secondary three and a secondary four class) taught by the same teacher. The class size was ranged between 18 and 30 students. The secondary four class was classified as an elite class (based on the school's internal examination results) and all students spoke Cantonese as their L1s. The secondary three class was classified as an enhancement class. Students, who ranked below average among their cohort in the internal mathematics examination, were enrolled in this class. All students have received at least 6 years of primary education, where Cantonese was employed as the medium-of-instruction and English was taught as an L2. Most of the students in the class spoke Cantonese as their L1s except two students in the secondary three class who were migrants from mainland China and spoke Mandarin/Putonghua as their L1s and Cantonese and English as their L2s. A total of 19 40-minute lessons (11 secondary three lessons and 8 secondary four lessons) were observed and video-recorded. Ethnographic interviews were conducted with the teacher and students during the 2-week observational period. Three post-video-stimulated recall interviews, a total of three hours, were conducted with the teacher in order to compare his actual translanguaging practices and his interpretations of his practices.

6. Analysis

We now analyse examples of co-learning of linguistic knowledge (i.e. knowledge of the linguistic features of specific named languages including pronunciation, grammar). In the dataset, three instances were identified which illustrate how the teacher and students resolve perceived linguistic discrepancies through co-learning. Extracts 1, 2 and 3 are examples of the interaction.

Extract 1: Learning Mandarin/Putonghua from the Students

This extract is extracted from the secondary three class. Prior to the extract, the teacher (T) read out the mathematical question that students needed to solve. After that, T initiated a question by deploying rhyming words at the end of each sentences to create a rhyming effect. However, when he uttered the last sentence, he failed to use the appropriate rhyming words/phrases. This led to students' laughter in the classroom. T deliberately apologised to the students by saying '對不起老師 (sorry teacher)' in Mandarin/Putonghua. In this extract, the teacher and students are engaging in discussion where they are involved in discussions which have no direct relevance to the content subject.

28 S12: + (Name-T) 你識唔識講 (0.5) 我覺得不行
 ((wǒ jué de bù xíng))
 ((tr. do you know how to say)) ((tr. I don't think so))
 +T looks at S12

29 (0.5)

30 T: +我真的不行
 ((wǒ zhēn de bù xíng))
 ((tr. I am not good))
 +T shakes his head

31 (0.3)

32 Ss: hahahaha

33 (0.3)

34 S12: +佢講到 (0.2) 我真的不行
 ((wǒ zhēn de bù xíng))
 ((tr. he is saying)) ((tr. he is not good))
 +S12 turns to S1

35 (0.2)

36 S11: +乜唔係 (.) 我覺得 (.) 咩
 ((wǒ jué de))
 ((tr. shouldn't it be)) ((tr. I think)) ((tr. right))
 +T stares at S11

37 (0.6)

38 S1: 叫佢講 (.) 我真的不行
 ((wǒ zhēn de bù xíng))
 ((tr. ask him to say)) ((tr. I am not good))

39 (0.2)

40 S11: 覺得啊=
 ((jué de))
 ((tr. think))

41 T: =我覺得
 ((wǒ jué de))
 ((tr. I think))

42 (0.6)

43 S11: [唔係真的]
 ((tr. it's not 'really'))

44 T: [+我覺得不行] (1.0) 我覺得不行
 ((wǒ jué dé bù xíng)) ((wǒ jué dé bù xíng))
 ((tr. I don't think so)) ((tr. I don't think so))
 +T shakes his head

45 (1.5)

46 T: +你不覺得這個 (0.3) 還可以嗎 (.) +part b
 ((nǐ bù jué dé zhè ge)) ((hái ké yǐ mǎ))
 ((tr. don't you think this)) ((tr. is it okay))
 +T directs his gaze to the screen and looks at the question
 +T looks at students

47 (0.3)

48 T: [可以嗎?]
 ((ké yǐ mǎ))
 ((tr. okay?))

49 S1: [你講得] (0.2) +不是你講得 (0.2) 我覺得還可以喎你啲普通話
 ((tr. the way you say it)) ((tr. nothe way you say it)) ((tr. I think your Mandarin is okay))
 +T looks at S1

50 T: 還可以
 ((hái ké yǐ))
 ((tr. still okay))

51 (0.5)

52 S1: 成句普通話我覺得還可以 hahaha
 ((tr. the whole Mandarin sentence is still okay))

After a 0.5-second pause, T indirectly responds to S12's question by uttering '我真的不行 (I am not good)' in Mandarin and shaking his head (line 30). However, in line 36, S11 repairs T's response by saying '覺得 (jué de) (i.e. think)' in Mandarin (lines 36 and 40). In response to S11's initiation, T offers the correct expression '我覺得 (wǒ jué de) (i.e. I think)' in Mandarin (line 41). S11 reiterates the corrective feedback in Cantonese by explaining that '真的 (really)' is not an appropriate phrase to be used in Mandarin (line 43). Simultaneously, T repairs his utterance in line 44 again by uttering the whole sentence '我覺得不行' in Mandarin and shaking his head at the same time, which illustrates his uptake of the target Mandarin expression. In line 46, T attempts to direct the students' attention back to the mathematical question by using Mandarin to elicit students' responses regarding the question and switching back to English to specify the sub-question 'part b'. Although T utters '可以嗎? (ké yǐ mǎ) (i.e. okay?)' in Mandarin to invite students' responses, S1 initiates an uninvited response in Cantonese by praising T's Mandarin proficiency, '我覺得還可以喎你啲普通話 (I think your Mandarin is okay)' (line 49). As it shows, T utters '還可以 (hái ké yǐ) (i.e. it's okay)' in response to S1's comment and also acknowledges his own Mandarin proficiency (line 50).

Based on the teacher's self-reflection during the pre-interview, he considered that his Mandarin proficiency was below average. Hence, it can be seen that the teacher is engaging in translanguaging practices as he draws on his limited linguistic knowledge of Mandarin, accompanied with his bodily actions such as shaking his head, to engage in learning Mandarin with the students in the EMI classroom. It is illustrated that the teacher has gained some knowledge of Mandarin grammar and pronunciation from his students and he makes the effort in repairing his utterance based on the students' corrective feedback. In the post-video-stimulated-recall-interview, the teacher comments on what he has learnt from his students:

| Classroom Interaction Transcript | Video Stimulated Recall Interview Selected Excerpts | Teacher's Perspectives | Analyst's Interpretations of the Teacher's Perspectives |
|---|--|--|--|
| <p>28 S12: +(Name-T) 你識唔識講 (0.5) 我覺得不行 ((wǒ jué de bù xíng)) ((tr. do you know how to say)) ((tr. I don't think so)) +T looks at S12</p> <p>29 (0.5)</p> <p>30 T: +我真的不行 ((wǒ zhēn de bù xíng)) ((tr. I am not good)) +T shakes his head</p> <p>31 (0.3)</p> <p>32 Ss: hahahaha</p> <p>33 (0.3)</p> <p>34 S12: +佢講到 (0.2) 我真的不行 ((wǒ zhēn de bù xíng)) ((tr. he is saying)) ((tr. he is not good)) +S12 turns to S1</p> <p>35 (0.2)</p> <p>36 S11: +乜唔係 (.) 我覺得 (.) 咩 ((wǒ jué de)) ((tr. shouldn't it be)) ((tr. I think)) ((tr. right))</p> <p>+T stares at S11</p> <p>37 (0.6)</p> <p>38 S1: 叫佢講 (.) 我真的不行 ((wǒ zhēn de bù xíng)) ((tr. ask him to say)) ((tr. I am not good))</p> <p>39 (0.2)</p> <p>40 S11: 覺得啊= ((jué de)) ((tr. think))</p> <p>41 T: =我覺得 ((wǒ jué de)) ((tr. I think))</p> <p>42 (0.6)</p> | <p>01 T: 學到啲咩, 佢哋嘅普通話好叻, 哈哈, 佢哋, 係囉, 有啲人根本就係 native, 然後, 係囉, 佢哋, 佢哋嘅其他嘅 language 比我好囉, 即係普通話嘅讀音準過我好多, 就係呢一個, 我哋身上就係學普通話啦 (What I have learnt? Um their Mandarin is really strong haha. Yeah some of them are native speakers of Mandarin. Their language proficiency is better than me and their Mandarin pronunciation is more accurate than mine. That's it. So, I have learnt to speak Mandarin from them)</p> <p>02 K: um 佢係頭先呢頭果兩個女仔其實本身就係講話, 乜嘢, 我真的不行 (普通話讀音), 佢哋就教返你, 係覺得 (普通話讀音) 喎, 其實都唔係淨係教你 (Um the two girls in the front were also saying something like what, "I'm not good" (pronouncing it in Mandarin) and then they taught you</p> | <p>T understands that his students' Mandarin proficiency is better than him.</p> | <p>From lines 2-7, T and the researcher are jointly making sense of what T has learnt from his students.</p> |

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|---|---|--|--|
| <p>43 S1: [唔係真的] <i>((tr. it's not 'really'))</i></p> <p>44 T: [+我覺得不行] (1.0) 我覺得不行 <i>((wǒ jué dé bù xíng)) ((wǒ jué dé bù xíng))</i> <i>((tr. I don't think so)) ((tr. I don't think so))</i> +T shakes his head</p> <p>45 (1.5)</p> <p>46 T: +你不覺得這個 (0.3) 還可以嗎 (.) +part b <i>((nǐ bù jué dé zhè ge)) ((hái ké yǐ mā))</i> <i>((tr. don't you think this)) ((tr. is it okay))</i> +T directs his gaze to the screen and looks at the question +T looks at students</p> <p>47 (0.3)</p> <p>48 T: [可以嗎?] <i>((ké yǐ mā))</i> <i>((tr. okay?))</i></p> <p>49 S1: [你講得] (0.2) +不是你講得 (0.2) 我覺得還可以喎你啲普通話 <i>((tr. the way you say it)) ((tr. no the way you say it)) ((tr. I think your Mandarin is okay))</i> +T looks at S1</p> <p>50 T: 還可以 <i>((hái ké yǐ))</i> <i>((tr. still okay))</i></p> <p>51 (0.5)</p> <p>52 S1: 成句普通話我覺得還可以 hahaha <i>((tr. the whole Mandarin sentence is still okay))</i></p> | <p>back as they stated that it should be “think” (pronouncing it in Mandarin). So, I think the students are not simply teaching you)</p> <p>03 T: 讀音 (The pronunciation)</p> <p>04 K: 係啦，同埋都教埋你 (Exactly and they are also teaching you)</p> <p>05 T: 嗰個文法點樣寫 (The grammar of Mandarin)</p> <p>06 K: 嗰個 grammar (The grammar)</p> <p>07 T: 係啦係啦係啦係啦，哈哈 (Yes, yes yes yes haha)</p> <p>08 K: Hahahaha</p> <p>09 T: 係囉，即係即係，係囉，總之我，普通話唔係好識讀囉，即係點樣用嗰啲，係囉，即係都唔係好識用 (Yes, that's, yeah, so I am aware that I am not good at pronouncing Mandarin utterances as well as using the, yeah, I'm not sure how to deploy it)</p> <p>10 K: um</p> | <p>T also realizes that he is not just learning the correct Mandarin pronunciation from his students. He is also learning the appropriate Mandarin grammar from his students too.</p> <p>T is acknowledging the fact that he is unsure how to pronounce the Mandarin words, as well as using the appropriating Mandarin phrases.</p> | |
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| | <p>11 T: 所以佢哋係識嘅咁樣囉 (So, they do know it)</p> <p>12 K: um 咁點解你覺得，我記得我之前都有問過你嘅，但係我都想再聽下就係，點解你覺得咁緊要去 engage 去呢一個 process 去 learn 呢個普通話 from 你嘅咁可愛嘅學生 (Um so why do you think, I think I have asked this question before, but I still want to hear what you have to say, why do you think that it's important to engage in this process, in terms of learning Mandarin from your lovely students)</p> <p>13 T: 都係，都係我學識左啲嘢之後，咁然後，咁我，咁我就已經學咗你哋教我嘅嘢啦，咁然後就到返你哋去學返我教嘅嘢，咁我諗佢哋會易啲接受呢個，即係我教嘅嘢咁會係，即係佢哋，嘅都有成功咁嘅，其實，教人係最，最易令到自己去學習到嘅，係啦，咁然後，如果佢哋係 keep 住緊，啊我而家學習緊嘅心態，即係，嚟緊我都會學到D新嘢，咁樣囉，即係，但</p> | <p>T believes that through co-learning, the students can develop their sense of pride and it can also motivate students in learning the content subjects.</p> <p>T also acknowledges that providing an opportunity for someone to teach can allow him/herself to learn better.</p> | <p>In the previous interview, T explained that he allowed students to laugh at him and he used it as a strategy to befriend with his students and promote a jocular classroom environment. The researcher wants to know how co-learning influence T's perceptions.</p> <p>T is willing to learn from his students.</p> <p>T imitates his students' voice by imagining that they have achieved the sense of achievement when they are able to educate the teacher.</p> <p>T's use of simile, 'turning on the switch', further</p> |
|--|--|--|--|

| | | | |
|--|---|--|---|
| | <p>咁，呢個，我諗，我諗，當時佢教完我之後個個思想去學習係一個最好嘅時機，係囉，好似係開啟左佢哋學習嘅動機，咁樣囉，就係咁，我覺得係咁</p> <p>(I think when I have learnt something from the students, then, I, I have learnt that they have taught me, then it's their turn to learn what I am going to teach next. So, I think this will motivate them to learn from me as well. So, I think they may feel that 'oh I develop the sense of success'. Actually, teaching the others is the best way for allowing us to learn. And so if the students are expecting me to, I mean keeping my learning attitude, that is, my willingness to learn new things, I think, I think, once the students have taught me the new knowledge, it's a good timing for them to learn from me too. It's like turning on the switch on their learning motivation. Yes, that's what I think.)</p> | <p>T perceives this as a key moment for him to motivate his students and encourage them to learn the content subject with him.</p> | <p>highlights his belief that by showing his willingness to learn from his students, this will prompt the students to learn new knowledge from him.</p> |
|--|---|--|---|

Table 1: Video Stimulated Recall Interview (Extract 1)

After watching the video-clip, T comments that he has learnt the correct Mandarin pronunciation from the students, and he realised that his students' Mandarin proficiency were a lot better than himself. In line 2, the researcher points out that T has not only learnt the correct Mandarin pronunciation. This motivates T to come into realisation that he has also learnt the appropriate Mandarin grammar from the students (line 5). This is reflected in the classroom interaction where T has learnt to use the phrase '覺得 (jué de) (i.e. think)' instead of '真的 (really)' since '真的 (really)' is not grammatically correct in Mandarin. In line 9, the teacher also acknowledges that he struggles to pronounce Mandarin words and employ the appropriate Mandarin phrases/vocabulary items. In the previous video-stimulated-recall-interview, T previously explained that he was trying out his weakest language at that moment and he allowed students to laugh at his use of Mandarin. In line 13, T justifies that when he displays his willingness to learn from his students, it can subsequently encourage students in learning Mathematics with T. T's willingness to engage in acquiring knowledge from his students is exemplified when he imitates his students' voice by imagining that the students have achieved the sense of achievement, '咦都有成功咁㗎 (oh I develop the sense of success)', when they are able to educate the teacher. T's use of simile when he mentions, '好似係開啟左佢哋學習嘅動機 (turning on the switch on their learning motivation)', highlights his belief that by building students' confidence and showing his willingness to participate as co-learner. Therefore, it can be argued that T's engagement in co-learning is motivated various pedagogical goals, including his desire to develop students' motivation in content learning and build up student's confidence, which contributes to the construction of a translanguaging space for co-learning.

