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Revista de Ciencias Sociales y Humanidades

The readiness of primary school science and mathematics teachers in implementation of dual language program (DLP)

La preparación de los maestros de ciencias y matemáticas de la escuela primaria en la implementación del programa de lenguaje dual (DLP)

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ABSTRACT

This research was conducted to determine the readiness of science and mathematics teachers in implementing DLP (Dual Language Program) in primary schools. This quantitative research using questionnaires forms. A total of 100 samples consisted of science and mathematics teachers who were randomly selected from primary school district of Batang Padang. Descriptively, the data were analyzed using frequency distribution, percentage, mean and standard deviation. The findings show that the level of readiness of science and mathematic teachers in terms of knowledge is high while the level of implementation and the interest of teachers towards the implementation of DLP is moderate. Inferential analysis based on the correlation analysis that has been conducted also shows that there is no significant relationship between the level of teachers readiness and experience teaching of science and mathematics in primary schools for implementing DLP. In summary, science and mathematics teachers are generally willing to implement DLP where their knowledge of DLP is high, but their skill and interest are still moderate, and it has no relation with teacher's teaching experience. All parties should play a role to help science and mathematics teachers so that their skill and interest in DLP can be improved in an effort to ensure that the implementation of DLP more successful in the future.

Keywords: Readinesss, Dual Language Programme (DLP), Science Teachers, Mathematics Teachers

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RESUMEN

Esta investigación se realizó para determinar la preparación de los maestros de ciencias y matemáticas en la implementación de DLP (Programa de lenguaje dual) en las escuelas primarias. Se forma esta investigación cuantitativa mediante cuestionarios. Un total de 100 muestras consistieron de maestros de ciencias y matemáticas que fueron seleccionados al azar del distrito escolar primario de Batang Padang. Descriptivamente, los datos se analizaron mediante distribución de frecuencia, porcentaje, media y desviación estándar. Los hallazgos muestran que el nivel de preparación de los maestros de ciencias y matemáticas en términos de conocimiento es alto, mientras que el nivel de implementación y el interés de los maestros hacia la implementación de DLP es moderado. El análisis inferencial basado en el análisis de correlación realizado también muestra que no existe una relación significativa entre el nivel de preparación de los maestros y la experiencia en la enseñanza de la ciencia y las matemáticas en las escuelas primarias para la implementación del DLP. En resumen, los maestros de ciencias y matemáticas generalmente están dispuestos a implementar DLP donde su conocimiento de DLP es alto, pero su habilidad e interés son aún moderados, y no tiene relación con la experiencia docente del docente. Todas las partes deben desempeñar un papel para ayudar a los maestros de ciencias y matemáticas para que su habilidad e interés en DLP puedan mejorarse en un esfuerzo por garantizar que la implementación de DLP sea más exitosa en el futuro.

Palabras clave: Preparación, Programa de lenguaje dual (DLP), Profesores de ciencias, Profesores de matemáticas

RESUMO

Esta pesquisa foi realizada para determinar a disponibilidade de professores de ciências e matemática na implementação de DLP (Dual Language Program) em escolas primárias. Esta pesquisa quantitativa usando formulários de questionários. Um total de 100 amostras consistiu de professores de ciências e matemática que foram selecionados aleatoriamente do distrito escolar primário de Batang Padang. Descritivamente, os dados foram analisados por meio de distribuição de frequências, porcentagem, média e desvio padrão. Os resultados mostram que o nível de prontidão dos professores de ciências e matemática em termos de conhecimento é alto, enquanto o nível de implementação e o interesse dos professores em relação à implementação de DLP é moderado. A análise inferencial com base na análise de correlação que foi realizada também mostra que não há relação significativa entre o nível de preparação dos professores e o ensino de ciências e matemática nas escolas primárias para implementação do DLP. Em resumo, os professores de ciências e matemática geralmente estão dispostos a implementar o DLP onde seu conhecimento de DLP é alto, mas sua habilidade e interesse ainda são moderados e não tem relação com a experiência de ensino do professor. Todas as partes devem desempenhar um papel para ajudar os professores de ciências e matemática, para que sua habilidade e interesse em DLP possam ser melhorados, em um esforço para garantir que a implementação do DLP seja mais bem-sucedida no futuro.

