TRIGGERED CODE-SWITCHING: A BOTTOM-UP APPROACH TO CODE-SWITCHING AMONG L2 TEACHERS

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ABSTRACT

Classroom interaction in the second language (L2) is an important source of language input for students. Yet, code-switching from the target language to another language is commonplace in many L2 classrooms. Psycholinguistic studies have shown code-switching happens through top-down and bottom-up processes during bilingual speech production. Triggering is a bottom-up process where code-switching is caused by words that are shared between different languages. To investigate if triggered code-switching takes place among secondary school ESL teachers in Malaysia, a study on teachers' language use in class was conducted. A total of 111 minutes of interaction from two English lessons was audio recorded and 225 instances of teacher code-switching in the recordings were analysed. The analysis reveals that lexical transfers between English and Malay and selected discourse markers triggered instances of code-switching among the teachers. The findings suggest that teacher code-switching in L2 classrooms should be considered from both top-down and bottom-up perspectives. Based on these findings, suggestions for future studies on code-switching among L2 teachers were provided.

Introduction

Code-switching is a common occurrence in many second language (L2) classrooms, regardless of the target language (TL) or the proficiency levels of the students (Cook, 2016). In general, code-switching is when the L2 teacher or a student switches from the TL to another language during the process of teaching and learning. This usually involves another language that they have in common such as a shared first language (L1). As classroom interaction is an important source of input for language learners, many studies have been conducted on the use of code-switching among L2 teachers. Most of these studies focused on the pedagogical functions of their code-switching (Temesgen & Hailu, 2022). In other words, the studies were conducted with the idea of code-switching being the result of top-down processing during bilingual speech production (i.e., code-switching is based on speaker intentions). For example, teachers code-switch because they want to achieve a particular classroom effect (Temesgen & Hailu, 2022). However, it has been found that code-switching among bilinguals is the result of both top-down and bottom-up processes (Green, 2018; Green & Wei, 2014). Bottom-up processing of code-switching is a type of code-switching that is triggered or primed by some sort of stimulus in the conversation. Typically, when bilinguals code-switch "involuntarily", they are said to have experienced the bottom-up processing of code-switching. Unfortunately, there are not as many studies on the bottom-up processes behind teacher code-switching in L2 classrooms. As L2 teachers are proficient and functional bilinguals who experience all of the related processes during speech production, it is important to further investigate teacher code-switching in L2 classrooms from a bottom-up perspective. Thus, the current study was conducted to investigate triggering in the code-switching of secondary school ESL teachers in Malaysia, a multiracial and multilingual country. The specific objectives of this study are:

- to identify instances of triggered code-switching by secondary school ESL teachers in Malaysia
- to describe the trigger words behind triggered code-switching by secondary school ESL teachers in Malaysia

Literature Review

The Control Process Model of Code-Switching

According to Muysken (2013), intra-sentential use of more than one language can be divided into three categories: insertion, alternation, and congruent lexicalisation. Based on Muysken's (2013) typology, code-switching is said to have occurred only when a speaker alternates between two languages "without either one being subordinated to the

other" (Muysken, 2013, p. 713). In other words, there is a complete switch from one language to the other, including both grammar and lexicon. However, inserting singular items from one language into a sentence in another language is not considered code-switching. Similarly, congruent lexicalisation, whereby an utterance is made up of multiple items from two languages due to a high level of structural similarity, is also not considered code-switching. Over the years, many frameworks have been developed to account for code-switching under different linguistic paradigms. For example, under sociolinguistics, Gumperz (1982) proposes six functions for code-switching including quotations, interjections, and so on. Later, Auer (1999) suggests that code-switching can be discourse-related or participant-related.

Other than sociolinguistic-based frameworks, there are also psycholinguistic-based frameworks to study code-switching and Control Process Model is one of them (Green, 2018; Green & Wei, 2014). Control Process Model was developed based on the concept of the co-activation of languages during bilingual speech production. When a bilingual formulates a message during the process of speech production, the corresponding linguistic representations in both of his/her languages are activated. Control Process Model suggests that the co-activated languages are likely to be in a "cooperative" relationship. This means that control of the speech production system can quickly shift from one language to another. This allows for both top-down and bottom-up processing of code-switching to take place.

