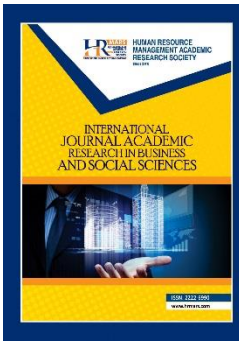
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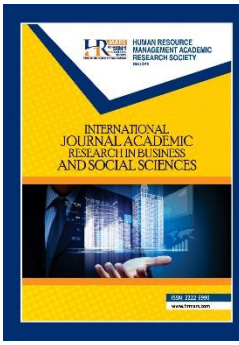
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English Medium Instruction at Crossroads: Students' Voice and Way Forward

Souba Rethinasamy, Joseph Ramanair, Kee-Man Chuah
Faculty of Language and Communication, Universiti Malaysia Sarawak, MALAYSIA
Email: rsouba@unimas.my

Abstract
Globalisation and extensive use of technology have enhanced the status of English as an international language and increased its value as an important commodity in various fields. This has encouraged the use of English in the teaching of content subjects especially those related to science and technology in many countries across Asia. This paper starts with an overview of English medium instruction policy in the region with an emphasis on the ongoing debate regarding the teaching and learning of Science and Mathematics in English in Malaysia. Drawing on data from a longitudinal study which utilized questionnaires and the paper presents empirical evidence on the learners' views and experience in learning Science in English, as well as their performance in the standardized national examination. The data gathered from a total of 1000 students from urban and rural schools in Sarawak, Malaysia, indicate the they have rather positive view about their ability in English, had positive experience in learning Science in English. Their positive view and experience conform to their performance in the subject. The results also correlate with the majority of the students' language preference for learning Science which is English and bilingual instruction in English and Bahasa Malaysia. The paper ends with a discussion on possible amicable options for medium instruction issues in ESL/EFL contexts.
Keywords: English Medium Instruction (EMI), English as an International Language (EIL), Bilingual Education

Introduction

English has become a language used not only for communication purposes between people whose first languages differ but also a pivotal medium for transmission of information and knowledge exchange. With the ever-increasing importance of English, it is of no surprise that the language is becoming even more integrated into the field of education across the globe (Lucktong & Pandey, 2020; Tsai, 2019). The adoption of English as the medium of instruction at various levels of education is apparent (Coleman, 2006; Crystal, 2004). Many countries are compelled to review their educational policies and practices in order to ensure the education system remains competitive and relevant (Nunan, 2003). In addition, English as medium instruction (EMI) has become an area of

immense research (Kuteeva, 2019). Nunan (2003) investigated countries in the Asia-Pacific region including China, Japan, Korea, Malaysia, Taiwan and Vietnam, and reported that the age at which English is a compulsory subject in most of these countries has shifted downward in recent years, signifying a growing importance of the language.

In Malaysia, English is mainly used as a second language and children are exposed to the language at a very young age. Despite that, due to the complexity of the multi-cultural landscape, the adoption of EMI often leads to heated debate and controversies (Phan, Kho, & Chng, 2013; Tan, 2005). Dependency on English is also seen as a threat to the status and role of local languages and knowledge written in other languages (Coleman, Hultgren, Li, Tsui, & Shaw, 2018; Kirkpatrick, 2011).

Literature Review

The growing importance of English as a medium of instruction

Mother tongue education is often advocated as best for students in the acquisition of content knowledge (Akinnaso, 1993; Kobia, 2007; Putz, 2004, Webb, Lepota, & Ramagoshi, 2004), however, attempts to define what constitutes mother tongue education have elicited controversies in academic circles. One of the popular criteria used to define the mother tongue is that it is "the language one thinks, dreams and counts in" (Skutnabb-Kangas, 1981, p. 18). In multilingual countries of diverse population, the existence of several mother tongues often leads to intense language education problems. In addition, with English exerting a firm importance as a global language of communication and knowledge, both multilingual and monolingual countries encounter a dilemma in planning the most suitable education policies, especially language education policy.

