Dual-Language Programme in Malaysian Secondary Schools: Are You Ready?

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ABSTRACT
Undeniably, the government has to have the gumption to jettison the English for Teaching Mathematics and Science policy or better known as PPSMI policy despite knowing the benefits gained by learning the subjects using English language. Since the abolishment, the Ministry of Education has envisaged an initiative named ‘To Uphold Bahasa Malaysia To Strengthen Bahasa Inggeris’ (MBMMBI) policy. Two approaches have been introduced, the Highly Immersive Programme (HIP) and Dual-Language Programme (DLP). DLP involves the teaching of STEM subjects, particularly Science and Mathematics as well as Reka Bentuk & Teknologi (RBT) and Asas Sains Komputer (ASK). To accentuate, this programme commenced in 2016. Thus, this study aims to identify the level of readiness and confidence among the students enrolled in this programme. In tandem, it also aims to discover the difference in the level of readiness between Form One and Form Two DLP students as well as gender influence. This study involved 145 DLP students comprising 80 Form One and 65 Form Two students as the respondents. This quantitative study employed 5-point-Likert scale questionnaire as the instrument as well as open ended questions to validate the findings. From the data analysis generated by SPSS 19, the level of readiness and confidence among the DLP students was still moderate. No significant difference was found in regards to class and gender. Though the respondents were aware on the importance of learning both subjects in English, they were still uncertain on the execution of the awareness. The respondents raised a lot of uncertainties in their responses. To sum up, DLP is a positive move put forward by the government aimed at valorizing the standard of English among the students via the learning of STEM subjects. However, more initiatives and efforts are deemed to better the execution of DLP towards progressivism.

KEYWORDS; Dual-Language Programme, ETeMS, education, readiness, policy implementation

INTRODUCTION
Apart from Highly Immersive Programme (HIP), Dual Language Programme (DLP) is another initiative under the ‘To Uphold Bahasa Malaysia To Strengthen Bahasa Inggeris’ policy. DLP is commonly assumed to be the reborn of English for the Teaching of Mathematics and Science (widely known as PPSMI) policy. Undeniably, it resembles PPSMI but differs in several aspects of its implementation. To note, programme is launched with three main objectives;

i. Enabling students to have the access and exploration of knowledge in order to compete globally and to increase the marketability of the students in the working field

ii. Assisting and capturing students’ enthusiasm of STEM education in the tertiary level

iii. Increasing students’ contact hours to English language, which indirectly enriches their language skills

By referring to Malaysian Education Blueprint, DLP works as a two-pronged approach, as it is the combination of Shift 1 and Shift 2 in Transforming the System. Shift 1 refers to ‘Provide Equal Access to Quality Education of an International Standard’ while Shift 2 reflects on ‘Ensure every Child is Proficient in Bahasa Malaysia and English Language and Is Encouraged to Learn an Additional Language’. This strongly emphasises the idea that Malaysian students ought to be bilingual as well as equipped with the world class quality of education. In fact, Ministry of Education (2013) asserted that every student will receive a strong grounding in foundational skills of literacy and numeracy as well as in Science, a key growth area for the Malaysian economy. The proposal to integrate the learning of language with the discovery of mathematics knowledge and scientific understanding will somehow nurture someone who is holistically balanced.

To acknowledge, this programme is on voluntary basis. So, before the school could take part in the Dual-Language Programme, the school needs to fulfill the four criterion outlined by the Ministry of Education;

1. Sufficient resource
2. Principal/Headmaster/Teachers’ readiness to practise DLP
3. Parental demands and support
4. School’s performance in Bahasa Melayu
The first criteria implies that the school needs to ensure the textbooks, reference books, teaching aids and other teaching and learning materials are sufficient and able to cater to the needs of DLP teachers and students. Consequently, the head of the school needs to have short and long term plan in ensuring the number of teachers accommodate the number of students involved in DLP. Apart from that, the parents must submit a written consent to the school, stating that their children will take part in DLP. In addition, the Parents-Teacher Association (PTA) must agree and encourage the implementation of DLP in the respective school. The final criteria conveys that the performance of the school in the Bahasa Melayu subject must be in par or better than the average grade subject (GPMP) for Bahasa Melayu in the national examinations such as UPSR or SPM of the previous year. Should these four criterion be fulfilled, then only the school can apply to be part of DLP.

