Limited Proficiency English Teachers' Language Use In Science Classrooms

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ABSTRACT

The English for Teaching Mathematics and Science (ETeMS) policy was reversed in 2012 citing the reason that about 40% of the teachers were still using Malay in the ETeMS classroom hence, affecting the successful implementation of ETeMS. The quality of English used by the 60% and the other 40% especially in the rural areas motivates this study. Data for this investigation was obtained from three English teachers who have limited proficiency. These limited English proficiency (LEP) teachers teach science through English in a rural primary school in Malaysia. Transcripts of nine lessons, classroom observations and teacher interviews were gathered. The findings reveal that the English language used by the LEP teachers was simple and frequently riddled with errors which resulted in distortion of content taught. Errors were linked to negative transfers from Bahasa Melayu, teachers' interlanguage, unsuccessful guesswork and memorizing words without full understanding of meaning. The LEP teachers therefore, made poor models for their students. The researcher concludes that even if the LEP teachers had striven to teach completely in English, the policy may have been seen to be implemented, but the quality of classroom discourse and content taught would have been problematic.

Keywords: teacher talk; content-based instruction; change; CLIL; classroom discourse

INTRODUCTION

In 2003, despite objections from various quarters ETeMS was introduced to Year 1, Form 1 and Lower 6 pupils. ETeMS was introduced following concern over the deteriorating command of English among young Malaysians who were finding difficulties in getting employment partly due to poor English proficiency. ETeMS also came about from the realization that English is an important international language for trade and the transfer of scientific knowledge and technology in preparing Malaysia to achieve its Vision 2020 (Gill, 2004). Additionally, the Malaysian government realized that its national language and translation bodies were unable to cope with the translation of technical literature into Malay. This would cause Malaysia to fall behind in its race for developed nation status and in the competition for foreign investment (Johnson, 2002).

Given the compelling reasons for having an ETeMS reform, the government had the following objectives in its science curriculum:

- To provide opportunities for students to acquire science knowledge and skills, develop thinking skills and strategies, and thoughtful learning through the inquiry approach

- To produce active learners by providing ample opportunities to engage in scientific investigations through hands-on activities and experimentations
- To keep abreast of developments in science and technology by enhancing their capability and know-how to tap the diverse sources of information on science written in English
- To provide opportunities for students to use English and hence increase their proficiency
- To develop students' ability to use English for study and communication

(Ministry of Education, 2002, p. 11)

2012 marks the reversal of the ETeMS policy which was introduced in 2003. In explaining the reversal of ETeMS, the Minister of Education stated that only 53% to 58% of the whole period allocated for the two subjects was conducted in English. He also reported that only some of the mathematics and science teachers who took the English Proficiency Assessment test reached the proficiency level (Husna, 2009, p.2).

RESEARCH AIM

The statement by the Minister of Education implies that about 60% of the teachers attempted to implement ETeMS. The remainder would still be using some English. Given the criticisms levied against the LEP teacher in the media (Munir, 2009) and complaints from parents, this study tries to address the question: What is the nature of the English language used by LEP teachers in rural areas in attempting to teach science through English?

METHOD

Data was collected from three LEP teachers, Ruhani, Farina and Zuleyka (pseudonyms), from a rural primary school. They were deemed limited English proficient based on their performance in the English Proficiency Test which was compulsory for ETeMS teachers. The teachers had an average of 8 years of teaching of which 3-4 years was in ETeMS. Sixteen 35 minutes single periods or double periods lessons were observed and audio-recorded.

Nine lessons, three from each teacher, containing the most amount of talk were fully transcribed. These transcripts provided the data for identifying and categorizing themes (which will be discussed later) that emerged in relation to teachers' English language use. For coding purposes, the transcribed lessons were segmented into units of analysis i.e. *move* and *act* (Sinclair & Brazil, 1982). Intra-coder reliability was established by re-coding the transcripts after a lapse of one month. The level of agreement was between 93% to 95%. Interviews with the teachers were conducted to discuss mainly pertinent details identified within the transcripts. To assist recall of information, transcripts of the lessons were provided. All interviews were recorded with the teachers' consent and conducted in Bahasa Melayu at their request. The interviews were then translated into English.