Nevertheless, the shift to the use of EMI is gaining prominence, especially in the Asia Pacific region. In Taiwan, Chang (2010) reported that more and more universities are teaching courses in English, especially in the areas of science and technology. In her study of 370 undergraduates, most of the students surveyed agreed that EMI helped them improve their English language proficiency. Although the students were rather passive in class (due to their limited language proficiency), they did not show negative attitudes towards the courses taught in English. A similar development is noted in South Korea, in which the EMI policy within the context of Korean higher education showed positive results (Byun, Chu, Kim, Park, Kim, & Jung, 2011). Byun et al. (2011) indicated that Korean students showed a high level of satisfaction with EMI but the lack of proficient instructors seemed to hinder the progress of the policy. They suggested a more flexible approach is needed in implementing EMI, particularly by considering students' language proficiency and career plans.

Nguyen (2011) reported that while English still holds that status of foreign language in Vietnam, the government has implemented the National Foreign Language Project 2020 and mobilized USD2 billion to promote English language at all levels of education. Closer to Malaysia, the Philippines was one of the earliest countries to adopt EMI for the teaching of Science and Mathematics (Velasquez-Ocampo, 2003). Although there had been a shift to Filipino motivated by nationalistic views, the policy of using EMI for both subjects was revitalised in 2003. The change was largely due the decline of students' academic achievement as well as English proficiency (Velasquez-Ocampo, 2003).

Medium of instruction debate in Malaysia

Despite being in the forefront in terms of the adoption of English as a second language as well as a dominant medium of instruction in most areas of education, the Malaysian English language education is often at a crossroads. English is seen as a direct threat to the national language - Bahasa Malaysia (BM) and the growing concern over the younger generations' mastery of BM has forced the government to revamp the education policy by reverting from the use of English in the teaching of Mathematics and Science subjects to BM. The re-adoption of English as the medium of instruction for both subjects was made in 2003 (Fong, 2004) under the policy known as English for Teaching Mathematics and Science (ETeMS). The policy was part of the Malaysian government's effort in preparing globally competitive citizens for the Vision 2020 that aims to make Malaysia a developed nation, since the translation of academic materials from English to BM was found to be too slow and costly (Chan & Tan, 2006). The ETeMS policy was implemented nationwide in 2003 in all primary schools starting from Primary One (7 years old) until Primary Six (12 years old). After just 9 years of ETeMS implementation, the policy was put to an end in 2012, and BM was reinstated as the main medium of instruction for all content subjects. The new policy known as 'To Uphold Bahasa Malaysia and to Strengthen the English Language' (MBMMBI) was implemented in 2012.

Those who were in favour of the ETeMS policy often cited the limited number of scientific books or scholarly works in BM as the main reason to support the use of English. Those who were not, on the other hand, tended to take Japan and Germany as examples of countries that achieved success without bowing to the pressure of English language (Gill, 2005). However, as further noted by Gill (2005), Japan is not a fair comparison since they have had a "massive start in developing translations activities and plans for accessing and advancing information in the field of science and technology" (p. 253). Japanese scholars have continued to translate scientific works from English to Japanese since the Meiji Era. Moreover, the emergence of EMI is rather obvious in Japan and Germany, especially in higher education. Despite the dominant influence of their respective first language in education, tertiary institutions in both countries have shifted their attention to the use of English in core programmes, which include the fields of science, engineering and Information Technology (Erling & Hilgendorf, 2006; Okuno, 2007; Phan, 2013).

At the micro-level, several studies have been conducted to justify abolishing the ETeMS policy. Nor, Aziz and Jusoff (2011) conducted a survey in 2006 involving students who had undergone the ETeMS policy for four years. The authors' views on the implementation of the policy were obtained and supported by the students' self-reported performance in English, Mathematics and Science. The study was limited to only one boarding school and covered a small sample size of 44 students who started learning the subjects in English half way through their secondary education. The results revealed that the students were not in favour of using English as the medium of instruction for Mathematics and Science though they did realize some improvements in their English proficiency. However, as noted by Faizah et al. (2011), the results from their study were inconclusive and a larger sample is needed.