The programme started since 2016. In the pilot project, 300 schools encompassing both primary and secondary took part in the pioneer programme. DLP involves the teaching of STEM subjects, particularly Science and Mathematics as well as Reka Bentuk & Teknologi (RBT) and Asas Sains Komputer (ASK). To date, Astro Awani (2017) reported Datuk Seri Mahdzir Khalid the Minister of Education proclaimed that 139 197 students are involved in DLP, equivalent to 2.9% of Malaysian students. This number includes the participation of 1 216 schools, comprising 587 primary schools and another 629 secondary schools.

Unlike PPSMI, DLP works as a voluntary programme. This means the school has the right to decline the participation should they are not interested or willing to implement it. It provides flexibility to the schools, teachers, students as well as parents their preferred language of instruction, making it very much open to the willingness of the schools to be part of it. It indeed shares some similarities with PPSMI, but the emergence of this programme is very much different as it does not impose on the mandatory use of English language in the teaching of both subjects. Students are open to be part of the programme, as long as their parents have given the consent as well as the school has fulfilled the pre-requisite requirements stated. One common similarity between these two proposals is that they still espouse on the utilization of English language as the means of disseminating information and knowledge on Science and Mathematics.

Despite the fact that Dual-Language Programme is a voluntary policy, few issues have been raised over the first two years of its inception. Early 2017, hundreds of Indian NGOs and Tamil language activists held a protest in regards to the implementation of the programme in Tamil vernacular primary schools. They claimed that worries arose regarding the future of Tamil education if English or Bahasa Melayu is fully used in the teaching of STEM. Adding to that, they were worried that schools would have fewer teaching hours in Tamil which might lead to the parents abandoning the school (The Star, 3 January 2017). Concurrent to the protest, Penang Deputy Chief Minister II has appealed to the Ministry of Education to abolish the Dual-Language Programme. Quoting from Malay Mail (29 December 2016), the DLP was introduced without consultation and feedback from education experts and the public while some parties have labelled the DLP as a new version of the PPSMI. Dr P. Ramasamy even reiterated that DLP will destroy vernacular schools and it is a danger to the vernacular schools in the country.

In addition, National Education Action Council Chairman Datuk Zainal Abidin Borhan claimed that Malay students will be victimised by the DLP. In tandem, Parti Amanah Negara president believed that the implementation of DLP would see the country regressing into an era of colonialism. He opined that 'We do not agree that English be the main medium for education. Doing so will see us having to overhaul the entire education system, complication matters for our teachers and gambling away the future of our students (Borneo Post, 3 April 2016). On top of that, Pena chairman Dr Ibrahim Ghaffar claimed that the implementation of DLP will bring about discrimination between the schools in the urban and rural areas as well as the vernacular counterparts. He stated that ‘educational policies should be applied universally, rather than on a selected group. It is discriminatory for the programme to only be available to the schools involved in the pilot. Not only that, this discrimination will also lead to a widening gap between urban and rural schools (Borneo Post, 3 April 2016).

The case of English competency and proficiency is a never ending story in the Malaysian education system. Thang, Ting and Jaafar (2011) claimed that Malaysian students display poor effort in learning English even though its importance is generally acknowledged. This is in consensus with Yunus and Shukri (2017) claiming that the proficiency of the English language among Malaysian has not seen much improvement since 1970. To note, English for Teaching Mathematics and Science (PPSMI) is one of the most debatable policy meant to better the English language proficiency among the students through the teaching and learning of Mathematics and Science subjects, apart from to accelerate the mastery of both subjects. The policy was call to an end in 2012 after on-going critics and arguments raised over the policy. This is then followed by the implementation of MBMMBI policy as the substitute of PPSMI. Under the MBMMBI policy, Dual-Language Programme (DLP ) is introduced.
This is where the concern arises. Are the DLP students really prepared to join the programme? As mentioned earlier, students’ agreement to join the programme is not among the criterion listed for the DLP to commence. It is their parents’ consent that matters more. However, if we were to look at this scenario, the students will actually suffer should the programme fail to reach its aims and objectives. In fact, the students are the ones who will have to undergo the consequences of DLP. Hence, this study is intended to determine the readiness of the students enrolled in DLP as well as to understand the factors influencing their readiness level. The research questions formulated are as followed:

1. What is the level of readiness among the students enrolled in Dual-Language Programme?
2. What is the level of confidence among the students enrolled in Dual-Language Programme?
3. Is there any difference in the level of readiness among the DLP students based on class and gender?