STUDIES ON ETeMS

ETeMS has been studied in a myriad of perspectives by various researchers. Among topics researched are: the professional development of teachers (Noraini et al., 2007), the discourses of doing science (Revathi et al., 2006), teachers' reactions to EteMS (Balkis, 2004), teachers' perceptions of ETeMS (Abu Bakar, 2006), the effects of using English on instruction ((Isahak et al., 2008), improving teaching and learning skills (Ng, 2005), the challenges of using scripted lessons (Tay, 2009) and the implementation of ETeMS in secondary schools (Palaniapan, 2007). Some of these studies have touched on teacher-related issues but none has focussed on the nature of teachers' language use as its main objective. This study hopes to contribute in a small way to this end.

CONTENT-BASED INSTRUCTION (CBI)

ETeMS is a form of content-based instruction which targets the dual development of content and language (see Costa & D'Angelo, 2011, for various definitions of CBI). Marsh (2008) maintains that the key in CBI is integration. This is based on the premise that "people do not learn languages, and then use them, but that people learn languages *by* using them" (Eskey, 1997, p. 133, emphasis in original). It follows therefore that instruction should focus on providing integration between formal language work and those tasks requiring the use of language which students will face in the target language community (Mohan, 1979). With regard to science, Lidbury and Zhang (2008) note that special languages have emerged along with the development of scientific knowledge and the growth of new specializations. These specialized languages, they believe, can be considered as foreign languages as they are aligned to particular groups and are mostly incomprehensible to people outside these clusters. Thus, for teachers who aspire to assist students in entering any of these communities, a strong command of the language is a must (Hillyard, 2011).

Mohan (1986) points out that all content learning is language learning but the reverse is not true. This is because content learning is often trivialized in language classes. Mohan rightly argues that using L2 as a medium of instruction does not guarantee successful communication. Elsewhere, Marsh (2008) observes the widespread belief that teaching content in English is CBI but he disagrees. He explains that content and language integrated learning (CLIL), as in teaching through English, always involves simultaneous attention to both topic and language. CBI scholars (Hillyard, 2011; Murphey, 1997) warn that CBI does not work when teachers fail to grasp this underlying methodological concept. CBI implies that teachers must have communicative competence. Canale and Swain (1979) propose that communicative competence is the combination of competence in four areas: grammatical competence, discourse competence, sociolinguistic competence, and strategic competence. Clearly, this taxonomy suggests that teachers need to give due attention to other aspects of their discourse besides a focus on content or meaning. While it is crucial for teachers to assist students in noticing the existence of specific linguistic features in the target language, the researcher believes that not all teachers are adept at managing this task (Cammarata, 2010). Lack of resources in the target language creates difficulty in communicating ideas. When caught in such situations, relying on communicative strategies to fill in the gap is

natural. Because these strategies are not utilised consistently, the occurrence of errors is sometimes inevitable.

FINDINGS AND DISCUSSION

The analysis of the LEP teachers' English language use reveals that teaching science through English was limited to simple teaching acts such as *evaluation* (e.g. yes/no), *modelling-drilling* through reading aloud and simple *questioning* (e.g. what is this?) and *directive* (e.g. draw a table fan). This is understandable as many English words and structures were not part of their linguistic repertoire because of their limited knowledge of English. One of the teachers, Zuleyka explained:

> My problem is speaking in English. I use broken English. Although I have passive knowledge, the words don't appear spontaneously when I teach. At times English words don't surface at all (laughs). Sometimes when I think hard they do come to the fore.