Extract 2: Learning English Pronunciations from the Students

This extract is extracted from the secondary three class. Prior to this extract, T was drawing students' attention to the next mathematical question on compass bearing. In this extract, T is reading aloud the mathematical question, which is visually presented on the projector. T then struggles to determine the appropriate pronunciation of the word 'aircraft'.

01 T: +okay (0.5) you can see
+T looks at the question on the screen-->
02 (0.2)
03 T: er (1.2) +a and b (0.4) are one hundred kilometre
+cursor moves along the line AB
04 (0.6)
05 T: apart (0.5) okay?+
--->+
06 (0.2)
07 T: that means +length of ab is one hundred kilometre
+T looks at the students
08 (0.5)
09 T: okay?
10 (0.4)
11 T: +and the compass bearing of +b (1.1) is +n seventy five=
+T looks at the screen
+cursor points at B
+cursor points at 75 degree
12 T: =ah from a (0.4) n seventy five east
13 (0.2)
14 T: +that means here like this
+cursor moves around point A
15 (0.8)
16 T: +air (0.6) craft (0.6) +craft right?
(/kra:ft/) (/kra:ft/)
+cursor points at the word 'aircraft'
+T looks at the students
17 (0.6)
18 T: aircraft (.) craft (0.7) aircraft
(/eə.kræft/) (/kræft/) (/eə.kræft/)
19 (1.5)
20 S12: craft
(/kra:ft/)

21 (0.2)
22 T: craft (0.3) craft (0.2) +okay (0.5) aircraft
(/kra:ft/) (/kra:ft/) (/ˈeə.kra:ft/)
+T looks back on the screen
23 (0.6)
24 T: +minecraft (0.8) air
(/ˈmam.kra:ft/)
+T looks at the students
25 (0.4)
26 S1: 哦我 get 啦=
((tr. oh I get it))
+S1 looks at question 12 on the screen
27 T: =aircraft (0.7) +[係囉]係囉
(/ˈeə.kra:ft/) ((tr. yeah yeah))
+T looks at S12
28 S12: [係囉]
((tr. yeah))
29 (0.3)
30 S12: 都係呢一個
((tr. that's the one))
31 (0.2)
32 T: +係咁樣讀 +(0.3) +okay
((tr. that's how it is pronounced))
+T looks at the researcher at the back
+The researcher is nodding
+T looks back on the screen
33 (0.5)
34 T: \$aircraft\$ departs from B
(/ˈeə.kra:ft/)
35 (0.4)
36 T: and flies +at a speed of one hundred and fifty kilometer
+cursor points at line AB

From lines 3-12, T is reading aloud the question and concurrently moving the cursor to point at the target phrases in order to assist students in noticing them (e.g. lines 3, 5, 11 and 12). Additionally, T also provides short explanations in regard to the questions to the students (e.g. lines 7 and 14) to scaffold students' understanding. However, in line 16, when he uses the cursor to point at the word 'aircraft', T is showing hesitation in pronouncing the word. He first utters the first part of the word 'air' and after a 0.6-second pause, he enunciates 'craft /kra:ft/'. He repeats 'craft /kra:ft/' again in order to indicate his uncertainty regarding the pronunciation of 'craft' and he invites the students to provide feedback on his pronunciation, as he looks at the students and utters 'right?' (line 16). However, no student offers any feedback to T in lines 17 and 19. Such difference is attributed to the variation between British and American English. Eventually, S12 acknowledges T's pronunciation by uttering '/kra:ft/' (line 20). T then repeats '/kra:ft/' twice in

order to recognise S12's feedback. T then directs his eye gaze to the screen and utters 'okay (0.5) aircraft' which indicates his motive in continuing to read aloud the mathematical question.

Nevertheless, after 0.6-second pause, T suddenly looks at his students and utters 'minecraft', which is a popular online game. T then utters 'aircraft (/eə.kræft/)' again in line 27. Here, T is comparing the old trace and the new trace by drawing on his accumulated knowledge of the pronunciation of 'minecraft' and then comparing it with his pronunciation of 'aircraft (/eə. krɑ:ft/)' in order to help him with determining the right articulation. This also implies that T still has not fully accepted S12's feedback in line 20. After a short reflection in line 27, T eventually apprehends that he is right, as he utters '係囉係囉 (yeah yeah)' in Cantonese. At the same time, S12 confirms T's pronunciation of 'craft (/kræft/)' as accurate.

In this extract, T translanguages through his concurrent use of verbal (use of English) and multimodal (e.g. use of cursor) resources to invite students in amending his English pronunciation. It is also noticeable that T comprehends the correct pronunciation of 'craft' through engaging in multilingual practices with the students (using both English and Cantonese) and drawing on his past knowledge which is acquired in different context and timescale. During the post-video-stimulated-recall-interview, T explains that inviting students to offer corrective feedback to his English pronunciation is a strategy to ensure that students are paying attention to his talk and it can possibly motivate students' in learning how to solve this particular mathematical question. The researcher then invites T to explain why is he keen to learn the correct English pronunciation from his students:

| Classroom Interaction Transcript | Video Stimulated Recall Interview Selected Excerpts | Teacher's Perspectives | Analyst's Interpretations of the Teacher's Perspectives |
|---|--|---|--|
| <p>01 T: +okay (0.5) you can see +T looks at the question on the screen--></p> <p>02 (0.2)</p> <p>03 T: er (1.2) +a and b (0.4) are one hundred kilometre +cursor moves along the line AB</p> <p>04 (0.6)</p> <p>05 T: apart (0.5) okay?+ --->+</p> <p>06 (0.2)</p> <p>07 T: that means +length of ab is one hundred kilometre +T looks at the students</p> <p>08 (0.5)</p> <p>09 T: okay?</p> <p>10 (0.4)</p> <p>11 T: +and the compass bearing of +b (1.1) is +n seventy five= +T looks at the screen +cursor points at B +cursor points at 75 degree</p> <p>12 T: =ah from a (0.4) n seventy five east</p> <p>13 (0.2)</p> <p>14 T: +that means here like this +cursor moves around point A</p> <p>15 (0.8)</p> <p>16 T: +air (0.6) craft (0.6) +craft right? (/kɹɑ:ft/) (/kɹɑ:ft/) +cursor points at the word 'aircraft' +T looks at the students</p> <p>17 (0.6)</p> <p>18 T: aircraft (.) craft (0.7) aircraft (/æ.kɹɑ:ft/) (/kɹɑ:ft/) (/æ.kɹɑ:ft/)</p> <p>19 (1.5)</p> <p>20 S12: craft (/kɹɑ:ft/)</p> | <p>01 K: 我就係想問呢個問題啦，點解你咁想知道個讀音係乜哈哈 (I am planning to ask you this question. Why do you wish to know the correct pronunciation haha)</p> <p>02 T: um 點解呀 (um why)</p> <p>03 K: 因為，點解我會咁樣問呢，好多時係 social interaction 可能其中有一個人，或者 native speaker 但自己可能都讀錯字咁樣呢，好多時都會 let it pass 嘅 (the reason why I am asking this is because very often, individuals or even native speakers may mispronounce words in social interactions. Very often, they will let it pass.)</p> <p>04 T: 哦 (oh)</p> <p>05 K: 即係就咁 ignore 左，咁就 let the interaction 咁就 go forward 咁就 make it smooth 咁樣囉 (This means they will ignore the mistake and let the interaction move forward in order to make the whole interaction fluently and smoothly)</p> | <p>T is unsure why the researcher is asking this question</p> <p>The researcher is inviting T to consider ignoring the mispronunciation for promoting fluency in the interaction.</p> | <p>The researcher is referring to Firth's 'let it pass' principle.</p> |

| | | | |
|--|--|---|--|
| <p>21 (0.2)</p> <p>22 T: craft (0.3) craft (0.2) +okay (0.5) aircraft (/kra:ft/) (/kra:ft/) (/ˈeə.kra:ft/) +T looks back on the screen</p> <p>23 (0.6)</p> <p>24 T: +minecraft (0.8) air (/ˈmæm.kra:ft/) +T looks at the students</p> <p>25 (0.4)</p> <p>26 S1: 哦我 get 啦= ((tr. oh I get it)) +S1 looks at question 12 on the screen</p> <p>27 T: =aircraft (0.7) +[係囉]係囉 (/ˈeə.kra:ft/) ((tr. yeah yeah)) +T looks at S12</p> <p>28 S12: [係囉] ((tr. yeah))</p> <p>29 (0.3)</p> <p>30 S12: 都係呢一個 ((tr. that's the one))</p> <p>31 (0.2)</p> <p>32 T: +係咁樣讀 + (0.3) +okay ((tr. that's how it is pronounced)) +T looks at the researcher at the back +The researcher is nodding +T looks back on the screen</p> <p>33 (0.5)</p> <p>34 T: \$aircraft\$ departs from B (/ˈeə.kra:ft/)</p> <p>35 (0.4)</p> <p>36 T: and flies +at a speed of one hundred and fifty kilometer +cursor points at line AB</p> | <p>06 T: 哦係㗎 (oh really)</p> <p>07 K: um hm 咁所以就，咁所以就 問返黎就係，點解你會咁想知道個 讀音係乜嘢囉 (um hm so that's why, that's why I am interested to know why you are curious to learn the pronunciation of that word)</p> <p>08 T: 因為我唔想錯囉，哈哈，理科 人嘅諗法，會唔會呢，即係要 make sure 每一個都係正確咁樣去講比 同學知，即係我唔想講錯左比 同學知，係啦，咁，所以，雖然，係 囉，所以連個讀音我都想啱呀，都 有啲，有啲情況有其他字呢同我個 學返嚟嘅讀音唔同呢，啲同學都同 我喺度拗嘅，咁但係，係囉，咁， 咁拗返啱咪好囉，即係知道，知道 正確咪最好囉，即係 correct，係 囉，就係最緊要學啱嘅野囉，就係 咁 (That's because I don't wish to make mistakes haha. That's a typical way of thinking, as a science-trained graduates. Maybe? I think it's important to ensure that everything that I say has to be accurate. I don't wish to provide the inaccurate information to the students. Yes. So yeah. So, I even insist that I am pronouncing the word accurately. In some cases, some of the</p> | <p>T displays his belief that it is important for students to learn the correct information in class.</p> | <p>T attributes his fastidious character to his educational background. He was trained as a Mathematician during his undergraduate and postgraduate studies.</p> |
|--|--|---|--|

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|--|--|--|--|
| | <p>pronunciations that I have learnt was different from the students' perceptions and some students argued with me in regard to this matter. But yeah, if we are able to come into an agreement then that's a good thing. I mean, knowing the correct answer is a good thing. Yeah. It's important to learn the right thing. That's it.)</p> <p>09 K: 呢樣野同，你覺得同 EMI policy 有冇關係啊 (so that, do you think it has any connections with the EMI policy?)</p> <p>10 T: um</p> <p>11 K: 你覺得 EMI policy 有冇 Kind of 逼你要用 correct English 咁樣 (do you think that the EMI policy somehow forces you to use correct English?)</p> <p>12 T: 都有架，都有架，如果唔係，我，我睇到呢個字我知道，哦飛機呀戰機，咁我以前可能就會就會話，可能以前補習就會，有架戰機就 departs from B 咁樣就，就直接 skip 咗果個字唔讀啦，但係而家我要講埋成句英文嘅時候咪，即係點都要講多一次嗰個字點樣讀，咁樣，都會要求自己要做到囉，係啦，咁佢地到，都會聽到嗰個字點樣讀，哈哈</p> | <p>The researcher is making sense of T's explanation and questions whether such belief is influenced by the EMI school policy.</p> <p>T explains that EMI teaching motivates him to utter the whole English sentence and he is unable to avoid not pronouncing the words that are not familiar to him.</p> | <p>This shows that EMI policy somehow hinders T in adopting the avoidance communicative strategy (Færch and Kasper, 1984). That is, T is not able to avoid a particular linguistic item during the</p> |
|--|--|--|--|

| | | | |
|--|--|--|--------------|
| | <p>(Yes, it does, yes it does. If it doesn't, I, when I first looked at this word, I know that it's 'oh aircraft it's military aircraft'. So, in the past, I could possibly say, perhaps when I was tutoring, I might say 'there is an aircraft which departs from B'. I will directly skip the word and not enunciate it. But now I have to read aloud the whole sentence in English. So, this means that I have to ask how the word can be correctly pronounced. Yeah. I will expect myself to be able to do so. Yeah. So, they can listen to how the word can be pronounced too. Haha.)</p> | | interaction. |
|--|--|--|--------------|

Table 2: Video Stimulated Recall Interview (Extract 2)

During the interview, the researcher refers to Firth's (1996) 'let it pass' principle (line 3). This means that the speaker delays in repairing a problematic utterance which is considered to be inconsequential for the course of the interaction. T justifies that he does not want to make any mistake and he attributes such fastidious attitude to his educational background as a science-trained graduate (line 8). During his undergraduate and postgraduate studies, T was trained as a mathematician (pre-interview). Notably, T also acknowledged that his English proficiency was average for teaching and occasionally he worried that he might mispronounce English words in class. Possibly because of his educational background and his awareness of his insufficient English skills, it shapes his attitude for conveying the most accurate information to his students. This is clearly reflected in T's remark in line 8: '我唔想講錯左比啲同學知 (I don't wish to provide the inaccurate information to the students)' and '最緊要學啱嘅野囉 (it's important to learn the right thing)'.