This study is derived from the Constructivism Theory, proposed by Papert in 1980. This theory states that learning is an active process creating meaning from different experiences. In addition, it also further explains how people might acquire knowledge and learn. In other words, students will learn best by trying to make sense of something on their own with experience as the guidance to help them along the way. Whenever students encounter something new, they have to reconcile it with their previous ideas and experiences, which may change the belief or it may discard the new information as something irrelevant.

Constructivism is an educational philosophy which holds that learners ultimately construct their own knowledge that then resides within them, so that each person’s knowledge is as unique as they are. In this study, the students who have enthusiasm in the lesson, will find that learning both subjects in English is interesting. Employing positive attitudes and having the confidence level will further enable students to enjoy learning the lesson. Thus, readiness in learning both subjects using English language will be demonstrated once the students possess positive attitudes, embedded with confidence level and enthusiasm. To simplify, the concept can be seen below:

![Conceptual Framework based on Constructivism Theory by Papert](image.png)

**BENEFITS OF LEARNING SCIENCE AND MATHEMATICS IN ENGLISH**

Learning Science and Mathematics in English language serves as a two-pronged approach, aims at enabling students to have the access and exploration of knowledge in order to compete globally and to increase the marketability of the students in the working field. In addition, it also means to increase the students’ contact hours to English language, that will indirectly enrich their language. The programme is in line with one of the goals in Malaysian Education Blueprint (2013-2025) which is to produce students who are at least bilingual in the Malay language and English language. Undeniably, some students believe that they learn better in English language than Bahasa Melayu. Yunus and Shukri (2017) opined that studying Mathematics and Science in English does facilitate their understanding better than in Malay. As a result, students who are given the opportunity to learn in English language will be able to engage themselves better in the language, which indirectly enables them to perform better in the subjects. Nor, Aziz and Jusoff (2011) argued that ETeMS has a crucial role to play in developing students who are competent in the English language so they can keep pace with the rapid advances in science and technology.

Undeniably, this programme develops high level of proficiency in both languages. Students enrolling in this programme will benefit themselves in terms of their language repertoire. In the case of Malaysian education system, students learn and have more contact hours in Bahasa Melayu via other subjects as it is the medium of
instruction in the schools. To reiterate, the purpose of introducing English as the medium of instruction in the teaching and learning of mathematics and science is mainly to enable students to keep up with the developments in science and technology by making it possible for them to access this information which is mainly available in the English language (Yahaya et al., 2009). Via this programme, the student will have better access to English language through three subjects, Mathematics, Science and English. In greater details, assuming the student’s first language is not Malay, he or she will develop three languages competently as the exposure to the other two languages in school increases. The research conducted by Lindholm-Leary and Howard (2008) demonstrated that most Dual Language students were rated as proficient in their two languages, particularly by the upper elementary grade levels and students made excellent progress in both languages across the grade levels in both 90:10 and 50:50 programmes. In fact, English language learners were or more likely to be classified by state assessments as proficient in English if they were participating in Dual Language Education programmes than if they were enrolled in English mainstream programmes (Lindholm-Leary, 2012).

SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS (STEM) EDUCATION

Science and technology plays a critical role in realising Malaysia’s aspiration to become a developed nation. Since mathematics is instrumental in the development of scientific and technological knowledge, the provision of quality mathematics education from an early age in the education process is thus important (Bahagian Pembangunan Kurikulum, 2016). Furthermore, science and technology is part of the 9 challenges that curriculum experts and educational institutions ought to face in achieving Vision 2020. As science and technology (S&T) innovations are increasingly important in the global economy market of the 21st century, Malaysia needs to produce students who are capable of generating S&T innovation to contribute to the well-being of mankind as well as to trigger the country’s economic growth (Lay & Osman, 2017).

STEM education is based on educating students in four different fields, namely science, technology, engineering and mathematics. It is based on the integration and application with the real world context. According to Subramaniam and Clark (2016), education for students in STEM has received increasing attention over the past decade which calls both for greater emphasis on these fields and for improvements in the quality of curricula and instruction. Students’ interest and enthusiasm can be aroused via challenging, fun and meaningful activities in STEM education. To show how significant it is, the focus has been emphasised in the Malaysian Education Blueprint 2013 - 2025. The blueprint underlines three steps to strengthen STEM education in Malaysia. As listed by Khairani (2016), the first step is to increase students’ interest through new learning approaches as well as improved curriculum. Strategies that can be implemented range from the inclusion of higher order thinking skills to making subject content relevant in everyday life. Secondly, by improving teachers’ skills and competencies through continuous training. Thirdly, the Ministry of Education has also put efforts to increase both students and parents’ awareness about the importance and opportunities in STEM fields. Due to that, the Ministry of Education has initiated various programmes in the form of curriculum and co-curricular activities to capture the students’ involvement in STEM education.

