

An Evaluation of the Implementation of the Dual Language Programme (DLP) among Science and Mathematics Teachers

Norazilawati Abdullah, Kung-Teck Wong, Noraini Mohamed Noh, Mahizer Hamzah, Nor Hasnida Che Md Ghazali

Abstract: *The Dual Language Programme (DLP) is a programme introduced under the foundation of Memartabkan Bahasa Malaysia Memperkukuh Bahasa Inggeris (MBMMBI). The DLP was first implemented in 2016 at selected schools. As such, researchers had conducted a study to evaluate the implementation of the DLP for science and mathematics which has been used in secondary school based on the CIPP model from the aspect of context, input, process and product. The first objective of this research is to identify the level of context, input, process and product dimensions of the DLP. The second objective is to identify the relationship among the level of context, input, process and product dimensions during the implementation of the DLP with the teachers' teaching experience. The third objective is to identify the advantages, weaknesses, challenges and suggestions by science and mathematics teachers in realising the DLP. This research had involved 210 teachers who taught science and mathematics in secondary school in Zone Keramat, Kuala Lumpur. This research was conducted using the survey form and interview questions as the research instruments. The data gathered from the research has been analysed using descriptive and inferential statistics by getting the value of the mean score and percentage and also the analysis of Pearson correlation. The data collected from interview were transcribed and analysed using Nvivo software. The result showed that the level of context, input and product dimensions were average while the level of process dimension was high. The research hypothesis was accepted where there was no relationship between context, process and product dimensions with the teachers' teaching experience. From the interview, we found that the DLP has its advantages and also disadvantages, but the essential steps have been proposed in this research. In conclusion, this research has given a new contribution to science and mathematics teachers in Malaysia to evaluate and improve the implementation of the DLP as whole.*

Keywords : *Dual Language Programme (DLP), Evaluation, Science, Mathematics*

I. INTRODUCTION

The objective of the DLP is to provide the opportunity for students in improving their access and exposure to various types of knowledge in order to compete globally and also to improve students' career marketability.

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Norazilawati Abdullah, National Child Development Research Centre, Faculty of Human Development, Sultan Idris Education University, Malaysia

Sultan Idris Education University, Malaysia

Kung-Teck Wong, National Child Development Research Centre, Faculty of Human Development, Sultan Idris Education University, Malaysia

Sultan Idris Education University, Malaysia

Noraini Mohamed Noh, ⁵Faculty of Human Development, Sultan Idris Education University, Malaysia

Mahizer Hamzah, Faculty of Human Development, Sultan Idris Education University, Malaysia

Nor Hasnida Che Md Ghazali, Faculty of Human Development, Sultan Idris Education University, Malaysia

This programme can help and attract students who plan to further their studies in Science, Technology, Engineering and Mathematics (STEM) at the tertiary level (JPN Melaka, 2015) [1].

Aligned with the PPPM's aspiration for students to conquer multi-language skills, the DLP provides the opportunity for students to practise the English language through Mathematics, Science, Information Technology and Communication subjects as well as in Design and Technology. In 2016, 300 schools out of 10154 primary and secondary schools had implemented the DLP.

It is predicted that in the future, many more schools will apply for the DLP programme (Menon, 2016) [2]. If we compare the DLP to the English For Teaching Mathematics and Science (ETeMS) programme, the implementation of the DLP is subject to the schools' request [3]. However, to ensure that schools practise the DLP, 4 conditions are required which must be fulfilled by the schools. Firstly, the school must have enough source. Secondly, the DLP can be implemented with the agreement from the schools and teachers. Thirdly, support is requested from parents for schools to implement the DLP programme. Lastly, the schools need to ensure that their performance in the Malay Language subject at the SPM level is equivalent or much better than the national cumulative grade.

II. RESEARCH OBJECTIVE

1. To identify the level of context dimension (the relevance of the DLP to the National Education Principle, the attitude and the level of readiness of the science and mathematics teachers) in implementing the DLP.
2. To identify the level of input dimension (knowledge, skill and confidence of science and mathematics teachers in practising the DLP, instruments, laboratories, flexibility, schedule, exercise and school principal's support) in implementing the DLP.
3. To identify the level of process dimension (the teaching and learning strategy and the way science and mathematics teachers utilise the DLP to evaluate the students' work product) in implementing the DLP.
4. To identify level of product dimension (difference in students' achievement and attitude toward the science and mathematics lessons).
5. To identify the relationship between the level of the dimensions of context, input, process and product in implementing the DLP with teacher's teaching experience.

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6. To identify the advantages, disadvantages, challenges and suggestions from science and mathematics teachers towards the DLP.

product)		
Product (difference in students' achievement and attitude towards science and mathematics lesson).	[r = -0.027, p = 0.779 >0.05].	No relationship

III. RESEARCH HYPOTHESIS

Ho1: There is no relationship between the level of the context, input, process and product dimensions in implementing the DLP with the teacher's teaching experience.

IV. RESEARCH METHODOLOGY

This research was conducted using the survey method in the quantitative and the qualitative form. The sample involved 210 science and mathematics secondary school teachers in the Keramat Zone, Kuala Lumpur. For the interview, five respondents had been selected to answer the given questionnaire. The instruments used in this research were the questionnaire and structural interview questions adapted from Norazilawati (2016) [4,5]. The pilot test had been conducted involving 25 science and mathematics teachers in the Pudu Zone, Kuala Lumpur. The alpha cronbach reliability value was 0.879. The data gathered was analysed using the SPSS software for descriptive and inferential analysis (quantitative) while Nvivo was used to analyse interview transcript (qualitative).