Palavras-chave: Prontas, Programa de Dupla Linguagem (DLP), Professores de Ciências, Professores de Matemática

1. INTRODUCTION

Dual Language Program (DLP) is a program introduced under the Enhancement of Bahasa Malaysia Empowerment English Language (MBMMBI) policy which has been approved at the National Economic Council Meeting Bill. 21/2015 on October 13, 2015 and announced by 6th Prime Minister of Malaysia in 2016 budget presentation on October 23, 2015 which gives the choice of schools that meet the criteria for conducting teaching and learning sessions in full English other than Bahasa Malaysia for Mathematics, Science, Information and Communication Technology, and Design and Technology (JPN Selangor, 2015).

The implementation of DLP aims to support the English language proficiency of students through increasing the time of exposure to the English language indirectly in Teaching and Learning subjects in line with the Malaysian Education Development Plan (PPPM) 2013-2025 to produce students with bilingual skill, (Utusan Malaysia, 11 January 2016).

Objective of this program is to provide opportunities for students to improve access and exploration of various knowlegde to compete globally as well as enhance student marketability in the workplace. This program can help and attract students who wish to continue their studies in the field of Science, Technology, Engineering and Mathematics (STEM) at the tertiary level, (JPN Melaka, 2015).

In line with the aspirations of PPPM for student to mastering bilingual skills, DLP provides an opportunity for students to adopt the English language through Mathematics, Science, Information and Communication Technology, and Design and Technology. DLP allows Malaysians society to improve access for the exploration of various knowledge to compete globally, (JPN Selangor, 2015).

Schools are striving to make choices based on the criteria outlined. Schools can submit an application to PPD and JPN. The implementation of DLP is subject to Ministry's approval based on school readiness, (JPN Selangor, 2015).

2. PROBLEM STATEMENT

The main input of effective learning depends on the teacher's presentation and communication in the classroom (Chew Fong Peng, 2008). If teachers are not able to communicate effectively, then situations that make the students passive during the teaching and learning process, always worried, unsure and unmotivated (Norashid & Hamzah (2014). Therefore, studies on teacher readiness should be conducted to identify the level of their readiness to carry out the teaching and learning process of science subjects in DLP.

The main problem faced by teachers are not able to mastered English language with well in their teaching (Utusan Online, 11 Julai 2009). Teachers should have fully adequate skill and self-confidence for implement this DLP program. Exposure about subjects to be taught using English language still insufficient for some science teachers. The use of English language in science subjects also worried for result in misinterpretation of meanings and terms when level of teacher's English language are shallow (Seth & Umi Mardhiah, 2008). When teachers wrongly use language or terms, this will cause problems for effectiveness of teaching and learning. Therefore, it is important for teachers to improve their knowledge and skill for build confidence to presenting the teaching of science and mathematics effectively.

Furthermore, teachers are not given training to teach science and mathematics in DLP for 2016 as selected schools because the schools are ready for pilot test. ELTC will help with training programs to increase English language proficiency among teachers which follow DLP in 2017 and the following year (JPN Selangor, 2015).

Therefore, this research aimed to review the readiness of teachers to teach science and mathematics in English language for this DLP program. This research focuses on level of knowledge subject content and science and mathematical terms as well as the English language proficiency of teachers.

3. RESEARCH OBJECTIVE

The objectives of this research are as follows:

1. Identify the level of readiness of science and mathematics teachers in terms of skill towards DLP.

2. Identify the level of readiness of science and mathematics teachers in terms of knowledge towards DLP.

3. Identify the level of readiness of science and mathematics teachers in terms of interest towards DLP.

4. Identify whether there is a significant relationship between the readiness of science and mathematics teachers in terms of skill, knowledge and interest with the teaching experience of primary science and mathematics subject in implementing DLP.

4. RESEARCH HYPOTHESIS

H1: There is no significant relationship between the readiness of science and mathematics teachers in terms of skill with teaching experience at primary school in implementing DLP.

H2: There is no significant relationship between the readiness of science and mathematics teachers in terms of knowledge with teaching experience at primary school in implementing DLP.

H3: There is no significant relationship between the readiness of science and mathematics teachers in terms of interest with teaching experience at primary school in implementing DLP.