REVISITING PPSMI

Due to the aim and vision of becoming a developed nation, Malaysia Ministry of Education has proposed the teaching and learning of Mathematics and Science in English (PPSMI) as part of the government policy. This is the outcome from the special meeting of the Cabinet on 19th July 2002. The implementation of this policy began in 2003 with the Year 1 pupils in Primary School and Form 1 and Lower 6 students in Secondary Schools as the pioneer cohort. The programme is fully implemented in 2007 for the Secondary School and 2008 for the Primary School.

However, after a lot of debate and arguments regarding the implementation of the policy, Malaysian Minister of Education, Tan Sri Muh’yiddin Yassin on the 8th of July 2009 has announced that the policy will be put to an end in 2012. This means that both Mathematics and Science subjects will be reverted back to the National Language (Bahasa Melayu) as the medium of instruction. In addition, he has announced that students who have started learning both subjects in English may continue their learning until they have finished their secondary education. Indirectly, the policy was only fully abolished in 2014.

PPSMI derives from the need to develop human capital in line with the objective of achieving developed nation status. Adding to that, Shuib (2008) mentioned that research in second language acquisition suggests that a second language is most successfully acquired when there is sufficient opportunity to engage in meaningful use of that language. This implies that having to learn Science and Mathematics in second language would actually
help the students to improve their language as well. Therefore, it has obviously implied PPSMI as a policy intended to benefit the nation.

**WHAT HAVE PAST RESEARCHES FOUND AND CONCLUDED?**

Numerous studies have been conducted pertaining to this issue. Firstly, Yunus and Shukri (2017) conducted a study on the pre-service teachers majoring in Science and Mathematics options in regards to their perceptions on teaching in English language. The findings denoted unfavourable perceptions, in which more than 50% of the respondents disagreed to teaching both subjects using English language. Moreover, 74% of the respondents claimed that it is troublesome to teach the subjects in English.

Conversely, Majid et al. (2011) in their study on the level of readiness of lecturers to teach in English presented positive results. 65% of the respondents claimed that the lecturers deliver the content in English language satisfactorily. Furthermore, about 60% respondents admitted that the lecturers are ever ready to help when students encounter any difficulties in learning the subjects in English.

On top of that, Haron et al. (2008) has conducted a survey apart from Science, Mathematics and English tests to 3903 primary 5 students. The result revealed that more than 85% students said their Science and Mathematics teachers code-switched in teaching the subjects. An average of more than 80% students expressed that they did not understand or did not really understand Science taught in English, though they had been learning the two subjects since 2003.

Anggau (2007) in his research concluded that the main problem faced by the Science and Mathematics teachers in a secondary school in Ranau was the students’ lacking of proficiency in English. Another reason is the lacking of facilities in implementing teaching of Science and Mathematics in English. Finally, he also concluded that the level of proficiency among the teachers involved also contributed to the difficulties in implementing the policy.

Surif, Ibrahim and Kamaruddin (2006) conducted a study on 120 students in the rural area in regards to their learning of Mathematics in English language. The respondents in this study agreed that teachers’ factor assisted them in their learning well. They also believed that the teachers would provide assistance to them whenever they faced difficulties in their learning. This is similar to Majid et al. (2011).

Professor Juriah Long found that about half of the students in both urban and rural schools were worried because they found it difficult to follow Science and Mathematics in English. This was one of the results from her 2005 survey of over 7 000 Form 2 students nationwide and she found the concern was greater among Malay students, those in rural schools and poor students (John & Damis, 2008). All of these findings are important to measure if there exists any difference when subjects are taught in English language on compulsory and voluntary basis.