As mentioned earlier, the top-down processing of code-switching is a type of code-switching that is based on speaker intentions whereas the bottom-up processing of code-switching is stimulus-based. According to Green and Wei (2014, p. 504), the top-down processing of code-switching is when a bilingual switches from one language to another based on his/her "intention to use an item or construction from the other language". Accordingly, the top-down processing of code-switching has been studied mostly in the form of the functions of code-switching via the sociolinguistic frameworks (e.g., Al Rousan & Merghmi, 2019; Prin, 2021; Smith-Christmas, 2014; Zebari, 2014). In contrast, bottom-up processing of code-switching is one that is "opportunistically adopted" (Green & Wei, 2014, p. 505) due to the presence of a certain stimulus in the conversation. Under the Control Process Model, two stimulus-based bottom-up processes can lead to code-switching namely, triggering and priming.

Firstly, code-switching can be "triggered" by certain words that are shared between languages such as lexical transfers, proper nouns, and bilingual homophones. Lexical transfers are words from one language that have been adopted into another language. Although they may be spelt differently in the receiving language, they are mostly pronounced in a similar manner. For example, *televisyen* in the Malay language is a lexical transfer based on the English word "television". On the other hand, bilingual homophones are words in different languages that are spelt and pronounced similarly because they have the same origins. English and Dutch, for example, are both West Germanic languages under the Indo-European language family. As a result, English and Dutch have bilingual homophones such as "cat/*kat*" and "book/*boek*". Finally, proper

nouns are the names of people or places that do not change regardless of the language being used and as such, are also considered shared words. The triggering theory was originally proposed by Clyne (2003) who found that the use of a trigger word in one language increases the activation level of the other language (to which the trigger word also belongs), leading to items from that language being selected "accidentally" during speech production that is, code-switching. However, Broersma and de Bot (2006) argue that only words that directly follow a trigger word (within the same clause) have the best chance of being switched. This is because the activation of the other language is the highest right after the production of a trigger word. In a more recent study, Broersma et al. (2019) concede that trigger words can also cause code-switching in the subsequent clause if the first clause has more than one trigger word.

Apart from triggering, priming is another stimulus-based, bottom-up process that can lead to code-switching. Primed code-switching is when a code-switched utterance is likely to be followed by another code-switched utterance. When a bilingual's conversational partner uses code-switching, the bilingual has to process what has been said (Green, 2018). To do so, the bilingual activates both of his/her languages. This can lead to the bilingual also engaging in code-switching due to the co-activation of languages. For example, Fricke and Kootstra (2016) found that the code-switching that took place among a group of Spanish-English speakers from Florida was influenced by priming. Interestingly, it was found that priming was not restricted to between speakers. Priming within the same speaker that is, self-priming is just as likely as priming between speakers or interlocutor-priming. In an earlier study, it was found that bilinguals also tend to code-switch at the same syntactic position as the preceding code-switched utterance (Kootstra et al., 2012).

In summary, code-switching involves a combination of top-down and bottom-up processing during bilingual speech production. Code-switching can be the result of speaker intentions in the former case, or it can be stimulus-based for the latter. Examples of bottom-up processing of code-switching are triggered code-switching and primed code-switching.

Code-Switching Among L2 Teachers

In terms of teacher code-switching in L2 classrooms, many studies have been conducted on different aspects of the phenomenon. For example, classroom interaction in the L2 is an important source of language input for students. Thus, a number of these studies focused on the amount of teacher code-switching (e.g., Nakatsukasa & Loewen, 2015; Taşçı & Ataç, 2020; Tsagari & Georgiou, 2016). They investigated how often L2 teachers code-switch in class. In particular, Nakatsukasa and Loewen (2015) as well as Tsagari and Georgiou (2016) found that L1 made up approximately 40% of L2 teachers' language use in class. Nakatsukasa and Loewen (2015) coded teacher utterances as L1 (English only), L2 (Spanish only), or mixed language (mix of English and Spanish) before adding up the number of utterances under each category to determine the extent of teacher code-

switching whereas Tsagari and Georgiou employed the word count method where they counted the number of L1 (Greek) and L2 (English) words spoken by teachers.