5. CONCEPTUAL FRAMEWORK

This study uses a theoretical framework model reflective Wallace (1991) state that teachers usually have existing knowledge and experience related to the job. When joining professionals training, teachers will relate received knowledge with knowledge through experiential knowledge which are two important sources of knowledge in professional training. Both sources of knowledge according to Wallace interconnected with one another to enable teachers to be more ready to carry out their professional duties.
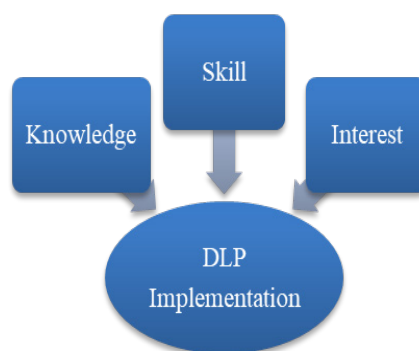
Figure 1. Conceptual Framework

6. RESEARCH METHODOLOGY

This quantitative research using a survey method which the questionnaire instrument used to know the the level of readiness science and mathematics teachers in implementing DLP. The questionnaire using Likert scale of 1 to 5 is the result of modifications Norisah (2016) and Norazilawati (2016) instruments and improvement of the researcher based on the objectives to be achieved. A total of 100 science and mathematics teachers from Batang Padang district, Perak were randomly selected as a sample of the study. A pilot study was conducted to obtain the reliability of the instrument to describe the consistency index of each item. The value of alpha cronbach coefficient for the reliability of this research instrument is 0.91. These value meets the high standards and makes the instrument can be used for the actual study.

The data were analyzed using the Statistical Packages for Social Science (SPSS) version 20.0. To answer the research objectives of the first, second and third, descriptive statistical analysis is used because it can

describe the data in the mean score. The analysis is necessary for assess the readiness level of teachers in terms of knowledge, skill and interest in the implementation of the DLP. Pearson Correlation Analysis was conducted to evaluate the relationship between two variables to answer the fourth objective of the research.

7. RESEARCH FINDINGS

Descriptive Analysis

Descriptive analysis was conducted for knowing the readiness of science and mathematics teachers towards the implementation of DLP at primary schools in terms of knowledge, skill and interest of the teachers. Table 1 below summarizes teacher's readiness in terms of skill, knowledge and interest in the form of mean and standard deviation.

Table 1. The level of readiness science teacher in the form of mean and standard deviation

Variables	Mean	Standard Deviation
Skill	3.24	0.67
Knowledge	3.97	0.55
Interest	3.44	0.65

The mean score for the skill variable is 3.24 with the standard deviation 0.67. This show that skill level of the respondents in this research is moderate. The mean score for the knowledge was 3.97 with a standard deviation of 0.55. This value describes the respondents' knowledge of DLP implementation is high. While the mean score for interest is 3.44 with the standard deviation of 0.65, which also describe the respondents have moderate interest towards the implementation of DLP.

Inference Analysis

Inferential analysis is conducted to find the relationship between the readiness of science and mathematics teachers in terms of skill, knowledge and interest and teacher's experience teaching of primary school in implementing DLP.

Table 2. Correlation Analysis Between Readiness Science Teachers by Skill, Knowledge And Interest With Primary School Teaching Experience In Implementing DLP

No	Teacher Readiness Component	Experience Teaching Primary School in Implementing DLP			Relation
		Coefficient Value (r)	Value Coefficient Determination (r^2)	Sig. (2-tailed)	
1	Skill	0.078	0.006	0.434	Very Weak
2	Knowledge	0.062	0.004	0.536	Very Weak
3	Interest	0.055	0.003	0.582	Very Weak

The results of the Pearson Correlation analysis to see the relationship between science and mathematics teachers' readiness in terms of skill with science and mathematics teaching experience in DLP implementation found that the results obtained from the analysis were [r = 0.078, p = 0.434 ˃ 0.05]. This shows there is no significant relationship between skill with experience teaching science and mathematics teachers in the implementation of the DLP. So, can be concluded that Ho1 is accepted because there is no significant relationship between skill with teaching experience of science teachers in the implementation of DLP.