Tan (2007) examined the ETeMS policy by focusing on the attitudes and achievement orientations of secondary school students towards Mathematics and Science. The study involved 400 students from

non-premier schools. He reported that students' attitudes and achievement orientations towards learning of the subjects indicated that the policy did not achieve its purpose. Nevertheless, he admitted that the finding was rather expected as the sample had not participated in the ETeMS policy at primary level (from 7 years old until 12 years old). Tan (2007) also suggested the need to investigate the views and achievements of students who went through the full implementation of the policy.

Besides that, Rethinasamy, Chuah and Hashim (2012) conducted a study to gauge the views of the first cohort who completed their primary education under the ETeMS policy on the learning of Science in English. This study involved a total of 600 students with an equal percentage of both urban and rural students of various ethnicity. The study found the first cohort students to have positive views in learning Science in English as part of the ETeMS policy. The study also reported 45.9% of the students wanting to learn Science solely in English and 40.3% bilingually in English and BM. However, since their study only involved the first cohort, Rethinasamy et al. (2011) highlighted the need to analyse longitudinal data for a more concrete evidence-based way forward regarding the policy.

Azmi and Maniam (2018) investigated the application of Computer Assisted Language Learning as one of the contributing factors under the ETeMS. The study focused on experienced teachers' perceptions of the courseware used in teaching the Science and Mathematics in English. They reported that despite the positive reactions toward the courseware design and instructional content, the teachers were not committed to using the courseware due to their lack of expertise, proficiency and skills in using technology. They study also reported that the use of courseware is not the major contributing factor to the failure of ETeMS and suggested for considering bilingual instruction in English and Bahasa Malaysia to enhance students' understanding, sustaining their interest in the subjects, and at the same time ensuring the quality of Science and Mathematics education.

The study by Muhammad (2012) aimed focused on teachers and investigated the perception of science teachers regarding the use English in teaching the subjects. The study involved 50 teachers from a peninsular state in Malaysia and data were collected using questionnaire and structured interviews. The findings showed that the teachers were in favour of the introduction of MBMMBI as they believed it would help improve students' proficiency in both Bahasa Malaysia and English.

Although the MBMMBI was implemented in 2012, the decision to switch back the medium of instruction for Science and Mathematics to BM brought about continued controversies and debate. Thus, under MBMMBI policy, the Ministry of Education introduced an initiative called the Dual Language Programme (DLP) which resembles ETeMS in 2016 (Suliman, Nor, & Yunus, 2017a). Under the DLP the schools, teachers, students as well as parents can choose the language of instruction for the teaching and learning of Science and Mathematics. Also, Sarawak-one of the Malaysian states located in East Malaysia decided to adopt English medium instruction for the teaching of Mathematics and Science for all the schools from January 2020 ("Sarawak the first Malaysian state to teach maths and science in English", 2019). Since DLP bears resemblance to ETeMS, the findings from ETeMS' study are likely to offer benefit for the effective implementation of DLP.

While most previous studies were conducted in peninsular Malaysia and the emphasis on students' voice was limited, the present study aimed to discover the views of the students who have completed all six years learning of Science in English since Primary One until Primary Six, in Sarawak, Malaysia. The study focused on five aspects:(1) students' self-rating of their ability in English, (2) experience in learning science under ETeMS, (3) views on the importance of learning Science in English, (4) performance on the Primary School Evaluation Test (commonly known as *Ujian Penilaian Sekolah Rendah* in BM and abbreviated as USPR), and (5) language preferences for learning Science. The study also attempted to investigate the relationship between these variables and students' language preference for learning Science.