Most of the studies on teacher code-switching in L2 classrooms, however, are based on the functions of teacher code-switching (Adriosh & Razi, 2019; Debreli, 2016; Hall & Cook, 2013; Paker & Karaağaç, 2015). The studies were mostly set within the English as a Second Language (ESL) or English as a Foreign Language (EFL) context. For example, Hall and Cook (2013) conducted a survey on the use of code-switching among English teachers from more than 100 countries. It was revealed that the core functions of code-switching stood out the most to the teachers such as to introduce new vocabulary items and to explain grammar rules. In another study, Paker and Karaağaç (2015) used a combination of questionnaires and interviews to investigate the use of code-switching among EFL teachers in Indonesia. Similarly, the researchers found that teachers code-switched to introduce new vocabulary items as well as to explain difficult topics. In a more recent study, Debreli (2016) conducted one-on-one and focus group interviews with more than 50 EFL teachers in Northern Cyprus. The teachers' responses showed that teachers code-switched to introduce new vocabulary items, explain difficult topics, and give instructions. More recently, Adriosh and Razi (2019) collected actual production data from the classroom to identify the functions of teacher code-switching. It was discovered that teachers code-switch for two main reasons: code-switching for constructing and transmitting knowledge and code-switching for interpersonal relations. Code-switching for constructing and transmitting knowledge is related to pedagogical functions such as clarification, repetition, and recapitulation whereas code-switching for interpersonal relations mostly involves the function of socialisation. In a review of studies in this area, Temesgen and Hailu (2022) propose that teacher code-switching in L2 classrooms can be summarised into three categories: academic function, managerial function, and social function.

As can be seen, research on teacher code-switching in L2 classrooms mostly took on a top-down approach to teacher code-switching. Nevertheless, there are some studies conducted based on the bottom-up processing of code-switching (Rahimi & Eftekhari, 2011; Yao, 2016). For example, Rahimi and Eftekhari (2011) observed that some of the code-switching demonstrated by Iranian EFL teachers were triggered by lexical transfers between Persian and English. However, they did not observe any code-switching related to proper nouns or bilingual homophones, which are the other two categories of trigger words identified under the triggering theory. The lack of bilingual homophones was eventually attributed to the fact that Persian and English are not "genetically related languages" (Rahimi & Eftekhari, 2011, p. 57) as they belong to different branches of the Indo-European language family. On the other hand, Yao (2016) found that discourse markers can also trigger code-switching among EFL teachers. English markers such as "okay" and "now" as well as the Mandarin marker '好' (good) can lead to code-switching among the Chinese ESL teachers in her study. However, it should be noted that both Rahimi and Eftekhari's (2011) study as well as Yao's (2016) study were conducted in largely monolingual contexts (Iran and China). This suggests that research on the bottom-

up processing of code-switching about teacher code-switching in L2 classrooms is not as extensive as research on the top-down processing of code-switching especially in multilingual settings.

Methodology

Conceptual Framework

The conceptual framework for the study (Figure 1) is based on the Control Process Model whereby triggered code-switching is a type of bottom-up processing of code-switching (Green, 2018; Green & Wei, 2014). Triggered code-switching is said to be related to trigger words such as lexical transfers, proper nouns, and bilingual homophones. As such, the three categories of trigger words served as the main guide during the analysis of triggered code-switching by secondary school ESL teachers in Malaysia.

Figure 1
Conceptual Framework for the Current Study
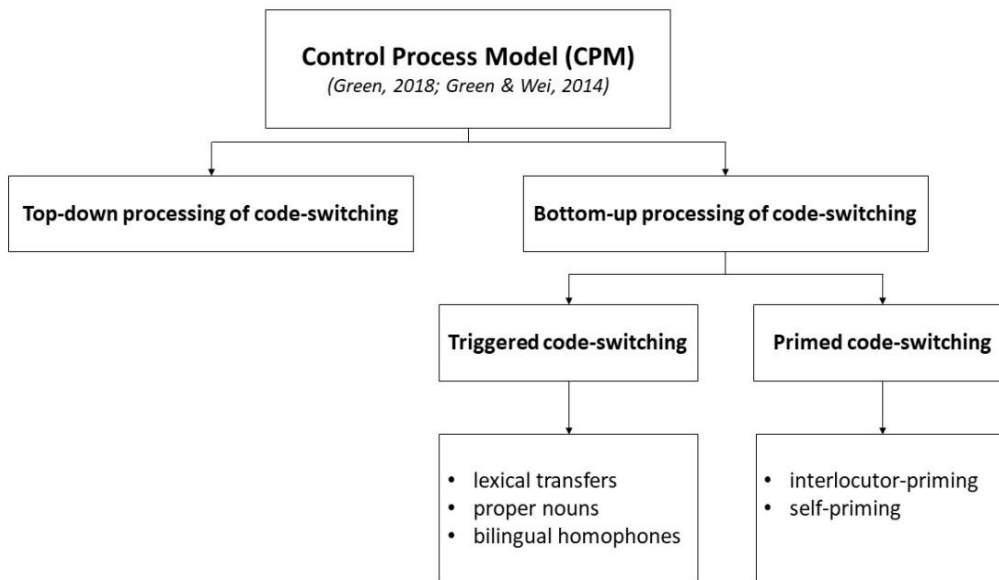
Sample