The results of the Pearson Correlation analysis to see the relationship between science teachers' readiness in terms of knowledge and teaching experience in DLP implementation found that the results obtained from the analysis were [r = 0.062, p = 0.536 ˃ 0.05]. This shows that there is no significant relationship between knowledge and the teaching experience of Science teachers in the implementation of DLP. So it can be concluded that Ho2 is accepted because there is no significant relationship between knowledge and the teaching experience of science teachers in implementing DLP.

The results of Pearson Correlation analysis to see the relationship between science and mathematics teacher's readiness in terms of interest with Science teaching experience in the implementation of DLP found that the results obtained from the analysis were [r = 0.055, p = 0.582 ˃ 0.05]. This shows that there is no significant relationship between the interest and the teaching experience of science and mathematics teachers in the implementation of DLP. So, can be concluded that Ho3 is accepted because there is no significant relationship between the interest and the teaching experience of science teachers in the implementation of DLP.

Generally, can be summarized that the level of readiness of the teacher is moderate in terms of skill and interests while high in knowledge for implementing DLP. The findings also show that there is no significant relationship between skill, knowledge and interest with teaching experience in the implementation of DLP.

8. DISCUSSION

This research to know the level of readiness of science and mathematics teachers in terms of knowledge, skill and interest in implementing DLP in primary schools. Generally, teachers have high knowledge, moderate skill and interest in implementing DLP at their schools. To ensure teachers' skill, knowledge and interest in this implementation, teachers should be given as much inputs as possible to ensure the effectiveness of this implementation. However, in reality, teachers face different situations when they start teaching at school (Seth, 2010). This may be because of other factors such as environmental factors, classroom conditions, student behaviours, administrators attitude and others that affect teachers in implementing teaching and learning sessions at school (Syuhada, 2008).This situation becomes more complicated when teachers lack adequate resources for refer to this implementation (Seth, 2010).

Teaching DLP directly or indirectly give many challenges to teachers. Therefore, the results of this research provide various implications to certain parties. Teachers, administrators, District Education Office (PPD), State Education Departments (JPN) and Curriculum Development Section (BPK). All of these parties need to work together and mobilize energy in finding solutions to facilitate teachers to implement DLP in teaching and learning.

Science subjects are the core subjects that important in today's technology era (Norazilawati, 2014). Students should be encouraged to be interested in this subject. Therefore, teachers need to have a high level of readiness to ensure that the inputs obtained by the students are high (Guncheng Anak Banter, 2010).

Therefore, the research findings show that there is no significant relationship between knowledge, skill and interest of teachers with their teaching experience at school. This shows whether new or experienced teachers also needs to be given more in-depth exposure to ensure that they can implement the DLP more effectively.

Therefore, the researchers hope this research finding of this research can help certain parties, especially science and mathematics teachers in improving and finding effective way to implement DLP for teaching and learning in primary schools. The high level of readiness of teachers can help science and mathematics teachers for implementing DLP very well.

This research finding also can help the ministry to provide more courses that are appropriate to ensure this implementation successful. Through the courses conducted for improve the knowledge, skills and interest of teachers to implement DLP. Accordingly, PPD, JPN and Ministry of Education should collaborate in providing essential resources for teacher's needs at schools.

9. CONCLUSION

Overall, this research to know the level of readiness of science and mathematics teachers in terms of knowledge, skill and interest in implementing DLP in primary schools with demographic factors which is the teaching experience of teachers. The findings show there was no significant relationship between the level readiness of teachers and teaching experience in primary schools.

Science and mathematics subjects are the core subjects need to mastered by all pupils. Teachers' skill, knowledge and interest are also closely related to the success of a policy. In the era of technology and globalization, teachers need to be prepared with sufficient skill such as good English language proficiency and the correct use of scientific and mathematical terms in English. Through the skill from a teacher, it can produce a generation that is competitive in the eyes of the world. Additionally, teacher experience is a valuable asset while facing challenges in the implementation of the DLP which was introduced in 2016. This should be taken seriously because teachers are very important drivers for student achievement. The students are the major groups that are affected by the implementation of this DLP. Therefore, the level of teacher's readiness like knowledge, skill and interest of science and mathematics teachers, should be strengthened so that DLP successfully implemented in Malaysia.

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