Additionally, the findings reveal that teachers' poor proficiency led to a myriad of errors detected even in simple teaching acts. These errors are reflected in Table 1. Errors were especially frequent in four categories: *word choice errors* (i.e. incorrect choice/addition of parts of speech), *syntactic errors* (i.e. errors of syntax involving tense, agreement, morphology, and word order), *omission* (i.e. omitting a part of speech that is required for an utterance to be considered grammatical) and *pronunciation errors* (i.e. deviant pronunciation which is not related to systematic non-native phonological patterns associated with Malaysian English). *Factual errors* which affect the truth value of an utterance (Chun et al., 1982), and *global errors* which violate the overall structure of a sentence making processing difficult (Ellis, 1997) were relatively lower. The individual teacher's list of errors suggests that Ruhani (one of the teachers), was especially weak in pronunciation and selecting correct words. Additionally, approximately 30 % of her errors involved *syntactic errors* and *omission*. She also made the most *global errors* implying that her L2 speech was difficult to understand. Farina's errors (another teacher), mostly involved *word choice* and *omission*. *Syntactic errors* and *pronunciation errors* were also quite frequent. Among the three teachers, she committed the most *factual errors* suggesting frequent distortions in imparted contents. Zuleyka committed the most errors involving syntax. She also committed frequent *omission*, errors in *word choice* and *pronunciation*.

TABLE 1. Summary of errors in three lessons conducted by each teacher

Error \ Teacher	Ruhani		Farina		Zuleyka		Total	
word choice	53	26.2%	177	44.2%	45	16.3%	275	31.3%
syntactic	31	15.3%	62	15.5%	105	38.0%	198	22.5%
pronunciation	68	33.7%	43	10.8%	66	23.8%	177	20.1%
omission	29	14.4%	109	27.2%	53	19.1%	191	21.7%
factual	2	1.0%	6	1.5%	4	1.4%	12	1.4%
global	19	9.4%	3	0.8%	4	1.4%	26	3.0%
Total	202	100%	400	100%	277	100%	879	100%

FACTUAL ERRORS

Only errors related to language proficiency are discussed in this section, although factual errors also occurred due to memory lapses and slips of the tongue.

In Extract 1, Farina is elaborating on the concept *controlling variable* (read *variables*). Earlier Farina stated that *controlling variable* comprises constant variables, manipulated variables and responding variables. However, within the same lesson the phrase was given another meaning:

Extract 1

1. <u>Farina</u> |teacher **nak** controlling [vairəbəl] **ni mesti ada dalam buku**|
    Teacher wants this controlling variable to be in your book.
2. |**salin**|
    Copy.
3. |**lepas tu kamu buat niii**|
    After that you do thiiis.
4. |**ok kamu tulis ni**|
    Ok you write this.
5. |controlling [vairəbəl] **sama** stone|
    Controlling variable is the same as stone.
6. |ok **kamu buat** stone|
    Ok you draw the stone.
7. |to chaaange the length of spriiing **lukis gambar** spriiing|
    To chaaange the length of spriiing, draw the picture of the spriiing.
8. |ok to measure observe|
9. |**dua perkataan kamu boleh jumpa** measure or observe **yaaa?**|
     Two words you can find measure or observe yea?

In this explanation, Farina referred to the stone i.e. *the constant variable* in the experiment as the *controlling variable* (5). In doing this, she contradicted her statement that a *controlling variable* is the super-ordinate of three variables. In extract 1, (her explanation), *controlling variable* is a co-ordinate with two other variables. Farina obviously had memorized the phrase without fully understanding its meaning.

In discussing *variables,* Farina repeatedly used *to keep the same*, *to change* and *to observe* or *measure* to mean *constant variable, manipulated variable* and *responding variable*. When these were not used, she used abbreviated forms such as CV and MV as shown in extract 2:

Extract 2

1. <u>Farina</u> |to change **ni kalau dalam bahasa tahun empat besok kamu akan jumpa**|
    This to change you'll come across it in the language of Year 4 science.
2. |to change **ni adalah {apa dia?** to fix aaa tooo **ni** aaa} (0.2) measuring [vairəbəl]|
    To change this is {what d'ya call it? to fix aaa tooo this aaa} (0.2) measuring variable.
3. |MV yaaa haa measuring [vairəbəl]|

4. |ok {to change} to change **tadi kamu kata apaaa**?|
          Ok {to change} to change what did you say earlier?
5. |**berubah…? ubah tak sama ok?**|
          Change…? changes not the same ok?