The researcher then questions whether the school's EMI policy has influenced T's perception to use correct English (lines 9 and 11). T explains that the EMI policy has motivated him to set expectation for himself to speak correct English. He then recounts his experience as private mathematics tutor. In the past, he could adopt the avoidance strategy (Faerch and Kasper, 1984) in order to avoid uttering a particular word in English. He provides a hypothetical scenario where he may say '有架戰機就 departs from B (there is an aircraft which departs from B)'. Such example illustrates how he deliberately deploys Cantonese, '有架戰機 (there is an aircraft)', to refer to the aircraft and then switches back to English, 'departs from B', to continue reading aloud the question. However, in EMI classroom setting, he realises that he needs to utter every single word to the students in English. This is reflected in the classroom interaction where T insists to seek feedback from students regarding his pronunciation of 'aircraft' through translanguaging. Therefore, it can be argued that T's motivation to engage in co-learning with the students in this moment of the interaction are influenced by his perceptions of offering the accurate information to students as well as the EMI policy which encourages him to develop his competence in using English to teach mathematics.

Extract 3: Learning Chinese Surname from the Students

This extract is extracted from the secondary four class. Prior to this extract, T was reading aloud a mathematical question which involved the students in searching for the number of days that Mr. Pang and Mr. Tung that have worked on a project. While he was reading aloud the question, T struggled to pronounce the surname of 'Tung'. He was unsure whether it should be pronounced as

‘Dong (/da:ŋ/)’ or ‘Tung (/ta:ŋ/)’’. He then translated them into Cantonese ‘董 (Tung)’ and ‘東 (Dong)’ in order to assist him to decide the most accurate pronunciation. In this extract, it is observed that the students are educating T in regard to the appropriate Chinese translations of the surname ‘Tung’ through deploying various multilingual practices (e.g. using Cantonese and appropriating T’s English pronunciations).

40 T: okay +please (1.2) okay listen listen (0.2) zip zip

+T points at the sentence

+T uses his index finger to hit the BB

41 (0.2)

42 T: very important

43 (0.5)

44 T: you cannot be lazy +you must write me a complete sentence

+T moves his finger along the sentence on BB (moving from left to right position) #1 #2

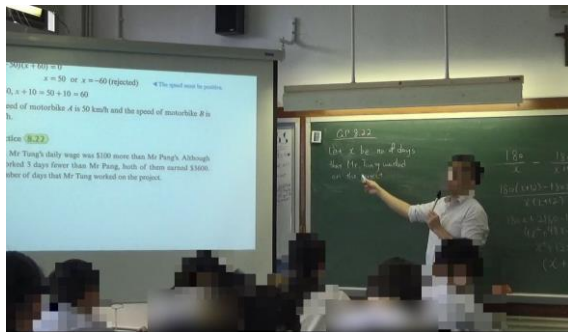


Figure #1

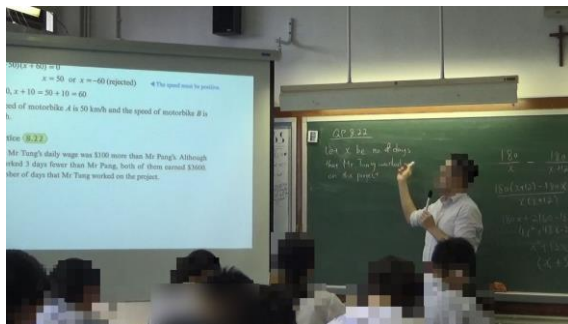


Figure #2

45 (0.7)

46 T: okay?

47 (.)

48 T: don't sim-

49 (0.2)

50 T: don't simply write me +let x be the number of days

+T uses RH to cover the last two lines of the sentence

#3

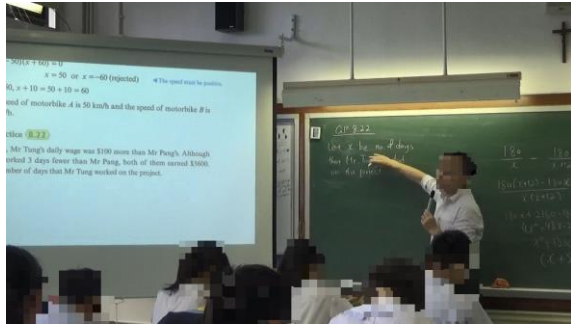


Figure #3

- 51 (.)
- 52 S13: don't sim-
- 53 (1.2)
- 54 T: okay? + (2.3) +唔可以就咁齋寫呢個啊 (1.0) +知唔知點解
 ((tr. you can't just write that))
 ((tr. do you understand why?))
- +T draws a square to include 'let x be no. of days'
- +T leans over the back of the chair
- +T looks at the students
- 55 (1.2)
- 56 T: 因為我哋啊東生係咪啊 (0.2) 有彭生喺度呀嘛
 ((tr. that's because our dear Mr. Dong right?))
 ((tr. we have Mr. Pang here right?))
- 57 (0.9)
- 58 Ss: 彭生 hahaha
 ((tr. Mr. Pang))
- 59 (0.5)
- 60 T: 我哋係 (0.7) 唔 (0.2) 你你點知呀東 (0.7) 係啦?
 ((tr. we are))
 ((tr. um (0.2) how will you you know Mr. Dong (0.7) right?))
- 61 (0.4)
- 62 S14: 有人姓董㗎嘛
 ((tr. some people have 'Tung' as their surnames))
- 63 (0.5)
- 64 T: 董都得啊董係呢個啊
 ((tr. oh Tung is acceptable in this case?))

65 (0.3)
 66 S?: 姓童
 ((tr. Tung as the surname))
 67 (0.3)
 68 T: 童 (0.3) 姓童添呀 (1.3) +童 (2.2) 有人姓童嘅 (0.6) +哦=
 ((tr. Tung))
 ((tr. having Tung as the surname too?))
 ((tr. Tung))
 ((tr. some people have the family name Tung?))
 ((tr. Oh))
 +T shifts his gaze to the ceiling
 +T looks at S14
 69 S14: =兒童個童阿
 ((tr. it's the equivalent meaning of children))
 70 (0.4)
 71 T: 係啲 (0.3) 係啲
 ((tr. oh right)) *((tr. oh right))*
 72 (0.2)
 73 S13: +即係 children 啊
 (/'tʃɪl.dən/)
 ((tr. this means children))
 +T looks at S13
 74 (0.5)
 75 T: 哦又 children 啊 (.) 又 children (.) 啊童
 (/'tʃɪl.dən/) (/ʻtʃɪl.dən/)
 ((tr. oh children again (.) children again (.) oh Tung))
 76 (0.2)
 77 S13: 係呀 children 啊=
 (/'tʃɪl.dən/)
 ((tr. exactly. It's children))
 78 Ss: =hahahahaah
 79 (1.4)
 80 T: 哦 (.) 係啲係啲 (0.9) 哦係囉
 ((tr. oh)) *((tr. right right))* *((tr. oh yeah))*