Two teachers from two different public secondary schools in Sabah, Malaysia participated in the current study. Because previous studies have shown that teacher code-switching can be the result of teachers' lack of competence in the L2 (Jogulu & Mohd Radzi, 2018), to provide a clearer picture of the triggering phenomenon, proficient and experienced teachers who were professionally trained were purposefully sampled for the current study. Both teachers have a bachelor's degree in Teaching English as a Second Language.

One of the teachers even has a master's degree in Applied Linguistics. In terms of proficiency, both teachers achieved the C1 level in the Cambridge Placement Test for English. Based on the Common European Framework of Reference (CEFR) scale, individuals with a C1 level of achievement in a language are considered proficient users of the language (Council of Europe, 2018). In addition to that, both teachers had been teaching English for more than five years at the time the study was conducted. This is an important criterion as, according to Jogulu and Mohd Radzi (2018), teachers who have been teaching for more than five years are considered experienced teachers. Table 1 provides further information about the teachers including their L1 and L2. To ensure the anonymity of the teachers, they are referred to as Teacher A and Teacher B.

Table 1
Information About the Teachers

	Teacher A	Teacher B
Gender	female	female
Age	34	36
Ethnicity	Malay	Kadazan
L1	Malay	Kadazandusun
L2	English	Malay/English
Professional Qualifications	Bachelor	Master
CEFR Level for English	C1	C1
Years of Teaching Experience	10	12

Instrument and Data Collection

Data collection for the current study was carried out in April 2022. The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Research Ethics Committee of Universiti Kebangsaan Malaysia (Ethics approval code: JEP-2022-176; Ethics approval date: 14 April 2022).

The main instrument used for data collection is audio recordings. According to Lester and O'Reilly (2019), audio recordings are suitable as they can capture spoken language in its entirety. For the recording, the teachers were provided with portable audio recorders (Sony ICD-PX370 Mono Digital Voice Recorder) that are easy to operate in the classroom. The recording was carried out by the teachers themselves to minimise interference in the teaching and learning process. The teachers each audio recorded one double-period English lesson for the current study. The lesson by Teacher A was a lesson on writing for Form 4 (16 years old) students whereas the lesson by Teacher B was a lesson on reading, also for Form 4 students. Lessons from the same grade were chosen to ensure that the lessons were comparable in terms of difficulty. The students were also comparable in terms of their level of English proficiency. Both classes were made up of lower intermediate students. However, Teacher B's class has 50% more students (n=31)

compared to Teacher A's class (n=20). Due to differences in the timetable at different schools, Teacher A's double-period lesson lasted for 63 minutes whereas Teacher B's double-period lesson lasted for 48 minutes. This was not seen as an issue as the current study focused on the qualitative aspect of the teachers' code-switching rather than the quantitative aspect. At the end of the lessons, the audio recordings were sent to the main researcher for data analysis.

Data Analysis

Prior to data analysis, the recordings were transcribed verbatim by the main researcher. To facilitate the data analysis process, the transcriptions for the current study were arranged in a table form, following Hepburn and Bolden's (2013) suggestion. An example of the table used for the transcriptions is provided in Figure 2. As can be seen, the table in Figure 2 includes information such as line number and speaker to facilitate the data analysis process. (For the transcription conventions used, refer to the Appendix.)