Methodology

The study specifically focused on the first, second and third cohort students who had completed all six years of learning Science in English from Primary One until Primary Six under the ETeMS policy. The first cohort started Primary One in 2003, the second in 2004 and the third in 2005 and they completed primary education in 2008, 2009 and 2010 respectively. Accordingly, the data were collected over three years after each cohort received their Primary School Evaluation Test (commonly known as *Ujian Penilaian Sekolah Rendah* in BM and abbreviated as USPR) results. Since some schools practised streaming according to students' academic ability, equal representation of students from every class was ensured and participants were randomly selected based on the school registration list. The study involved a total of 1000 students with equal percentage of students from 2 urban schools (500 students) and 2 rural schools (students) in Sarawak.

This study employed a survey research design using a questionnaire (which was bilingually presented in BM and English in order to facilitate students' understanding of each items) and semi-structured interviews. The questionnaire consisted of five sections. The first section covered demographic information (e.g. primary school type and location). The second section gathered students' self-rating of their ability in English language and it consisted of 9 Likert-scale items. The third section comprising 7 Likert items dealt with students' experience in learning Science under the ETeMS policy. The fourth section addressed students' views on the importance of learning Science in English and it consisted of 5 Likert Scale items. Altogether there were 21 Likert Scale items and each was rated on a 4-point scale ranging from and coded as 'Strongly Disagree' (1), 'Disagree' (2), 'Agree' (3), and 'Strongly Agree' (4). The fifth section elicited students' grades in the USPR. The grades, which ranged from A to E, were coded as 1 for 'E (fail)', 2 for 'D', 3 for 'C', 4 for 'B' and 5 for 'A'. Section six focused on students' language preference for learning Science. Their responses were grouped and coded as 1 for other languages, 2 for BM, 3 for a combination of English and BM, and 4 for English. The self-reported UPSR results were verified with printed records to ensure accuracy.

The questionnaire data were keyed in and analysed using descriptive inferential statistical measurements with the assistance of Statistical Package for Social Sciences (SPSS) Version 20. For the Likert-scale items, standard deviation, mean, median and mode were determined. Percentages were tabulated for the examination grades and the Spearman correlation test was utilized to determine the relationship between the student's language choice and the constructs investigated in this study.

The Likert-scale items were evaluated for their internal consistency by using Cronbach's alpha coefficient. The scales indicated high reliability coefficients (.852 to .883) as shown in Table 1.

Construct	Cronbach's Alpha	No. of Items
Student's Self-rating	.883	9
Students' experience in learning Science under ETeMS	.859	7
Students' views on importance of Learning Science in English	.852	5

Table 1: Cronbach's Alpha Values for Questionnaire Constructs

Results

Students' Self-rating of English language ability

This construct focused on students' perception about their ability in English language skills (listening, speaking, reading and writing), elements (vocabulary and grammar), use (social and learning contexts) and their overall ability in English. Table 2 presents the results for this construct.

The standard deviation for each item is more than 0.7 which means that the items are within an acceptable level (Nunally, 1978; Haghani et al., 2014). The mean for each item is above 2.5 indicating an inclination towards positive self-rating among the students. The rating level seems to be the highest for reading ability (mean=3.034). The mode value is 3 for all items except for language use in social and learning contexts. This shows that the students perceive their ability in English language skills (listening, speaking, reading and writing) and language elements (grammar and vocabulary) as higher compared to their ability to use English in social and academic contexts. In addition, the median is higher for learning (median=3) compared to the value for language use in social context (median=2). This indicates that students are more confident with their use of English in learning context compared to social use. An analysis of the demographic data on the students' language use in social communication (at home and with friends) showed that only 15% use English as the main language of communication at home and 19.2% use it with friends. The lack of English use in social settings seems to justify their lack of confidence in their self-rating for social use. However, the results for the item on overall ability in English show that on the whole, the students view their ability positively. Studies (e.g. Gloria & Ho, 2003) have mentioned that Asian students have the tendency to underrate their ability in English language learning. Despite this 'cultural influence', the findings for the students' self-rating in English language is on the high side and, in actual fact, it could be higher.