V. RESULT

Table I: Results of objective 1,2,3 and 4 for descriptive analysis.

Dimension	Mean	Level
Context (the relevance of the DLP to National Education Principle, attitude and the level of science and mathematics teachers' readiness)	3.31	Moderate
Input (knowledge, skill and confidence of science and mathematics teachers who were practising the DLP, instruments, laboratories, flexibility, schedule, exercise and school principal's support)	3.52	Moderate
Process (teaching and learning strategy and the way science and mathematics teachers who were practising DLP to evaluate students' work product)	3.81	High
Product (difference in students' achievement and attitude toward the science and mathematics lessons).	3.20	Moderate

Table II : Results of objective 5 for inferential analysis. The hypothesis is accepted.

Dimension	Correlation value	Relationship
Context (the relevance of the DLP to the National Education Principle, attitude and the level of science and mathematics teachers readiness)	[r = -0.070, p = 0.461 > 0.05].	No relationship
Input (knowledge, skill and confidence of science and mathematics teachers in practising the DLP, instruments, laboratories, looseness, schedule, exercise and school principle's support)	[r = -0.040, p = 0.673 > 0.05].	No relationship
Process (teaching and learning strategy and the way science and mathematics teachers who were practising the DLP evaluated students' work	[r = -0.003, p = 0.973 > 0.05]	No relationship

Table III: Result for objective 6

Element	
Goodness	The DLP was able to capture the students' interest to pursue study in Science, Technology, Engineering and Mathematics field (STEM). It increased the period of time students were exposed to the English language which indirectly can improve their English. It also helped in terms of students' readiness in the future. This is because they won't get nervous to cope with a higher level of education and career because the knowledge of the English language is given a top priority in job selection nowadays.
Weakness/ challenge	The DLP and ETeMS both neglected the foundation of National language. PPSMI had been abolished because it clearly failed to strengthen national education. It showed a bad effect when applied to two subject lessons and the results would be much worse if it was applied to the others. The respondents said that it was so inappropriate for the government to keep investing money into a programme that would only repeat the failure that had been caused by the ETeMS. The respondents also said that the foundation of the DLP would never overcome students' weakness in mastering English language because the main problem was the English language itself. The worst effect caused by ETeMS during the implementation from 2003-2015 was the decrease of number of students that managed to further their studies in Science stream in Form 4 and 5 in all schools in Malaysia. This showed a very clear sign towards the students' mastery and interest in Science specifically. In conclusion, the implementation of the DLP was irrational to be implemented as it was done in a rush without detailed evaluation and without taking into account many factors.
Suggestion	The respondents suggested a few ways to improve the effectiveness of the DLP implementation i.e the KPM/ LPM/ JPN/ PPD need to give high commitment in implementing the DLP so the quality will be guaranteed. The authorities are advised to ensure that all information about the DLP is directly disseminated to the teachers. There is also a need for training, courses, monitoring and continuous support from the aspect of planning or implementing process.

VI. CONCLUSION

In conclusion, the results from this study showed that the levels of context, input and product dimensions were moderate while the level of process dimension was high. The research hypothesis was accepted where the analysis of Pearson correlation showed that there was no significant relationship between the levels of context, input, process and product dimension in the implementation of the DLP with the science and mathematics teachers' teaching experience. Generally, the majority of interview respondents said there were many advantages of the DLP such as it managed to help and attract students' interest to further study in STEM, increased the period of students' exposure to English language and prepared them for future careers. However, the disadvantages in the DLP cannot be overcome by all the advantages. It has been predicted that the DLP would fail, following in the steps of ETeMS. It is suggested that KPM must take a step forward by introducing other solutions such as providing training,



courses, monitoring and continuous support to all teachers and students in empowering the DLP and we need to improve our English without forgetting our mother tongue. We have to bear in mind that the Malay Language is the nation's soul.

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AUTHORS PROFILE



Norazilawati Abdullah is an Assoc. Prof at Faculty of Education and Human Development, Sultan Idris Education University (UPSI). She is the Deputy Director and Fellow of the National Child Development Research Centre (NCDRC), Malaysia. E-mail: nora@fpm.upsi.edu.my



Kung-Teck Wong is an Assoc. Prof at Faculty of Education and Human Development, Sultan Idris Education University (UPSI). He also a Fellow of the National Child Development Research Centre (NCDRC), Malaysia. E-mail: thomas@fpm.upsi.edu.my



Noraini Mohamed Noh is an Assoc. Prof at Faculty of Education and Human Development, Sultan Idris Education University (UPSI), Malaysia. E-mail: noraini.mn@fpm.upsi.edu.my



Mahizer Hamzah is an Assoc. Prof at Faculty of Education and Human Development, Sultan Idris Education University (UPSI), Malaysia. E-mail: mahizer@fpm.upsi.edu.my



Nor Hasnida Che Md Ghazali is an Senior Lecturer at Faculty of Education and Human Development, Sultan Idris Education University (UPSI), Malaysia. Email: hasnida@fpm.upsi.edu.my