In Extract 2, Farina was trying to explain the concept *manipulated variable* which she referred to as *to change*. She explained that *to change* means *measuring variable* (2-3). However, equating *measuring variable* to the phrase *to change* failed to capture the inherent meaning of things being manipulated in the term *manipulated variable*. Later, Farina also used the phrase *to measure* to refer to *responding variable*. That caused difficulty in understanding how *measuring variable* is different from *to measure*. The errors in these examples, it is believed, stemmed from superficial understanding of the terminologies used and confusion resulting from using abbreviations and then matching the wrong words to the letters such as matching *m* and *c* with *measuring* and *controlling* instead of *manipulated* and *constant,* respectively. Farina's imprecise language use distorted the meaning of taught concepts.

GLOBAL ERRORS

Farina and Zuleyka made few *global errors*. Ruhani's record, however, was relatively high suggesting that she was the most difficult to understand. The following illustrates the errors:

Extract 3

What was uttered	**What was intended**
1. |ok firstly when you have make a one battery you can make at above below or top of below one battery|	When you draw a circuit with one battery, you can draw the battery anywhere within the circuit.
2. |ok what is measuring?|	What did we measure?
3. |how many your [span] length for the table?|	How many finger span is the length of your table?

Ruhani has problems verbalizing her thoughts not only in utterances involving complex structures, but also in simple interrogatives (2 and 3). Code-switching or drawings were usually used to clarify meaning in these instances. It was concluded that the response Ruhani received was not because of her discourse competence but rather her strategic competence i.e. the ability to be understood despite the lack of adequate vocabulary and structures.

WORD CHOICE ERRORS

Within this category, more errors involving *incorrect choice* were detected than *incorrect addition*. Table 2 provides a summary of the errors made by each teacher.

TABLE 2. Word choice errors in three lessons conducted by each teacher (Incorrect choice)

Incorrect choice	Ruhani		Farina		Zuleyka		Total	%
	Total	%	Total	%	Total	%		
verb	8	17.4	32	20.6	11	30.6	51	21.5
preposition	4	8.7	11	7.1	3	8.3	18	7.6
noun	26	56.5	105	67.7	9	25.0	140	59.1
determiner	1	2.2	0	0.0	0	0.0	1	0.4
auxiliary	1	2.2	0	0.0	2	5.6	3	1.3
article	5	10.9	3	1.9	8	22.2	16	6.8
adverb	1	2.2	3	1.9	1	2.8	5	2.1
adjective	0	0.0	1	0.6	2	5.6	3	1.3
Total	46	100	155	100	36	100	237	100

Of the three teachers, Farina recorded the highest number of incorrect choice. Apparently, the higher count was due to repeated errors such as her habit of referring to herself as *teacher* instead of using *I* or *me*. Similarly, the use of *pampers* instead of *diaper* is common in communication among Malay speakers (Lim & Teoh, 2007). Hence, both errors were attributed to negative transfers of Malay language habits. Other errors shown below were attributed to her low English proficiency:

Extract 4
1. |ok i want you add the **word** e-n-t ya at the absorb **sentence** eh|
2. |you write thiiis answeeer ok (0.2) **byyy ten**|

In (1), Farina incorrectly used *word* and *sentence* instead of *letters* and *word* because she was unclear about these nouns. The phrase *by ten* was used in (2) because she did not know the phrase *ten times*.
     Incorrect noun choice in Ruhani's data included the use of *span* and *couple* instead of *finger span* and *partner*:

Extract 5
1. |how many your [**span**] measure that first|
2. |with your **couple**|

Although these errors can be attributed to poor proficiency, it was noted that the word *span* was also incorrectly used in the textbook. This suggests that the Ministry of Education was not very thorough in its selection of textbook writers and the editing of textbooks.
     With regard to incorrect choice of verbs, most of the errors were linked to literal translations of Malay as shown in extract 6:

Extract 6
1. |**see** the front|
2. |ok **close** your mouth|
3. |ok **open** page 80|

The first two errors resulted when Farina chose inappropriate counterparts like *see* and *close* instead of *look* and *shut*. Although the words *see/look* and *close/shut* belong to the same semantic field, their use is not interchangeable in the above contexts. Farina's inability to exploit the lexical fields correctly is indicative of her lack of linguistic competence. As for the third example, it is likely the result of literally translating the Malay directive *buka mukasurat 80* (open page 80) into English. *Pusing ke mukasurat 80* the Malay equivalent of *turn to page 80* is not an acceptable structure in Malay syntax. This explains the error.

Table 3 provides a summary of incorrect addition of words made by the teachers. Since none of the errors can be attributed to L1 transfer, it was concluded that they were a reflection of the teachers' interlanguage.

TABLE 3. Word choice errors in three lessons conducted by each teacher (Incorrect addition)

Incorrect addition	Ruhani		Farina		Zuleyka			
	Total	%	Total	%	Total	%	Total	%
verb	1	14.3	0	0	0	0	1	2.6
pronoun	0	0.0	15	68.2	0	0	15	39.5
preposition	0	0.0	5	22.7	5	55.6	10	26.3
article	5	71.4	2	9.1	4	44.4	11	28.9
adverb	1	14.3	0	0	0	0	1	2.6
Total	7	100	22	100	9	100	38	100

Farina made the most incorrect additions and interestingly, they involved the use of the pronoun *you* in directives. Although the addition does not make the utterances grammatically wrong, it is generally not present in native speakers' speech:

Extract 7
1. |**you** look the picture|
2. |ok **you** look the table|

Incorrect additions in Zuleyka's data were linked to over-generalization of the use of the phrasal verb *look at*:

Extract 8
1. |ok everybody look **at** here|
2. |ok look **at** here for explanation|

Ruhani was detected adding unnecessary articles:

Extract 9
1. |ok somebody have **a** three|
2. |today we have to learn **a**[səkət]|

SYNTACTIC ERRORS

Table 4 shows that most of the errors related to this category involved morphology, followed by errors in agreement and tenses.

TABLE 4. Syntactic errors in three lessons conducted by each teacher

Syntactic error	Ruhani		Farina		Zuleyka		Total	%
	Total	%	Total	%	Total	%		
word order	5	16.1	10	16.1	3	2.9	18	9.1
tense	2	6.5	22	35.5	22	21.0	46	23.2
morphology	16	51.6	30	48.4	38	36.2	84	42.4
agreement	8	25.8	0	0	42	40.0	50	25.3
Total	31	100	62	100	105	100	198	100

Most of the morphological errors involved nouns and adjectives. Some examples of morphological errors related to nouns include:

Extract 10
1. |there are two **[səkət]**|*(circuit)*
2. |you add five **material**|
3. |today {i want} I want you [meʒərəd] the some **thing** in the **classes**|

L1 interference is believed to underlie these errors. In Malay, a plural noun is usually marked either by the duplication of the noun, or by using numbers or words that indicate many like *banyak* or *ramai*. The noun form rarely goes through any morphological transformation except in some cases of duplication like *bahan-bahan* (materials) or *batu-batan* (rocks*).* Example 3 shows that the teacher was aware of the use of morpheme *s* to mark plural nouns in English. However, she could not monitor her language efficiently in running speech to apply the rule.