**METHODOLOGY**

This is a pure quantitative study. This research design is chosen in order to gather the respondents’ data on the topic as claimed by Denscombe (2003), quantitative study uses number and can present findings in the form of graphs and tables, so it conveys a sense of solid, objective research. It employs cross-sectional survey as the research instrument as this is done by collecting and analysing data at one point in time only (Holmes, Dahan & Ashari, 2008). This helps the researcher to gather data and analyse it without taking a long time. The instrument adapted from Tuah and Mohini (2010) is a 5-point Likert scale questionnaire. Kothari (2011) said Likert scale is a good instrument of choice because it is relatively easy to construct and a liable instrument because respondents will have to answer each statement in the instrument. Then, each statement included in the Likert scale is given an empirical test for discriminating ability, easy to be used and requires less time to construct. The instrument consists of three sections, namely the demographic profile of the respondents and followed by Readiness and Confidence Construct. At the end of the questionnaire, the respondents will have to answer open-ended questions, which are ‘What makes you ready/unready to learn Science and Mathematics in English’ and ‘What is the problem you face in this programme’. In regards to the sample involved, 145 Form One and Two students became the respondents. The findings were analysed using SPSS Version 19 and descriptive statistics involving frequency, percentage and mean were employed. Inferential statistic, T-test was also employed to answer the third research question.
FINDINGS

Demographic Profile of the Respondents
There were 145 respondents involved in this study. The demographic profile of the respondents is in the table below.

<table>
<thead>
<tr>
<th>Form</th>
<th>One</th>
<th>Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>44.8%</td>
<td>55.2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ready to Learn Science and Mathematics in English</th>
<th>Yes</th>
<th>Unsure</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ready to Learn Science and Mathematics in English</td>
<td>50.3%</td>
<td>46.9%</td>
<td>2.8%</td>
</tr>
</tbody>
</table>

Students’ Level of Readiness
The table below describes the items pertaining to students’ level of readiness.

<table>
<thead>
<tr>
<th>No</th>
<th>Item</th>
<th>Mean Score</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I can master the English basic well</td>
<td>3.4579</td>
<td>Moderate</td>
</tr>
<tr>
<td>2</td>
<td>I can read in English well</td>
<td>3.9586</td>
<td>High</td>
</tr>
<tr>
<td>3</td>
<td>I can write in English well</td>
<td>3.6552</td>
<td>Moderate</td>
</tr>
<tr>
<td>4</td>
<td>I can understand the information in English well</td>
<td>3.4690</td>
<td>Moderate</td>
</tr>
<tr>
<td>5</td>
<td>I can communicate in English well</td>
<td>3.3517</td>
<td>Moderate</td>
</tr>
<tr>
<td>6</td>
<td>I can understand the textbook, notes or reference books in English</td>
<td>3.5793</td>
<td>Moderate</td>
</tr>
<tr>
<td>7</td>
<td>Activities done to improve English master is sufficient</td>
<td>2.9517</td>
<td>Moderate</td>
</tr>
<tr>
<td>8</td>
<td>Various learning facilities in English is sufficient</td>
<td>3.2690</td>
<td>Moderate</td>
</tr>
<tr>
<td>9</td>
<td>I use reference books, reading materials and exercise books in English</td>
<td>3.5586</td>
<td>Moderate</td>
</tr>
<tr>
<td>10</td>
<td>I can understand the exam instructions in English</td>
<td>3.7379</td>
<td>High</td>
</tr>
<tr>
<td>11</td>
<td>The use and learning in English is supported by class environment</td>
<td>3.8414</td>
<td>High</td>
</tr>
</tbody>
</table>

Referring to the items above, the highest scoring mean was from ‘I can read in English well’, with 3.96. This explains that the respondents in this study are very confident in terms of their reading capabilities. However, when comparing this item with the other four items related to language skills, the results demonstrated contradicting findings. Items ‘I can write in English well’, ‘I can understand the information in English well’ and ‘I can communicate in English well’ scored 3.66, 3.47 and 3.35 respectively. This is even concurrent to the item ‘I can understand the textbook, notes or reference books in English well’, with 3.58 mean score. Adding to that, only 64.8% of the respondents agreed that they could write well in English, 51% could understand well in English, 40% claimed that they could communicate well in English and 54.5% agreed that they could understand the textbooks, notes and references in English well. From this, it seems that the respondents are more well-prepared in their reading skills, as denoted by 80.7% agreement. Hence, all these contribute to the lower mean for item ‘I can master the English basic well’, which scored 3.46.

To further illustrate this, the respondents claimed that ‘I am not ready because I could not understand the questions and I cannot talk in English’, ‘I am not ready because I don’t like it and I don’t understand English’, ‘English is difficult’, ‘I am not ready because I always don’t understand the questions’, I’m okay with Mathematics but not with Science cause it’s too difficult to answer it in English, ‘I cannot explain in English’, ‘I cannot answer in English but I know the answer in Bahasa Melayu’, ‘I don’t read English books a lot’ and ‘I cannot speak English well and I feel shy to speak in English’. From these responses, it shows that students find difficulties in engaging with the lesson due to their mastery of English language.