	Speak	Listen	Read	Write	Vocab	Grammar	Social	Learning	Overall
Mean	2.829	2.897	3.034	2.892	2.559	2.561	2.592	2.636	2.625
Median	3.000	3.000	3.000	3.000	3.000	3.000	2.000	3.000	3.000
Mode	3.00	3.00	3.00	3.00	3.00	3.00	2.00	2.00	3.00
Std. Deviation	.78637	.75164	.72206	.76611	.71065	.74083	.83919	.81619	.76089

Table 2: Students' Self-Rating of English Language Ability

Thus, at this point it seemed necessary to compare students' self-rating with their actual performance in the UPSR English paper which was obtained from the students' background information in Section 1 of the questionnaire. The UPSR English paper consists of Paper 1 which includes multiple choice questions (MCQ) that focus on grammar, vocabulary, and reading comprehension. The English Paper 2's main focus is on writing ability. An analysis of the results (Table 3) shows that majority of the students (67.8%) scored high grades (A and B), about 29.4% obtained average grades (C and D) and only a very small minority (2.8%) failed the English paper. Taken as a whole, the results for self-rating and actual performance seem to mirror each other and point towards students having more positive view about their ability in English.

	Frequency	Percent	Cumulative Percent
A	392	39.2	39.2
B	286	28.6	67.8
C	200	20.0	87.8
D	94	9.4	97.2
E (fail)	28	2.8	100.0

Table 3: Students' Performance in USPR English paper

Experience learning Science in English

This construct focused on students' experience in learning Science under the ETeMS policy. The items covered students' perceptions in relation to listening to their teachers' teaching, responding verbally to questions, reading texts, writing answers, understanding concepts, terms and overall experience. The result for students' views about their experience in learning Science is shown in Table 4.

As with the items for self-rating, the standard deviation for each item in this construct is more than 0.7 which means that the items are within acceptable level (Nunally, 1978). Similar to self-rating, the mean for each item is more than 2.5 signifying that students have had positive experiences in learning Science in English. While the median value is 3 (Agree) for all item, the mode value is also 3 for all items except for the item on responding verbally to English (mode=2). This means that many students did face some difficulty in giving oral responses during Science classes. This result is also similar with the results for self-rating whereby the mean value was slightly lower for speaking (2.829) compared to reading (3.034), writing (2.892) and listening (2.870) in English. Thus, there is a need to address the challenges that students' face in responding orally (e.g. answering questions and discussing) during class.

	Listening	Respond Verbally	Reading	Writing Answers	Science Concepts	Science Terms	Overall Experience
Mean	2.957	2.705	2.995	2.871	2.732	2.690	2.801
Median	3.000	3.000	3.000	3.000	3.000	3.000	3.000
Mode	3.00	2.00	3.00	3.00	3.00	3.00	3.00
Std. Deviation	.80610	.75003	.81095	.75956	.73397	.72968	.82102

Table 4: Students' Experience Learning Science in English

View on importance of learning Science in English

The items for this construct covered how students view the importance of learning Science in English with regard to access to information, various sources, benefit for future study and career as well as their overall importance. Table 5 presents the results on how the students view their importance of learning Science in English.

The mean (more than 3) for each item on students' views about the importance of learning science in English shows that the students have positive views about learning science in English. Among them, students are of the view that learning Science in English is more important for their future study (mean=3.229, mode=3) and future career (mean=3.235). In addition, most of the students strongly agree that learning Science in English is important for their future career (mean=3.229) the majority strongly agree that learning Science is important (mode=4, mean=3.317).