To facilitate the subsequent analysis for code-switching, as part of the initial transcription process, words from any language other than English used by the teachers (and students) during the lessons were also identified. It was found that all the non-English words used were Malay words even though one of the teachers' L1 is Kadazandusun. This is most probably due to the fact that Malay is the shared language between multiracial teachers and students. In other words, the code-switching in the current study is from English to Malay. It is important to note that Malay belongs to the Austronesian language family whereas English, as mentioned earlier, is an Indo-European language. Following that, instances of teacher code-switching were identified based on Muysken's (2013) typology. Teacher code-switching is when teachers make a complete switch from English to Malay, including grammar and lexicon, in the process of teaching. However, the teacher turns that are entirely in Malay was not considered teacher code-switching. Instances of student code-switching were not identified as the focus of the current study is on teacher code-switching. An example of teacher code-switching can be seen in Figure 2. In Line 16, Teacher A made a complete switch from English to Malay, including grammar and lexicon.

Figure 2
An Example of the Transcription Table

Lesson: Teacher A	
Date: 21 April 2022	
Total length: 63 minutes 12 seconds	

Line number	Speaker	Text
1	Teacher A	okay can we start our lesson ?
2	Student	done done =
3	Teacher A	= can we start (.) settle everything
4	Student	no =
5	Teacher A	= no ? anything you want to discuss ?
6	Student	no =
7	Teacher A	= no alright okay now today we are going to continue with yesterday's
8		activity take out your exercise boo:k (.) take out your exercise boo:k
9		(students talking among themselves)
10	Teacher A	okay ? we continue with question seven ? there was a piece of paper
11		inside start with that one essay *kamu* start with that one okay you
12		answer the first question number two: in your essa:y you have this one
13		a message or map you either can put about a message or you can put
14		about map settle number two number three: your essay must have
15		element of surprise (.) three points if you answer all these three: you
16		will get marks (.) okay *jawab je tiga ni: kamu akan dapat markah* (.) and
17		remember yesterda:y when you write your essa:y you must have the

Next, all instances of teacher code-switching were analysed to determine if they were influenced by triggering. To do so, each English word directly preceding an instance of teacher code-switching to Malay was identified. Then, the words were analysed to determine whether they are shared words between the two languages (Broersma et al., 2019). Two dictionaries were referred to for this part of the analysis: the Cambridge Advanced Learner's Dictionary (Cambridge University Press, 2013) and the *Kamus Dewan*'which is a leading dictionary for the Malay language (Dewan Bahasa dan Pustaka, 2010). If the word preceding the switch was found in both dictionaries, the word was regarded as a shared word between English and Malay. On the contrary, if the word preceding the switch was only found in the English dictionary, the word was not considered a shared word between English and Malay. If the word preceding a switch is a proper noun, it was also considered a shared word between English and Malay. Switches following a shared word were categorised as triggered code-switching and switches following a non-shared word were categorised as non-triggered code-switching (Broersma et al., 2019). Thus, the analysis for triggered code-switching in the current study is entirely based on the teachers' speech in class which has been transcribed. This is in line with the procedures of previous studies on triggered code-switching such as Broersma and de Bot (2006) and Broersma et al. (2019). All instances of teacher code-switching were analysed based on these procedures.

Instances of Triggered Code-Switching by Secondary School ESL Teachers in Malaysia

The transcriptions were first analysed to identify all instances of teacher code-switching. Excerpt 1 shows teacher code-switching taken from Teacher A's lesson.

Excerpt 1

103	Teacher A	where is your book =
104	Student 3	= *tak ada* teacher =
105	Teacher A	= ah nevermind la you you continue eh write down the answer
106		down here la (.) *tak payah tam* no need to paste anything down
107		yet *tak payah tampal lagi* because i want to collect the paper
108		(2.5) do new book la syukri =
109	Student 3	= ah =
110	Teacher A	= new book new book

In Excerpt 1, Teacher A was asking a student if he had his book with him to which the student replied in Malay that he did not (Line 104). Teacher A then instructed the student to write down his answers on a handout that she had just provided. In the middle of Line 106, Teacher A switched from English to Malay (*tak payah tam*) to inform the student that he does not have to paste the handout into his book just yet. As can be seen, the switch is a complete switch into Malay including both grammar and vocabulary. However, Teacher A only articulated the first syllable of the word "*tampal*" which is the Malay word for "paste" before switching back to English. At the beginning of Line 107, Teacher A switched to Malay again (*tak payah tampal lagi*). It is a repetition of the earlier switch but in full. Thus, two instances of teacher code-switching were identified from this teacher turn. Apart from Teacher A, Teacher B also engaged in code-switching during her lesson.