On the other hand, some respondents denoted positive responses such as ‘I am ready to learn Science and Mathematics in English language for my future’, ‘I am ready to join this programme because it is more fun than Bahasa Melayu and I can understand the subjects well in English’, ‘I am ready because I want to master my English skills in STEM’, ‘I am ready because I want to improve my English so I can be good in university’, ‘I am ready because I love English’, ‘I can remember English easier’, ‘I am ready because I like to talk in English’, ‘Although my English is not good, I always have my dictionary with me’, ‘I am ready because I can answer in English’, ‘I don’t have problems because the key words are easy’, ‘I don’t have problems because I
can understand the references well’, and ‘I always have my dictionary’. Despite juggling with their language competencies, some respondents are found to be very optimistic with the programme.

The other two items that scored high were ‘I can understand the exam instructions in English’ and ‘The use and learning in English is supported by class environment’, with 3.74 and 3.84 respectively. About 2/3 of the respondents agreed that they have no difficulties in understanding the instructions in the exam while about 70% of the respondents believed that the class environment supports their learning process. This is reiterated in the responses when some of them pointed out that teacher plays a dominant role in creating a conducive environment in the class for the learning process to take place.

An interesting point to ponder here is on the two least scoring items, ‘Activities done to improve English master is sufficient’ and ‘Various learning facilities in English is sufficient’ which had 2.95 and 3.27 mean score respectively. Only 32% of the respondents agreed that the activities done is helpful for the students to improve their mastery in English language. Parallel to this, less than half of the respondents asserted that the facilities provided are enough to assist the learning process. This implies the activities and facilities need to be improved to better the teaching and learning process.

**Students’ Level of Confidence**
The table below describes the items pertaining to students’ level of confidence.

<table>
<thead>
<tr>
<th>No</th>
<th>Item</th>
<th>Mean Score</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The teachers’ teaching style in English language is easy to understand</td>
<td>3.510</td>
<td>Moderate</td>
</tr>
<tr>
<td>2</td>
<td>Teachers teach me when I have problems in learning Science/Mathematics in English language</td>
<td>4.221</td>
<td>High</td>
</tr>
<tr>
<td>3</td>
<td>Teachers teach Science/Mathematics in English systematically</td>
<td>3.993</td>
<td>High</td>
</tr>
<tr>
<td>4</td>
<td>I can answer the questions from my friends in English language</td>
<td>3.455</td>
<td>Moderate</td>
</tr>
<tr>
<td>5</td>
<td>I am brave to give opinions in English language to my friends</td>
<td>3.083</td>
<td>Moderate</td>
</tr>
<tr>
<td>6</td>
<td>Teachers like to use many ways in teaching Science/Mathematics in English</td>
<td>3.931</td>
<td>High</td>
</tr>
<tr>
<td>7</td>
<td>Learning Science/Mathematics in English is easy</td>
<td>3.083</td>
<td>Moderate</td>
</tr>
<tr>
<td>8</td>
<td>My English skills is enough for me to understand Science/Mathematics in English</td>
<td>3.124</td>
<td>Moderate</td>
</tr>
<tr>
<td>9</td>
<td>The questions given by the Science/Mathematics teachers are easy</td>
<td>3.159</td>
<td>Moderate</td>
</tr>
<tr>
<td>10</td>
<td>I answer the questions in English orally</td>
<td>3.235</td>
<td>Moderate</td>
</tr>
<tr>
<td>11</td>
<td>I present the work in class using English language</td>
<td>3.407</td>
<td>Moderate</td>
</tr>
<tr>
<td>12</td>
<td>I can follow the lesson if the teacher uses English fully in the class</td>
<td>2.972</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

For the next construct, the three highest scoring items came from the items related to the teachers. The highest scoring item ‘Teachers teach me when I have problems in learning Science/Mathematics in English language’ demonstrated the fact that students need the teachers to assist them in their learning. This is crucial in this case as a number of the respondents were not learning the subjects in English language when they were in primary school. As teachers have been equipped with the DLP training, this will be a great opportunity for them to make use of the knowledge they possess. The same goes to the next two items related to teachers. The teachers vary their teaching methods in order to attract the students’ attention as well as to ease the students’ understanding. It is essential for the teachers to use different ways of teaching so as not to hamper the students’ learning process. One student might be learning in different way from the others. The same goes to how teachers teach in proper structure. They ought to follow the syllabus and try to engage with the students in order to ensure the students could follow the lesson well. Among the responses related to the teachers factor include ‘I am ready because the teacher use words that I can understand’, ‘The teachers teach us very well’, ‘The teachers explain the questions well’, and ‘When I have problems, I will ask the teacher to give the explanation’.