The following morphological errors related to adjectives were produced by Farina:

Extract 11
1. |spring is very **long** (.) compare spring A and B|
      *The spring is **longer** if you compare spring A and B.*
2. |bag **absorb** or non-absorbent?|
      *Is the bag **absorbent** or non-absorbent?*

These errors involving adjectives appear to originate from within the L2. Error (1) is a case of Farina not being sensitive to the comparative form of adjectives in English. Although a recast was done on this directive, the error remained intact. It could not be confirmed based on the other L2 utterances if Farina knew about comparative adjectives. She appeared to have avoided the use of both forms of the comparative adjectives by code-switching.

        The error in (2) was the consequence of not knowing all of the noun/verb/adjective members of the *absorb* word family. This was confirmed during the observation when Farina consulted the author. Farina incorrectly substituted *absorb* for

absorbent on 10 occasions in that lesson alone. This reminds us that it is always a risk having incompetent teachers in the classroom.

Of the three teachers, Zuleyka made the most errors in agreement. It turned out that the lower counts in Ruhani's and Farina's data were due to the rare occasions in which the third person singular was used. The following examples were produced by Zuleyka and Ruhani:

Extract 12
1. <u>Zuleyka</u> |ok nobody **have** plastic ruler (0.2) plastic ruler?|
2. <u>Ruhani</u> |{ok aaa} ok who **want** {too} to try?|
3. <u>Zuleyka</u> |ok magnet **have** a pole|

The notion of subject-verb agreement is not a part of Malay grammar (Loga, 2005). This could explain the frequent errors in agreement as the teachers were inclined to rely on L1 language rules. Moreover, their perception that linguistic accuracy was unimportant made them focus on content being understood. Ruhani stated:

> Science does not emphasize grammar. Just make sure students get science terminology. That's only what's required.

Similar comments were also reported by Tan (2011) in her examination of secondary school mathematics and science teachers' implementation of ETeMS. In her study, all mathematics teachers perceived that learning mathematics is not strongly linked to language. The teachers were reported to devote their lessons to developing students' speed and accuracy at solving assigned problems.

The analysis of tense within syntactic errors revealed an interesting finding. Many errors were attributed to over-generalization of the present tense structure. The following extract from Zuleyka's transcript showed her unsuccessful attempts at using the present perfect tense and her inclinations to use the simple present tense:

Extract 13
1. |{aaa do youuu er} **do** you **er store** the magnet befooore?|
2. |**do** you **have been store** the magnet before|
3. |{do you} **do** you **store** a magnet {before before} before this?|
4. |**do** you **have** a magnet at home?|

As seen here, Zuleyka began with a question in the present tense which used the adverb *before* (1). Probably sensing that its structure was flawed, she rephrased the question (2). The use of *have been* in the recast indicates that she had an idea about the perfect tense but had problems accessing it. She reverted to the earlier version but this time adding the word *this* (3). The disfluencies in the question suggest that she was searching for the right structure. She finally succeeded in producing a grammatical utterance only after changing her strategy by substituting *before* with *at home*. The substitution permits her to use *do you have* to initiate the question.

The perfect tense is a feature of the English grammar that is difficult for Malay language speakers to grasp. In Malay, the speaker only needs to use *sudah* or *telah* (meaning *already*) to convey the meaning inherent in the perfect tense in English (Loga,

2005). There is no requirement to adjust the form of the main verb as is the case in English grammar. This could be the explanation for the above errors.

PRONUNCIATION ERRORS

Generally, Zuleyka and Farina were able to pronounce most of the English words in their lessons. Ruhani, however, was less successful. When the mispronunciations in her lessons were brought to her attention, Ruhani commented:

> For me, science is not about language. Pronunciation is related to language, right? I feel when it comes to science, it's not about pronunciation. It's the facts (that are important)…it's not about that (pronunciation).

Lemke (1998) had pointed out that learning science involves learning to use the languages of science which include the use of words, symbols, images, and actions. For not paying attention to pronunciation, Ruhani continued to mispronounce several common everyday items such as kettle, and toaster as [kitəl] and [tustə]. A few students appeared to know the correct pronunciation for these words and ignored her poor modelling. The majority, however, were observed to have acquired her mispronunciations.