Excerpt 2

196	Teacher B	okay so let's look into your textbook now (.) *kat sini* (.) it tells
197		you the story of how coral reef uh exist *macam mana dia*
198		*terbentuk* and then later on *apa jadi kat dia*

In Excerpt 2, Teacher B was briefly explaining about an article in the textbook to her students. In this teacher turn, three instances of teacher code-switching can be observed. In the middle of Line 196, the teacher briefly switched from English to Malay for the phrase "*kat sini*" which means "over here" to refer to the article. A second longer switch from English to Malay (*macam mana dia terbentuk*) occurred at the end of Line 197 followed by a third switch (*apa jadi kat dia*) in Line 198. (Note that the two excerpts above are provided as examples of teacher code-switching that occurred in Teacher A and

Teacher B's lessons. The code-switching described here are not triggered code-switching thus, no trigger words were identified.)

From the two lessons, 225 code-switches were identified. Teacher A's lesson had more instances of code-switching (n=126) compared to Teacher B's lesson (n=99). However, Teacher A's lesson was longer than Teacher B's lesson. Teacher A's lesson was 63 minutes long whereas Teacher B's lesson lasted for 48 minutes. When averaged, it was found that both teachers code-switched at least twice per minute. Nevertheless, this analysis was carried out only to provide an idea of the amount of code-switching that took place in both lessons. As mentioned earlier, the current study focused on the qualitative aspect of the teachers' code-switching and not the quantitative aspect.

Following that, words directly preceding an instance of teacher code-switching were identified and analysed. As none of the words that preceded teacher code-switching are proper nouns, reference was made to the two dictionaries mentioned earlier for all the words. It was found that some of the words are shared words between English and Malay, that is, they exist in both languages. The code-switching that occurred following these words is categorised as triggered code-switching. On the contrary, code-switching that takes place after English words (words that are not shared with Malay) is classified as non-triggered code-switching. Table 2 summarises the number of triggered code-switching and non-triggered code-switching in Teacher A and Teacher B's lessons.

Table 2
Frequency of Triggered Code-switching and Non-triggered Code-switching in Teacher A's and Teacher B's Lessons

Lesson	Total Number of Code-switches	Triggered Code-switching	Non-triggered Code-switching
Teacher A	126	5	121
Teacher B	99	5	94

As shown in Table 2, Teacher A and Teacher B each had five instances of triggered code-switching in their respective lessons. However, in comparison to the total number of teacher code-switches, the number of triggered code-switching is relatively small. Triggering accounted for 3.9% of Teacher A's code-switching and 5% of Teacher B's code-switching. The trigger words that led to Teacher A and Teacher B's code-switching are presented in the following section.

Trigger Words Behind Triggered Code-Switching by Secondary School ESL Teachers in Malaysia

Excerpt 3 shows triggered code-switching taken from Teacher A's lesson. Two instances of teacher code-switching are found in Line 265. For the first switch, the teacher was responding to a student's question. The teacher initially responded in the English

affirmative form before she repeated the Malay phrase used by the student ("*boleh tulis*" which translates into "can write") to further reinforce her message. In this sense, the switch was most probably an intentional switch or the result of top-down processing. However, the second switch ("*pun tak apa*") was triggered by the word "pencil". In this case, the word "pencil" is an English lexical transfer in Malay ("*pensil*"). In addition to this instance of triggered code-switching, other instances of triggered code-switching in Teacher A's lesson also involved lexical transfers between English and Malay such as "message" ("*mesej*"), "element" ("*elemen*"), and "essay" ("*esei*"). Among them, the English word "element" triggered two instances of code-switching to Malay for Teacher A. No triggered code-switching as a result of bilingual homophones was observed in Teacher A's lesson.

Excerpt 3
| 264 | Student 8 | *boleh tulis dah* = |
| 265 | Teacher A | = yes yes *boleh tulis* (.) write down with pencil *pun tak apa* |

In Teacher B's lesson, code-switching was similarly triggered by lexical transfers between English and Malay such as "pyramid" ("*pyramid*"), "organism" ("*organisma*"), "technology" ("*teknologi*"), "cement" ("*simen*"), and "option" ("*opsyen*"). Excerpt 4 shows three examples of triggered code-switching in Teacher B's lesson. The first switch in Line 301 ("*pernah terfikir tak macam mana*") was a direct translation of the preceding clause. Once again, the switch was most probably an intentional switch. However, the second and third switches in Line 302 were both triggered by lexical transfers between English and Malay. The second switch ("*zaman dulu*") was triggered by the English word "pyramid" ("*pyramid*"). Following that, there was a brief switch back to English before another switch to Malay ("*tapi dia boleh bina pyramid yang*"). The third switch was also triggered by a lexical transfer between English and Malay. In this case, it was triggered by the English word "technology" ("*teknologi*"). Similarly, no triggered code-switching as a result of bilingual homophones was observed in Teacher B's lesson.