In line 54, T initiates a question in Cantonese and asks students to provide a reason why it is necessary to write out a complete sentence. As no student responds in line 55, T attempts to draw students' attention to 東生 (Mr. Dong) and 彭生 (Mr. Pang), without realising that he has mispronounced Mr. Tung's Chinese surname. Although the students are laughing at T's reference to Mr. Pang without pointing out T's mistake in line 58, T displays his uncertainty of referring Mr. Tung as 東生 (Mr. Dong), as shown in line 60 when he utters '你你點知呀東 (0.7) 係啦? (how will you you know Dong (0.7) right?). It is noticeable that there is an abrupt stop in articulating '東生 (Mr. Dong)' as T only utters 東 (Dong) and subsequently leads to a 0.7-second pause. T then

says ‘right?’ in high intonation to signal his uncertainty of his speech. In line 62, S14 offers feedback to T in Cantonese by saying ‘有人姓董㗎嘛 (some people have ‘Tung’ as their surnames)’. This results in T’s uptake as he acknowledges the possibility of having ‘董 (Tung)’ as a Chinese surname (line 64). However, another student challenges S14’s response by offering an alternative answer, ‘姓童 (Tung as the surname)’. T shows his surprise that the surname of Tung can also be translated in Chinese as 童. This is illustrated in his repetition of the word ‘童’ several times in line 68 and the repetition of the same questions: ‘姓童添呀 (having Tung as the surname too?)’ and ‘有人姓童嘅 (some people have the family name Tung?)’. After initiating an change-of-the-state token ‘哦 (oh)’ (Heritage, 2012) in line 68, S14 offers further clarifications to T in line 69 by pointing out that ‘童’ can also mean children. T then acknowledges S14’s feedback by repeating ‘係㗎 (oh right)’ twice (line 71).

In line 73, S13 initiates an uninvited turn and offers clarifications to T. She claims that ‘即係 children 㗎 (this means children)’ which directly points out the semantic meaning of ‘童’. Note that S13 pronounces the word ‘children’ as /‘tʃɪl.dən/ (i.e. missing the ‘r’ sound). It is argued that S13 deliberately does that to imitate T’s pronunciation since this is how T pronounces ‘children’ prior to the extract. T mistakenly pronounces ‘children /‘tʃɪl.dən/’ twice in line 75 when he accepts S13’s feedback. Sarcastically, S13 continues to appropriate T’s English pronunciation and utters ‘係呀 children (/‘tʃɪl.dən/) 㗎 (exactly, it’s children)’ in order to mislead T’s perception of his own English pronunciation of ‘children’. This translanguaging practice allows S13 to construct a performance of T’s inaccurate English pronunciation, which is received with laughter from the class (line 78).

Throughout the extract, it is evidenced that T does not only learn how an English translation of ‘Tung’ can possibly be referring to different Chinese surnames (董 and 童). Rather, such co-learning opportunity broadens his real-world knowledge regarding different kinds of Chinese surnames which exists in the Chinese society. During the post-video-stimulated-recall-interview, the researcher invites T to reflect on what he has learnt from his students:

“K: 咁頭先睇呢一個 episode 入邊，你覺得你自己學到一啲嘅 from the students ?

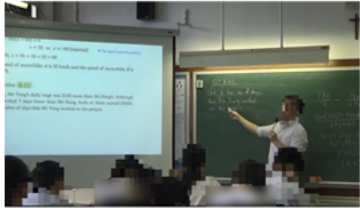
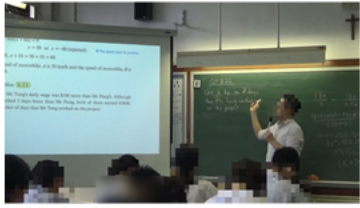
(So, after watching the episode, do you think you have learnt something from the students)


T: 都有嘅，即係拼音㗎㗎，個名囉，haha，姓氏，係囉，即係嗰啲尤其係中文譯音㗎㗎呢，我唔係好熟呀嘛，之後突然佢哋講咗，哦姓童都得嘅，咦係㗎，有人姓童㗎㗎，咁樣囉，係啦咁然後所以就，都 inspire 到我即係原來，即係學多幾個姓氏嘅拼音囉都可以叫做

(Yes, I do. That's the pronunciation. The name. Haha. Surnames. Yeah. It's specifically the Chinese translation of the surnames. I'm not familiar with those. So they suddenly said to me that having the surname (Tung, 童) is also possible. Oh yeah. Some people do have the surname Tung. That's it. So that also inspires me in some ways. It is because I'm able to learn more about the pronunciations of different surnames.)"

(Post-video-stimulated-recall-interview with T)

Here, T acknowledges that he has learnt the translations of the Chinese surnames and also the existing Chinese surnames in the society. This is shown as T imitates his students' voice '哦姓童都得嘅 (having the surname 童 is also possible)' and then verbalises his own thought, '咦係喎, 有人姓童㗎喎 (Oh yeah. Some people do have the surname Tung)'. T suggests that through co-learning, it inspires him to learn new knowledge from his students. The researcher then questions why it is necessary for the teacher to engage in an extended discussion about Chinese surnames with the students during the Mathematics class:

| Classroom Interaction Transcript | Video Stimulated Recall Interview Selected Excerpts | Teacher's Perspectives | Analyst's Interpretations of the Teacher's Perspectives |
|--|---|--|--|
| <p>40 T: okay +please (1.2) okay listen listen (0.2) zip zip +T points at the sentence +T uses his index finger to hit the BB</p> <p>41 (0.2)</p> <p>42 T: very important</p> <p>43 (0.5)</p> <p>44 T: you cannot be lazy +you must write me a complete sentence +T moves his finger along the sentence on BB (moving from left to right position) #1 #2</p>  <p>Figure #1</p>  <p>Figure #2</p> <p>45 (0.7)</p> <p>46 T: okay?</p> <p>47 (.)</p> <p>48 T: don't sim-</p> <p>49 (0.2)</p> <p>50 T: don't simply write me +let x be the number of days +T uses RH to cover the last two lines of the sentence #3</p> | <p>01 K: 咁但係，你覺得自己當時要，點解要特登去 engage 去呢個 topic 入邊嘅 (But then, why do you think that you have to engage in that particular topic at the moment?)</p> <p>02 T: 因為佢哋喺度捉住我呢個位喺度講 (This is because they have been forcing me to discuss this matter with them)</p> <p>03 K: 係呀但係你可以 ignore 佢嚟㗎嘛 (Yes, but you can choose to ignore them)</p> <p>04 T: 我覺得，我深返入去佢哋個 topic 到嘅時候，然後等，等我易啲可以抽番佢地出嚟，講我想講嘅嘢囉，即係好似係我 sacrifice 一啲，即係首先我願意聽佢哋個問題，即係佢哋啲嘢先，然後學完啦，咁我就可以擺番番過嚟，去我嗰度學嘢囉，就係咁樣啦 (I think that, when I engage in their topic, it will be easier for me to draw their attention back to the lesson and allow them to focus on my teaching. So, it's like I'm sacrificing something. That is, I have to first show my eagerness in listening their questions and what they have to say. After learning that from them, I can then draw their attention back and motivate them to learn from me. That's it.)</p> <p>05 K: 咁即係我見到學生同老師之間，都 go beyond 個 language policy 啦，就用少少中文去 engage 佢呢一個 playful talk 入面啦，點解你覺得係比較，why is it important 去</p> | <p>T argues that the students force him to engage in the non-academic discussion.</p> <p>T suggests that engaging in non-academic discussions with the students can allow him to attract them in paying full attention on the content.</p> | <p>The researcher is trying to understand why T engages in the non-academic discussion with the students.</p> <p>The researcher suggests that T can ignore the students.</p> <p>Based on the observation of the classroom interaction data, the researcher</p> |