The three least scoring items in this construct portrayed the level of confidence among the respondents. Item ‘I can follow the lesson if the teacher uses English fully in the class’ had the lowest mean score. It somehow indicated that they hoped for the lessons to be taught in mix languages. In fact, respondents were unsure if they can learn well if the teachers uses full English instruction in the class as denoted by 47% of the respondents. This is challenging for the fact that the teaching process should be conducted fully in English. If the teacher applies code-switching, it will defeat the purpose of this programme. On top of that, item ‘I am brave to give opinions in English language to my friends’ indirectly reflect the finding related to speaking skill in the earlier construct. This emphasises that respondents are unsure of their communication skill or perhaps afraid to voice out their views using the target language. Item ‘Learning Science/Mathematics in English is easy’ enlightens us...
that the respondents are not on total agreement with this, which might be caused by the issues on language competency or the content mastery.

In addition, an Independent Samples t-test was also conducted to test if there is any significant difference exists between the Form One and Form Two in regards to their level of readiness. The results demonstrated no significant difference was found between these two groups of respondents. However, the Form One students were found to be on the upper hand than the counterpart. Perhaps, Form One students were still new to the programme and more enthusiastic in undergoing the programme as compared to Form Two students who have been undergoing it for more than a year. Another factor, which is gender was also tested using the statistical test. Likewise, no significant difference was found between the male and female students pertaining to their level of readiness. However, it is interesting to note that the male students were more ready than the female students in this case. Perhaps, there are more reasons contributing to this finding which can be discovered in future research.

DISCUSSIONS

The findings have illustrated that the level of readiness among the respondents in this study is still moderate. This somehow answers the question in the demographic section on their readiness towards the programme, with only 50.3% were found to be ready while 46.9% were unsure. This is an important point to note when almost half of the respondents are still baffling in regards to their readiness in joining the programme. The respondents clearly understand the importance of learning in English language, yet they are still unsure of their readiness. Prior to this, Yunus and Shukri (2017) asserted that the lack of the English language skills would be a great loss to the country and at present, the escalating pressure is felt as social media every now and then report on Malaysians’ unfathomable, baffling poor grasp of English. In addition, Ishak and Mohamed (2010) put forward that the programme is important for English mastery and career workforce in future. It is envitable that the mastery of the English influences the participation in the programme. The students will have to juggle between their language competency and Mathematics and Science content knowledge. If they have the proficiency, it might not hamper their understanding of the content knowledge. However, those with limited mastery of language will also be able to go through the programme on condition that they have the positive attitudes and willingness to improve their language skills from time to time.

In discussing the level of English mastery among the respondents, less than half of the respondents were found to agree that they master the foundation of English well supporting Yunus and Shukri (2017) that the proficiency of the English language among Malaysians has not seen much improvement since 1970. If the students are unable to master the basic of English language, it might be difficult for them to get along with the lesson. In discussing the mastery of English language among the students, reading skill seems to be more advanced than the other three language skills. Speaking skill on the other hand was found to be least competent among the respondents with only 40% agreed they could communicate well in English. This defeats Manan and Shamsudin (2012) that spoken English is the most important among the four language skills in an increasingly globalised world today. In fact, this finding reiterates Suliman (2014) in which majority of the respondents agreed that speaking skill is the most difficult language skill. Students should be encouraged to converse using English language, especially in giving justification of their answers. They should be made anxious-free of making mistakes and willing to come forward and offer their views because Nair (2000) asserted that students should be made to feel that learning to speak English could be fun. With that, a more interactive learning process will take place.