The next extract illustrates a problem that stems from Ruhani's poor pronunciation:

Extract 14

1.	<u>Ruhani</u>	|what means a [səkət]?|
2.	Faridah	**bulatan**
		Circle (Confusing 'circuit' with 'circle')
3.	<u>Ruhani</u>	|[skət] **apa yang awak pakai tu?**|
		[skət] What's that you're using/wearing?
4.	Shafiq	**seluar**
		Trousers.
5.	<u>Ruhani</u>	|[skət] what means a [skət]?|
6.	Students	**kain, baju, seluar, kain**
		Sarong, blouse, trousers, sarong
7.	<u>Ruhani</u>	|mm **ini li…? litar** [səkət]|
		Mm this is a cir..? circuit [səkət]

In this episode, Ruhani was eliciting the meaning of *circuit* (1) and Faridah answered *bulatan* meaning *circle* (2). The response must have been triggered by the poor pronunciation of the word *circuit* which led Faridah to offer *bulatan*. She probably thought that Ruhani was eliciting the translation of *circle* which sounds close to [səkət]- especially with the transfer of L1 habit of not voicing final stops. The situation worsened when Ruhani restated the question in Malay using the word *pakai* (meaning either *use* or *wear*) and fronted it with [skət] (3). It led Shafiq to associate *pakai* with *wear* and [skət] with *skirt*. Shafiq appeared to interpret the question as a request to name the clothing item he was wearing, which prompted him to answer *seluar* meaning *trousers* (4). When Ruhani restated the question using [skət] twice (5), students started naming other clothing items (6) probably thinking that the question was an invitation to call out

answers along that line. Realizing the discussion was going nowhere, Ruhani ended the episode by telling the students the meaning of *circuit* in Malay (7).

All the teachers were not familiar with the International Phonetic Alphabets (IPA) and so were unable to use it to decode pronunciation. Consequently, they went about guessing their way which sometimes led students to question them as revealed by Farina:

> Like just now, I pronounced pigeon as [pigən]. I said [pigən]. Then a student corrected me, "Teacher, [pigən] or pigeon?" "Oh sorry, sorry pigeon aaa thank you". In a way, I also learned from my able students, right? How d'ya say *burung hantu* (in English)? (Author: Owl). I pronounced it as [ol] (laughs). Owl, owl.

Teachers revealed that their mispronunciations were self-taught as nobody in the school could be relied on for assistance. The Education Ministry (MOE) promised to supply dictionaries with CD-ROMs to teachers; however, none of the teachers had received any although some dictionaries were delivered. Clearly, the MOE's failure to keep its promise had denied the teachers one possible solution to their pronunciation problems and the failure, as the findings revealed, comes with a cost.

OMISSION

Table 5 indicates that the most frequently omitted component involved prepositions followed by verbs and articles.

TABLE 5. Omission errors in three lessons conducted by each teacher

Omission	Ruhani		Farina		Zuleyka			
	Total	%	Total	%	Total	%	Total	%
verb	12	41.3	41	37.6	18	34	71	37.2
pronoun	0	0.0	8	7.3	0	0.0	8	4.2
preposition	16	55.2	48	44.0	14	26.4	78	40.8
noun	0	0.0	1	0.9	0	0.0	1	0.5
conjunction	0	0.0	1	0.9	1	1.9	2	1.1
article	1	3.4	10	9.2	20	37.7	31	16.2
Total	29	100	109	100	53	100	191	100

Omission of prepositions was the most frequent in the data for Ruhani and Farina while omission of articles tops Zuleyka's list. All three teachers had verbs as the second most frequently omitted component of speech. The teachers appeared to show almost the same patterns in their omissions suggesting that they had similar inclinations.