| | | | |
|---|---|--|--|
|  <p>Figure #3</p> <p>51 (.)</p> <p>52 S13: don't sim-</p> <p>53 (1.2)</p> <p>54 T: okay? + (2.3) +唔可以就咁寫呢個啊 (1.0) +知唔知點解 <i>((tr. you can't just write that))</i> <i>((tr. do you understand why?))</i> +T draws a square to include 'let x be no. of days' +T leans over the back of the chair +T looks at the students</p> <p>55 (1.2)</p> <p>56 T: 因為我哋啊東生你嘅啊 (0.2) 有彭生喺度呀嘛 <i>((tr. that's because our dear Mr. Dong right?))</i> <i>((tr. we have Mr. Pang here right?))</i></p> <p>57 (0.9)</p> <p>58 Ss: 彭生 hahaha <i>((tr. Mr. Pang))</i></p> <p>59 (0.5)</p> <p>60 T: 我哋係 (0.7) 唔 (0.2) 你你點知呀東 (0.7) 你嘅? <i>((tr. we are))</i> <i>((tr. um (0.2) how will you you know Mr. Dong (0.7) right?))</i></p> <p>61 (0.4)</p> <p>62 S14: 有人姓董㗎嘛 <i>((tr. some people have 'Tung' as their surnames))</i></p> <p>63 (0.5)</p> <p>64 T: 董都得啊董係呢個啊 <i>((tr. oh Tung is acceptable in this case?))</i></p> | <p>break the language boundary 同埋 social boundary，即係語文上 break 左個 boundary，但係 social boundary 即係我同個學生之間，老師係一個 leader in the classroom 咁學生係 here to learn，點解，點解咁緊要去 break through 呢一個 boundary 去達致到一個 scenario 就係大家都可以學到野</p> <p>(So based on my own observation, I notice that between you and the students, the classroom has gone beyond the language policy as you and the students are using some Cantonese to engage in the playful talk. Why do you it is important to break the language boundary and the social boundary? So, from the linguistic point of view, you break the language boundary but also the social boundary. This means that between you and the students, the teacher is serving as a leader in the classroom and the students are here to learn. Why do you think it's important to break through such boundary in order to achieve a space where everyone in the classroom can learn something?)</p> <p>06 T: 哦唔係，我諗緊，其實作為老師個方面，我覺得仲係，仲係繼續緊呢個 leader 嘅身份去教我嘅專長數學，但係另外一方面，咁啲學生有其他佢哋嘅專長，可以令我學返轉頭，咁我去學啲啲嘢，冇影響到我係數學 leader 呢方便嘅專業囉，即係，係囉，我覺得我唔會因為佢哋，同佢哋，真係好似我，我唔識啲樣 language 係啦，即係啲啲姓氏，易會令到，動搖左我係數學果方便個教學個領域囉，即係我都可以教到你地數學嘅，只不過我另外果一方面唔強，所以我會學你哋啲啲嘢，係</p> | <p>T perceives himself as an expert in mathematics and acknowledges the fact that his mathematical knowledge makes him qualified to be teaching students mathematics.</p> <p>T recognizes the fact that different people have different strengths and weaknesses and he is open to learn new</p> | <p>notices that T and students go beyond the EMI language policy and also the social hierarchy.</p> <p>T's open-minded attitude is the factor which motivates him to co-learn with the students.</p> |
|---|---|--|--|

| | | | |
|---|---|---|---|
| <p>65 (0.3) 66 S2: 姓童 ((tr. Tung as the surname)) 67 (0.3) 68 T: 童 (0.3) 姓童添呀 (1.3) +童 (2.2) 有人姓童嘅 (0.6) +哦= ((tr. Tung)) ((tr. having Tung as the surname too?)) ((tr. Tung)) ((tr. some people have the family name Tung?)) ((tr. Oh)) +T shifts his gaze to the ceiling +T looks at S14 69 S14: =兒童個童阿 ((tr. it's the equivalent meaning of children)) 70 (0.4) 71 T: 係啲 (0.3) 係啲 ((tr. oh right)) ((tr. oh right)) 72 (0.2) 73 S13: +即係 children 啊 (/'tʃɪl.dən/) ((tr. this means children)) +T looks at S13 74 (0.5) 75 T: 哦又 children 啊 (.) 又 children (.) 啊童 (/'tʃɪl.dən/) (/ 'tʃɪl.dən/) ((tr. oh children again (.) children again (.) oh Tung)) 76 (0.2) 77 S13: 係呀 children 啊= (/'tʃɪl.dən/) ((tr. exactly. It's children)) 78 Ss: =hahahahaah 79 (1.4) 80 T: 哦 (.) 係啲係啲 (0.9) 哦係囉 ((tr. oh)) ((tr. right right)) ((tr. oh yeah))</p> | <p>啦，即係然後，即係佢哋如果有呢個心態，其實即係，好似以前啲啲不恥下問咁樣呢，係啦即係你係果方便勁，我咪學你啲嘢囉，冇所謂嘅係囉，即係，有好多大家啲啲唔同嘅強項弱項，所以，都應該有乜所謂我自己覺得，仲更加，close 啲囉我覺得，佢哋會更加易接受呢個人，肯聽佢講嘢囉我覺得 (Oh, not really. I am thinking. Actually, as a teacher, I think I am still using my status as a leader to teach Mathematics, which is my expertise. But on the other hand, students also have their own strengths which can allow me to learn from them. So, when I am learning something from the students, this does not affect my status as a leader in Mathematics. That is, I mean, I don't think I will, because of them, it's like me who doesn't know that particular language. That's the surnames. It won't change the fact that I am an expertise in Mathematics. This means that I can still teach you Mathematics. It's just the fact that I am not good at other areas. So, I am happy to learn the knowledge that you have acquired. Yeah. And then, if they have such attitude, I mean like. It's like not being ashamed to ask and learn from those who are inferior to you, just like the older generations. That's right. So, if you are skilled in a particular area, then I am happy to learn from you. It's not a problem at all. That's because everyone of us has our own strengths and weaknesses. So, I don't think it's a problem at all. I think it will allow me to be close with them too. They will easily accept me and willingly listen to me, I think.)</p> | <p>things from his students. T predicts that if he shows his willingness to learn from his students, the students will find him more approachable, which is important to develop students' motivation in learning mathematics.</p> | <p>T refers to a Chinese idiom ‘不恥下問 (It's like not being ashamed to ask and learn from those who are inferior to you, just like the older generations)’ to display his willingness to learn from his students.</p> |
|---|---|---|---|

Table 3: Video Stimulated Recall Interview (Extract 3)

In line 2, T initially suggests that he decides to engage in the discussion about Chinese surnames because of his students. However, the researcher questions whether T can ignore the students' demand. T then explains that by demonstrating his willingness to learn from the students, this can then motivate students to learn the subject content. T uses a simile to illustrate his point: '即係好似係我 sacrifice 一啲 (it's like I'm sacrificing something)'. This exemplifies T's view that learning something from the students requires him to sacrifice something, possibly the lesson time for learning the content. Hence, by sacrificing the lesson time and becoming a co-learner, T can subsequently involve the students in learning the content subject with him.