In addition, this study also posits the idea that the learning process is encouraged by the class environment, which is the second highest scoring item. About 70% respondents agreed that class environment places a big impact in the learning process. It can be said that teachers become the source of contributing factor towards students’ ease of learning. As a number of the respondents were not previously learning the subjects in English, the assistance and support from the teachers who were involved in ETeMS is needed and deemed necessary. To enlighten, a lot of the respondents responded that the teachers’ assistance in the learning process has helped them to be more confident about the programme. They denoted that ‘teacher teaches very good’, ‘teacher explains well’, ‘teacher uses easy words to understand’ and ‘teacher explains when I have problems’. Teachers play a pivotal role in this programme. This finding supports studies by Majid et al. (2010) and Surif, Ibrahim and Kamaruddin (2006) on the role played by teachers in ETeMS. It should be taken into account that teacher is at the heart of the educational process and it highlights the importance of the teachers to engage students in the learning process. This is parallel to Mustakim, Mustapha and Lebar (2014) asserting that teachers are encouraged to create an enjoyable learning environment by developing activities suited to students. When the students find the excitement in the learning, this will indirectly develop their confidence level much better.
On top of that, more activities and facilities supporting the learning process should be organised and provided. Activities pertaining to English mastery improvement will enable the students to enrich their language proficiency, indirectly boosting the students’ confidence level. The same goes to the facilities. Although no resources will be provided to the schools, DLP schools and teachers can collaborate to share facilities that will aid the learning process. Suliman (2014) proposed that environment factor is seen as one of the factors contributing towards students’ lacking of competency. Therefore, crucial steps need to be undertaken to stop the environment factor from becoming a prevalent factor in hampering students’ readiness and confidence level in the programme.

In regards to the level of confidence among the respondents, only three items recorded high mean score. Interestingly, all three items are related to the teachers’ ways of teaching and assistance. This posits the idea that teachers play an important role in instilling the confidence level among the students, especially in the teaching and learning of Science and Mathematics in English language. This is supported by Mustakim, Mustapha and Lebar (2014) asserting that teachers are encouraged to create an enjoyable learning environment by developing activities suited to students. Teachers play the dominant role to ensure the students feel comfortable and confident in learning the subjects as argued by Khairani (2016), teacher is an important factor in determining quality as well as the successfullness of STEM integration programme. If teachers are unable to assist the learning process, students’ motivation and confidence level might decline. In this case, teachers’ role is highly demanded in order for the teaching and learning process to take place well. This is even reinforced by Ong (2009) saying that teachers’ way of teaching also plays an important role in increasing students’ learning outcome and achievement in Science and Mathematics.

The respondents’ level of confidence is considered to be on the moderate level, similar to their level of readiness. An important item to note here is that almost half of the respondents were unsure if they could follow the lesson well if it is to be conducted fully in English language. This indicates that the respondents are still uncertain of their beliefs in learning the subjects using English language. This is an important indicator for the teachers to ensure that the students are comfortable with learning both subjects in English language. This finding reiterated finding from Ishak and Mohamed (2010) whereby 45% of the respondents in their study denoted that they will face difficulties if English language is to be fully used in their teaching and learning process. Students should be given the platform for them to boost the confidence in the learning of both subjects using English language. This will only prolong the uncertainty among Malaysian students about their confidence level, if nothing is done to boost their confidence level. It should be noted that Ong & Tan (2008) argued the purpose of teaching Science and Mathematics in English is to enable students to acquire proficiency in English while learning science. Although Lay and Osman (2017) proposed that Malaysian students’ achievement in science and 21st century skills are not satisfactory, it is a big hope that with the implementation of DLP, the perception can be changed.

CONCLUSION

This study has imposed the idea that the students are still unsure of their readiness in embracing the change in the teaching and learning of STEM subjects. Their level of readiness is found to be moderate and this is greatly caused by their incompetent mastery of language. They clearly denote the importance of learning in English language, yet their uncertainties are inevitable. Mastery of language as well as facilities to impede their learning are some of the issues that need to be tackled in implementing DLP. Students’ competency of the language is one of the major issues contributing to their lack of readiness in DLP. Indeed, this is a positive move aimed at valorizing the standard of English among the students via the learning of STEM subjects. However, more initiatives and efforts are deemed to better the execution of DLP and this ought to be done hand in hand by all parties, from the top position of policy makers to the ones in the micro level of the simple management, those practitioners. As noted by Mohd Nor (2014), equal opportunity to access quality education for all is a crucial policy for Malaysia. Hence, DLP is a programme made to cater to the needs of certain parties that are more prone to using English language in their teaching and learning. This is also concurrent to Goal 4 of Sustainable Goals Development, which is to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. Therefore, every aspect of DLP implementation should be improved to ensure the success of this programme.

REFERENCES