	More information	Various resources	Future study	Future career	Overall Importance
Mean	3.088	3.036	3.229	3.235	3.317
Median	3.000	3.000	3.000	3.000	3.000
Mode	3.00	3.00	3.00	4.00	4.00
Std. Deviation	.80056	.80582	.75969	.78511	.69785

Table 5: Students' View on the Importance of Learning Science in English

Performance in UPSR Science

Table 6 shows the grades obtained by the students in the UPSR Science paper. The results show that 72.4% of the students performed very well in their Science paper obtaining grades A and B as compared to 26.3% obtaining average grades C and D. On the other hand, only 1.3% failed the paper, which is considered a very low failure rate. Again, the students' performance in the UPSR Science is found to be good and this is similar to the results for positive self-rating of their ability in English.

Grade	Frequency	Cumulative Percent
A	429	42.9
B	295	72.4
C	218	94.2
D	45	98.7
E (fail)	13	100.0

Table 6: Students' Performance in USPR Science Paper

Language preference for learning Science

Table 7 shows the results for students' language preference for learning science. Almost half of the population (49.4%) prefers to learn Science in English while 35.7% prefers bilingual instruction in BM and English. On the other hand, only a small minority of about 7.5% prefers to learn Science in BM and a similar minority (7.4%) prefers to learn in other languages (Mandarin). This results, which indicate that most students prefer to learn Science in English and bilingually in English and BM, seem to be consistent with the students' positive self-rating of their ability in English, positive experiences

they have had in learning Science in English, and their positive attitudes towards the importance of learning Science in English.

Preferred Language	Frequency	Valid Percent	Cumulative Percent
English	494	49.4	49.4
English & BM	357	35.7	85.1
BM	75	7.5	92.6
Other language (Mandarin)	74	7.4	100.0

Table 7: Students' Language Preference for Learning Science

Relationship between language preference and other variables

Next, the relationship between students' language preference and the variables investigated was analyzed by performing a Spearman Correlation Test. The results (Table 8) show significant positive correlations ($p<.01$) between students' language preference for learning Science and their views on the importance of learning Science in English ($r=.194$), performance in Science ($r=.227$), performance in English ($r=.260$), self-confidence in English language ability ($r=.266$), and experience in learning Science in English ($r=.323$). Although the correlation value is between low to moderate, the significance level indicates that the students' positive self-rating, positive experience, positive view about the importance of learning Science in English and good performance in UPSR Science are significantly related to the students' language preference for learning Science which is in English and to some extent bilingual instruction in English and BM.

Variable	Self-Rating	Importance of Science in English	Experience	UPSR Science Grade	Language Preference
Self-Rating	1.000	.330**	.322**	.256**	.266**
Importance of Science in English	.330**	1.000	.290**	.282**	.194**
Experience	.322**	.290**	1.000	.301**	.338**
UPSR Science Grade	.256**	.282**	.301**	1.000	.227**
Language Preference	.266**	.194**	.338**	.227**	1.000

Table 8: *Correlation Coefficient Between Students Language Preference and the Variables Investigated*

Moreover, among the variables, students' positive experience in learning Science under ETeMS shows the highest correlation value with language preference ($r=.338$) which means that the positive experience they have had in learning Science in English during their primary education correlates the most with their language choice. On the other hand, the lowest correlation value ($r=.194$) is observed for the relationship between students' view on the importance of learning Science in English and their language preference. Although students seem to view learning Science as important (mean=3.3170), 35.7% of them still prefer to learn the subject bilingually in English and BM, rather than solely in

English. Only a small minority of 7.5% and 7.4% wants to learn Science in BM and Mandarin, respectively.

Discussion and Conclusion

This study investigated the views of Malaysian students who have completed their primary education under the discontinued ETeMS policy. The study focused on the learning of Science in English. The findings showed that the students have rather positive views about their ability in English. They claimed to have had positive emotional experiences in learning Science during their primary education. They are also of the view that it is very beneficial for them to learn the subject in English to address their needs. These results seem to go hand in hand with the students' actual performance in the UPSR Science Test, and if given the choice, the students have indicated their preference to learn Science in English or bilingually in English and BM.