Quantitative analysis of omissions revealed that the verb BE attracted the most errors. All of the errors are believed to be the result of relying on the Malay language spoken structures:

Extract 15
  1. |^ bag absorb or non-absorbent?|
       Beg menyerap atau tak menyerap?
  2. |which one ^ MV?|
       Yang mana satu MV?

The Malay equivalents for all these utterances are grammatically correct and they do not require the use of any linking verbs (Loga, 2005). However, applying Malay structures to English utterances led to errors as English grammar requires the use of the verb BE. Similarly, the application of Malay structures failed in several cases which involved infinitives when the preposition *to* was omitted: "After this I want ^ check your table" or "ok I want you ^ remember the word absorb".

Omission was also frequent in the use of phrasal verbs as the teachers tended to omit prepositions especially in the phrasal verb *look at*: "look ^ the water" or "you look ^ length 0.5 until 2.0". This omission is also linked to L1 influence. The English verb form used here appears to be a literal translation of the Malay *tengok*. The phrasal verb *look at* can be sufficiently translated into Malay with the use of the word *tengok* alone. Translating *tengok* from Malay to English as shown in extract 15, would require the use of a phrasal verb and failing to do so inevitably lead to ungrammaticality.

The unmistakable influence of Malay is also seen in the omission of the definite article. Here are two examples:

Extract 16
1. |number five ^ last one ok|
     Nombor lima akhir sekali ok.
2. |ok you search what is ^ MV|
     Ok kamu cari MV apa.

The inclination to utter *last* instead of *the last* is probably because the utterance was based on Malay grammar which allows such omission (Loga, 2005). Malay speakers have two ways of knowing what is being referred to in these cases. In (1) *last* alone is sufficient clue for its referent whereas in (2) the referent is readily understood from the context. Clearly, the English grammar requiring the use of the definite article would seem redundant and this might be the reason for the lack of its use here. Additionally, since the English grammar rule is not parallel to Malay grammar it must be learned and monitored carefully before its use becomes second nature. The teachers' poor mastery of English made it hard for them to monitor their speech efficiently during the fast paced lessons although there were times when they were observed to be successful.

CONCLUSION

It is quite apparent that the language proficiency of the LEP teachers in the rural setting in this rural school and probably by extension in other rural schools is extremely poor. The findings show that limited English proficiency affected the teachers' attempts at implementing science through English in significant ways. Firstly, the teachers' use of fragments or simplified structures of English were not useful linguistic input for students to emulate. Secondly, the teachers' inclination to focus on meaning without giving sufficient attention to accuracy of form meant that abundant opportunities to develop language skills that were available by teaching science through English were not appropriated. Thirdly, the teachers' lack of skills at noticing errors prevented them from using errors as materials for form-focused talk. In fact, this lack of skills led to the reinforcement of errors. It was noted that the errors in the teachers' language use also

distorted the factual truth of the contents taught. The fourth characteristic of the language used by LEP teachers which affected the delivery of science through English was the teachers' English language variety which was frequently based on Malay speaker intuition leading to students acquiring the teachers' interlanguage. Lastly, the teachers were incapable of being creative in their language use as they were constrained by their limited English. Teachers confined their English language use to teaching acts which did not challenge their linguistic skills or alternatively, they memorized structures found in the textbook.

Teaching science through English is a complex activity which demands that teachers are competent not only in content but also the medium of instruction. The findings of this study point to the fact that the medium of instruction itself proved to be a major hurdle to successful implementation of science through English when teachers had limited proficiency in the language. The findings suggest that in order for such a program to succeed, the issue of teacher preparedness should be addressed. For this researcher, teacher preparedness includes giving careful attention to language proficiency as there is an urgent need to enhance teacher English proficiency. The responsibility to look into this, however, should not be placed on teachers alone. Teacher preparedness is a responsibility to be shared by all stakeholders in the education system such as the Ministry of Education and inspectorate as well as school heads, and colleagues. There must be the political will and the will of the teachers themselves to redress the poor language proficiency issue.

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