Excerpt 4
301	Teacher B	have you ever wonder *pernah terfikir tak macam mana* they
302		can build the pyramid *zaman dulu* without technology *tapi dia*
303		*boleh bina piramid yang* =
304	Student 4	= *besar* =
305	Teacher B	= very very huge until now is still there

In addition to the above, there were some instances of code-switching among the teachers that were triggered by discourse markers. Excerpt 5 taken from Teacher A's lesson. Teacher A was giving feedback to a student about her essay. At the beginning of Line 341, Teacher A briefly switched from English to Malay ("*kat sini*") following the discourse marker "okay". At the end of Line 341, the teacher switched from English to

Malay again ("*cuma kamu* teacher *tak nampak elemen* surprise *tu kat mana contohnya"/* "I do not see where the element of surprise is") following the second "okay". (Here, the word "teacher" and "surprise" are considered as insertions of singular English words into an otherwise Malay sentence. Thus, "*cuma kamu* teacher *tak nampak elemen* surprise *tu kat mana contohnya*" is considered as a continuous stretch of Malay and the only switch occurred after the word "okay".)

Excerpt 5

341	Teacher A	okay *kat sini* (1.5) your essay is good okay *cuma kamu* teacher
342		*tak nampak elemen* surprise *tu kat mana* (1.0) *contohnya* for
343		example I give you ah this morning

On the other hand, in Teacher B's lesson, there were some instances of triggered code-switching following the phrase "okay so". In Excerpt 6, Teacher B was explaining coral reefs to her students. In Line 296, there was a switch from English to Malay ("*apa kegunaan dia*") following the phrase "okay so". This is also an example of code-switching triggered by discourse markers although the discourse marker used here is the phrase "okay so" rather than just the word "okay". It was observed that this is an idiosyncrasy on Teacher B's part where she often combines these two words when speaking in English. Excerpt 7 is another example of code-switching by Teacher B following the phrase "okay so".

Excerpt 6

294	Teacher B	alright there are <u>huge</u> amounts of limestone under the ocean in
295		islands and mountains these limestone islands and mountains
296		are called coral reef okay so *apa kegunaan dia* what do we do
297		with that so the Egyptian used it to build the great pyramids

Excerpt 7

466	Teacher B	coral reef *ni* is ve:ry expensive okay so *dia orang memang nak*
467		how however alright the chemical threat is a threat to the coral
468		reef

Discussion

Results from the data analysis in the current study echo the results of previous studies on teacher code-switching in L2 classrooms based on the concept of triggering. Both Rahimi and Eftekhari's (2011) study and the current study found triggered code-switching among L2 teachers due to lexical transfers between the TL and the teachers' L1. However, in the current study, Teacher B's L1 was Kadazandusun and Malay was not her L1. Thus, in Teacher B's case, her code-switching was motivated by lexical transfers between two languages whereby neither was her L1. Nevertheless, the current study lends support to

the idea of teacher code-switching in L2 classrooms being related to lexical transfers between languages. Apart from that, all of the lexical transfers that led to code-switching in the current study are nouns. A similar observation was made in an earlier study on Croatian-English speakers (Hlavac, 2012). It was found that most of the lexical transfers that resulted in code-switching are nouns. This suggests that there is a need to explore further the triggering effect of other types of lexical transfers such as verbs and function words (e.g., determiners and prepositions).

Interestingly, both Rahimi and Eftekhari's (2011) study and the current study did not find any triggered code-switching due to bilingual homophones. Rahimi and Eftekhari (2011) attributed the lack of bilingual homophones in their data to the fact that Persian and English are not "genetically related languages" (p. 57) as they belong to different branches of the Indo-European language family. Similarly, Malay and English are also not genetically related as Malay is an Austronesian language. Thus, this could be a possible explanation for the absence of triggered code-switching in the current study due to bilingual homophones nor proper nouns. However, triggered code-switching has been found between languages that are not closely related such as Dutch and Arabic (Broersma & Bot, 2006) even though most of the triggered code-switching that occurred were associated with the use of proper nouns rather than bilingual homophones.