The findings from this study is consistent with the results reported by Rethinasamy, Chuah, and Hashim (2012) from their study on the first cohort of students who completed their primary education under the ETeMS policy. On the other hand, the findings on students viewing their ability in English positively as well as having had positive learning experience seem to be in contradiction with studies that focused on teachers' views and experiences (Azimi & Maniam, 2018; Mohammad, 2012). Since students are not only the majority but also very important stake holders of education, their voices are crucial to be heard and given serious consideration.

The ETeMS policy was introduced in 2003 (MOI English) but it was abruptly ended in 2012. A new policy named MBMMBI was introduced, where MOI was switched back to BM. However, due to intense dissatisfaction among stakeholders, the DLP programme which provides opportunities for schools, teachers, parents and students to choose the language of instruction was introduced (Suliman, Nor, & Yunus, 2017b). Based on the present study, the current DLP programme caters to the language of instruction preference of the majority and the minority. However, the findings from the present study also indicate a second majority group of students who prefers bilingual instruction in English and BM.

Thus, perhaps a way forward is to provide a third option which is a compromise and in line with this a bilingual Science education seems to be a promising alternative (Benson, 2004, Cummins, 1989; Greene, 1997; He, 2011; Johnson & Swain, 1997). Bilingual education generally signifies education where two distinct languages are used for the teaching of content subject (He, 2011). In relation to EMI, the programme aims at easing English language learners into the English academic environment (Freeman, 1996). However, in order to ensure its effectiveness, it should not be one that is 'taken from the shelf' and follow 'a one size fits all' formula but one that needs to be tailored to the context in which it is applied. According to Krashen (1999), the knowledge that children gain through their first language eases the learning of content knowledge because literacy developed in the primary language provides the basis and facilitates its transfer to the second language. For example, students who have learned about plants in the primary language, would be able to comprehend additional knowledge about plants in English much easier. As the students develop their English language proficiency and gain knowledge of the topics in the subject matter, they will be better equipped to

cope with Science in English. Thus, during the early stages where students have limited proficiency in English, students should receive a bigger percentage of the subject matter in the primary language. This was also recommended by Azmi and Maniam's (2018) from their study on the teachers' views and experiences in teaching the subjects in English.

Under the proposed option, school authorities and teachers could have the freedom to increase the percentage of input in English based on their students' ability. This would help ensure students with low English proficiency at their early stage of schooling acquire basic scientific knowledge and at the same time develop their knowledge of the subject matter in English. Similarly, students with higher proficiency in English will not be hindered and have the flexibility to progress at their pace. This will better equip them to pursue their studies at tertiary level and beyond.

Moreover, education is not just for the privileged or the underprivileged, nor it is for the rural or urban students. Education is for all and it must address local and global needs as well as present and future needs. Thus, monolingual instruction in BM, may be insufficient in preparing students to cope with the scientific knowledge especially at the tertiary education and be competent at a global level. On the other hand, monolingual instruction in English may be detrimental to low proficiency students who will probably fall behind and eventually become dropouts at an early stage of education. Gill (2005) stressed that it would be beneficial to pursue an option that can cater for language empowerment at various levels by complementing challenges of indigenization and globalisation. The proposed third option which offers learning of Science bilingually in BM and English would address the crucial need for inclusive education.

The implementation of the option would require training of teachers through in-house programmes whereby in-service teachers are given training on how to adapt teaching learning techniques and progress from first language instruction to English language instruction for each topic and prepare lessons accordingly. At the same time, teacher training colleges and universities should offer double major education degree programmes in which teacher trainees can opt to specialize in a science subject and English. This would prepare the expertise required and ensure the successful implementation of the proposed option and achieve the education for all philosophy.

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Declaration of ownership
This report is our original work

Conflict of interest
None

Ethical clearance
The study was approved by the institution

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