The researcher raises another question based on his observation of the classroom data and he notices that T and students go beyond both EMI language policy and also the hierarchical role sets (i.e. the teacher as knowledge provider and students as knowledge receiver). As displayed in the MCA analysis, the classroom turns into a translanguaging space where the students translanguaged to construct playful talk through imitating T's English pronunciation and also to educate T's understanding of the translations of Chinese surnames through using Cantonese. T also employs Cantonese throughout the process to make sense of the students' feedback. In the interview, T justifies that learning from his students will not affect his status as an expert in mathematics and hence he is willing to learn anything that is beyond his expertise (line 6). This is reflected in his reference of a typical Chinese idiom, '不恥下問 (It's like not being ashamed to ask and learn from those who are inferior to you, just like the older generations)'. Using this idiom exhibits T's willingness to learn from his students who are not typically considered as 'experts'. Moreover, T also comments that co-learning with the students allows him to build positive rapport with his students, which plays an important role in motivating students' content learning. This is also reflected in the MCA analysis where the students are engaged in playful talk with T (Author, 2020a; Waring, 2013). As shown in lines 73-78 of the interaction, S13's feedback to T is received with laughter from the students and they treat the utterances as playful.

7. Discussion and Conclusion

The aim of this article is to investigate co-learning in the EMI classroom in HK. In particular, it uses translanguaging as a perspective to examine how the mathematics teacher moves flexibly between Cantonese, Mandarin/Putonghua and English not simply to teach and manage the class but also to learn from his students to create a translanguaging space for co-learning. The examples show that the teacher's priority is to get the lesson done and make sure that the students have learned the contents rather than sticking to the school's language policy. Through translanguaging

beyond the different languages and modalities, the classroom has turned into a co-learning environment in which the teacher benefits a great deal from the students' knowledge. Extract 1 illustrates how T draws on his limited knowledge of Mandarin/Putonghua, a language that has been promoted as the national language in China and it has been taught in Hong Kong schools and universities, to gain knowledge of Mandarin/Putonghua grammar and pronunciation from his students. T also attempts to repair his Mandarin/Putonghua utterance based on the students' corrective feedback and this contributes to the creation of a humorous classroom context in the lesson. As noted in section 3, Mandarin/Putonghua is a minority language in terms of the speaker population – very small number of pupils are Mandarin L1 speakers in the classroom. However, Mandarin/Putonghua is the official national language of China, of which HK is a special administrative region. But HK youth, and the general public, generally have a negative attitude towards Mandarin/Putonghua (Poon, 2010; Zhang, 2013). In this extract, it is noticeable that T creates a translanguaging space for co-learning which promotes equitable knowledge construction and honours students' various linguistic knowledge in the classroom. Extract 2 shows that the EMI mathematics teacher is positioning himself as an English learner and students as the knowledge holder. Similar to many other EMI teachers who are not confident with their own English usage in the classrooms (Macaro et al., 2018; Briggs et al., 2018), T negotiates the correct English pronunciation with S13 through using multilingual and multimodal resources. It is also noticeable that T brings in his past knowledge which is acquired in different context and timescale to help him in grasping the appropriate pronunciation. Additionally, although T is a Cantonese L1 speaker, T is seeking clarifications about different English translations of Chinese surnames through Cantonese with his students (Cantonese L1 speakers) in Extract 3. In the interaction, T learns more about the English translations of the Chinese surname 'Tung', the existence of different Chinese surnames as well as the Cantonese pronunciations of these surnames. His curiosity to learn from his students is reflected in the video-stimulated-recall-interview. He always wants to be accurate all the time, possibly because of his educational background as a mathematician. Throughout the co-learning process, T and students employ a variety of registers (such as appropriating T's wrong English pronunciation, use of Cantonese) to transmit and exchange information with each other.

Co-learning promotes equity in knowledge construction. It exhorts the teacher and students to learn from each other and engage in joint construction of knowledge. The teacher is no longer the sole possessor of knowledge in the class. As demonstrated in the analysis, the teacher's willingness to position himself as co-learner with his students privileges students' full linguistic knowledge and helps to create a more equitable learning environment for students (Curry and Cunningham, 2000). The classroom participants' acts of orchestrating resources during the process of co-learning is a

process of translanguaging where both the teacher and students go beyond the school's EMI policy and linguistic codes, transcend modalities and make full use of each other's knowledge for enabling meaning-making and positioning both teacher and students on the same level as holders of knowledge.

Our analysis has revealed that by receiving new information and having awareness or a realisation of something amiss, this can potentially be useful for the teacher to manage content teaching. This is reflected in the post-video-stimulated-recall-interview data which illustrates the mathematics teacher's awareness of what he has learnt from his students and the impact that it has on classroom instruction. The teacher clearly articulates that learning something his students does not only fill in his knowledge gaps (e.g. Tables 1, 2 and 3), it also assists the teacher to achieve his pedagogical goals, including motivating students to learn the subject with the teacher, develop student's confidence, create a playful classroom context in the classroom (Tables 1 and 3) and conforming with the EMI policy (Table 2). This highlights that co-learning does not only afford teacher's learning of new information or provide a frame for equalising power relations. It can potentially serve as an opportunity for teachers to accomplish a range of pedagogical goals for promoting students' learning in EMI classrooms.

Throughout the analysis section, we have demonstrated that although EMI is essentially a monolingual language-in-education policy, such policy is often not abided by teachers and students. Co-learning in EMI classrooms rejects the typical view on EMI mathematics classrooms which offer limited chances for students to jointly negotiate meanings with the teacher (Lo, 2014). This study highlights how translanguaging creates a space for co-learning and co-learning facilitates equity in knowledge construction. In order to create such translanguaging space, the EMI teacher's willingness in positioning himself as 'vulnerable' (i.e. taking risk of being not knowing, acting as a receiver of knowledge rather than a provider of knowledge) (Brantmeier, 2013) and to learn from his students are important factor which enables a more equitable treatment of all students and their linguistic repertoire (Cantonese, English and Mandarin/Putonghua).

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Appendix: MCA transcription conventions (adapted from Jefferson, 2004 and Mondada, 2018)

Sequential and Timing Elements of the Interaction

| | |
|-------|---|
| [| Beginning point of simultaneous speaking (of two or more people) |
|] | End point of simultaneous speaking |
| = | Talk by two speakers which is contiguous (i.e. not overlapping, but with no hearable pause in between) |
| OR | continuation of the same turn by the same speaker even though the turn is separated in the transcript |
| (0.2) | The time (in tenths of a second) between utterances |
| (.) | A micro-pause (one tenth of a second or less) |

Paralinguistic Elements of Interaction

| | |
|-------------|---|
| wo:rd | Sound extension of a word (more colons: longer stretches) |
| word. | Fall in tone (not necessarily the end of a sentence) |
| word, | Continuing intonation (not necessarily between clauses) |
| wor- | An abrupt stop in articulation |
| word? | Rising inflection (not necessarily a question) |
| <u>word</u> | (underline) Emphasised word, part of word or sound |
| word↑ | Rising intonation |
| word↓ | Falling intonation |
| °word° | Talk that is quieter than surrounding talk |
| hh | Audible out-breaths |
| .hh | Audible in-breaths |
| w(hh)ord | Laughter within a word |
| >word< | Talk that is spoken faster than surrounding talk |
| <word> | Talk that is spoken slower than surrounding talk |
| \$word\$ | Talk uttered in a 'smile voice' |

Other Conventions

| | |
|--------|---------------------------------|
| (word) | Approximations of what is heard |
|--------|---------------------------------|

| | |
|-------------|---|
| ((comment)) | Analyst's notes |
| # | Indicating the exact locations of the figures in the transcripts |
| + | Marks the onset of a non-verbal action (e.g. shift of gaze, pointing) |
| XX | Inaudible utterances |