Additionally, the data analysis revealed that some of the teachers' code-switching in the current study were triggered by discourse markers. Similar observations have been made by Yao (2016), whereby English markers such as "okay" and "now" led to code-switching among EFL teachers in China. In the current study, the English marker "okay" also led to instances of teacher code-switching. Code-switching due to the use of discourse markers was also found in an earlier study on Spanish-English speakers by Pena (2011). Thus, the current study has reinforced the potential of discourse markers as trigger words for code-switching. This is important because discourse markers were not included in the original triggering theory that has mostly concentrated on three categories of trigger words, namely, lexical transfers, proper nouns, and bilingual homophones (Clyne, 2003). As such, the findings of the current study can additionally help to inform future studies within the triggering paradigm.

Nevertheless, it is important to bear in mind that in Yao's (2016) study, English and Mandarin do not share discourse markers. On the other hand, in the current study, the English word "okay" is part of the Malay language, "*okey*" (Dewan Bahasa dan Pustaka, 2010). Thus, it is unclear whether the code-switching triggered by the word "okay" in the current study is due to its status as a discourse marker or its status as a lexical transfer between English and Malay. To clarify this issue, future studies with a greater amount of production data is needed. A greater amount of production data may be able to reveal code-switching due to other English markers. According to Lee (2017), apart from the word "okay", words such as "so" and "right" as well as "now" also function as discourse markers in English. Because these words are undoubtedly not part of the Malay language, any code-switching that occurred following the use of these words will truly establish the triggering effects of discourse markers.

Finally, the data analysis revealed that the number of triggered code-switching is relatively small. As mentioned earlier, triggering accounted for less than 5% of either teacher's code-switching. This suggests that the bottom-up processing of code-switching, especially triggered code-switching, may not be as relevant to Malaysian ESL teachers. However, previous studies on triggered code-switching among L2 teachers did not report on the amount of triggered code-switching (Rahimi & Eftekhari, 2011; Yao, 2016). As such, it is not possible to draw any conclusions as to whether the small number of triggered code-switching is a common scenario or something that is exclusive to the Malaysian context. At the same time, these findings indicate that most of the teacher code-switching that occurred are, in fact, purposeful and functional (i.e., via top-down processing) which is an observation that has been repeatedly made (Ferguson, 2009).

Conclusion

The current study set out to investigate possible triggered code-switching among secondary school ESL teachers in Malaysia. Two English lessons in different secondary schools in Sabah, Malaysia were audio recorded for the purpose of this study. Analysis of the transcriptions revealed that triggering did occur in the code-switching of Malaysian ESL teachers. Specifically, triggered code-switching among Malaysian ESL teachers is related to the use of lexical transfers between English and Malay. In addition to that, there were some instances of triggered code-switching due to the use of the English discourse marker, "okay". These findings have successfully provided new insights into teacher code-switching in L2 classrooms as the result of different processes during bilingual speech production. However, the current study also has certain limitations. The study involved only two teachers from Sabah, Malaysia as participants. Accordingly, the findings of the study may not be applicable to the larger population of English teachers across Malaysia. Apart from that, the current study is based on slightly less than two hours of production data. The amount of data collected may not have been adequate to reflect other types of triggered code-switching such as code-switching due to bilingual homophones or proper nouns. Moreover, the small number of triggered code-switching in general suggests that it may be more productive to consider the psycholinguistic aspect of teacher code-switching in tandem with other aspects of code-switching such as the interactional aspect or the functional aspect when it comes to teacher code-switching in L2 classrooms. Other bottom-up processes related to code-switching such as primed code-switching should also be explored in future studies. This is because primed code-switching not only involves stimulus from the speaker (self-priming) but also from the speaker's conversational partner (interlocutor-priming) which is another important dimension in the bottom-up processing of code-switching among L2 teachers.

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Appendix: Transcription Conventions

Transcription Conventions	Meaning
word	talk produced in English
word	talk produced in any language other than English
=	the two lines connected by the equal lines are continuous talk
(1.2)	silence timed in tenth of a second
(.)	micro pause of less than 1 second
?	rising intonation
:	lengthened sound
<u>word</u>	emphasis