THE IMPLEMENTATION OF REFORMED PRIMARY SCIENCE CURRICULUM IN JEMPOL AND JELEBU DISTRICT

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ABSTRACT

This study aimed to analyze the implementation of reformed primary science curriculum in Jempol and Jelebu District, and to determine the relationship between the implementation of level I science curriculum and the teachers' understanding. A mixed method approach was used. Quantitative data were collected through questionnaire from 127 science teachers, meanwhile the qualitative data collected through interviews, classroom observations and document analysis. The quantitative data were analyzed through SPSS, while the interview data were analyzed using ATLAS.ti. The findings show there is a significant positive relationship between the teachers' understanding and the translation of science curriculum into the lesson plan. A significant positive relationship is also found between the teachers' understanding and the strategies used in teaching science. There is also a positive relationship between the teachers' understanding and the assessment methods carried out in the classroom. Nevertheless, insufficient of time in completing the learning standard and insufficient apparatus have become issues and challenges due to less understanding of the content of level I science curriculum. In conclusion, there is a positive relationship between all studied aspects of teachers' understanding towards the reformed primary science curriculum and its implementation. In implication, the study indicates that there is a need in professional development trainings for teachers who are teaching level I science in order to maximize curriculum implementation at the classroom level.

PERLAKSANAAN REFORMASI KURIKULUM SAINS RENDAH DI DAERAH JEMPOL DAN JELEBU

ABSTRAK

Kajian ini bertujuan menganalisis pelaksanaan reformasi kurikulum sains sekolah rendah di Daerah Jempol dan Jelebu, serta menentukan hubungan antara pelaksanaan kurikulum sains tahap I dan kefahaman guru terhadap kandungan kurikulum. Reka bentuk kajian ini merupakan kaedah gabungan iaitu kaedah kuantitatif dan kualitatif. Data kuantitatif dikumpul melalui soal selidik daripada 127 guru sains, manakala data kualitatif dikumpul melalui temu bual, pemerhatian bilik darjah dan analisis dokumen. Data kuantitatif dianalisis menggunakan SPSS manakala data kualitatif yang dikumpul melalui temu bual dianalisis menggunakan perisian ATLAS.ti. Dapatan kajian menunjukkan terdapat hubungan positif yang signifikan antara pemahaman guru dan penulisan Rancangan Pelajaran Harian. Hubungan positif yang signifikan juga diperoleh antara pemahaman guru dan strategi yang digunakan dalam pengajaran sains. Terdapat juga hubungan yang positif antara pemahaman guru dan kaedah pentaksiran. Walau bagaimanapun, ketidakcukupan masa dalam menghabiskan standard kandungan, dan ketidakcukupan peralatan telah menjadi isu dan cabaran kepada pelaksanaan reformasi kurikulum sains sekolah rendah kerana kurang pemahaman terhadap kandungan kurikulum sains tahap I. Kesimpulannya, terdapat hubungan yang positif antara pelaksanaan reformasi kurikulum sains sekolah rendah dan pemahaman guru dalam semua aspek yang dikaji. Implikasinya, keperluan dalam latihan pembangunan profesional untuk guru-guru yang mengajar sains tahap I harus diambil kira bagi memaksimumkan pelaksanaan kurikulum di peringkat bilik darjah.

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ABBREVIATIONS

SK **:** *Sekolah Kebangsaan*

SJK (T) **:** *Sekolah Jenis Kebangsaan (Tamil)*

SJK (C) **:** *Sekolah Jenis Kebangsaan (Cina)*

DSKP **:** *Dokumen Standard Kurikulum pelajaran*

PPPM **:** *Panduan Perkembangan Pembelajaran Murid*

DST **:** *Dunia Sains dan Teknologi*

KSSR **:** *Kurikulum Standard Sekolah Rendah*

SCPS **:** Standard Curriculum for Primary School

ICPS : Integrated Curriculum for Primary School

KBSR **:** *Kurikulum Bersepadu Sekolah Rendah*

UPSR **:** *Ujian prestasi Sekolah Rendah*

PISA : Programme for International Student Assessment

TIMSS : Trends in International Mathematics and Science Study

PPDJJ : *Pejabat Pelajaran Daerah Jempol dan Jelebu*

CHAPTER 1

INTRODUCTION

1.1 Introduction

Malaysia is one of the developing countries, which emphasizes in science and technology. In order to reach the developed nations by 2020 in future, our nation is looking forward to the contributor in science and technology rather than the consumer of the technology. Regarding this, there were several upgrades had been integrated in curriculum especially science curriculum. Capabilities and creativity should be provoked among young learners and it becomes necessary in order produce many scientific knowledgeable citizens. Attributable to that, science curriculum has become as an important tool in achieving the needs of nation. Some primary teachers may not consider unambiguous teaching about the appropriate science for young learners, but there is adequate evidence to suggest that the youngest of primary learners can appreciate some of the attributes, while level II primary students can grasp, to some

degree, all of them (Akerson, Buck, Donnelly, Nargundi-Joshi & Weiland, 2011). Here to curve the young scientist started from level I primary which really put stress on Standard Curriculum for Primary School level I science that had been set by the Malaysia Ministry of Education.

According to Allan et al. (2016), curriculum can be defined as prescriptive, descriptive, or both. Besides, Tyler (1957) defined that curriculum is all the learning experiences planned and directed by the school to attain its educational goals. Meanwhile prescriptive definitions given by Indiana Department of Education (2010), curriculum means the planned interaction of pupils with instructional content, materials, resources and processes for evaluating the attainment of educational objectives. Caswell and Campbell (1935), stated that curriculum is all the experiences children have under the guidance of teachers. Curriculum is only a part of the plan that directly affects students. Anything in the plan that does not reach the students constitutes an education wish but not a curriculum (Ebert, Ebert & Bentley, 2013).

SCPS or "Standard Curriculum for Primary Schools had been introduced in 2011 by our Malaysia Ministry of education (MOE). The curriculum reformation is mainly focusing on Malaysian students in order to them to meet the emerging globalisation. It is also widely known as, '*Kurikulum Standard Sekolah Rendah'* (KSSR), involving all subjects including Science. The SCPS is an attempt "to restructure and improve the current curriculum to ensure that students have the relevant knowledge, skills and values to face the challenges of the 21st century" (Ministry of Education Malaysia, 2012a, p. 6). 30 selected schools were used for piloting the Standard Curriculum for Primary Schools (SCPS). The Malaysia's north region such as

Perlis Kedah, Penang and Perak has implement it in the academic year 2009-2010. Then it was officially implemented in all primary schools in 2011. Since it is newly introduced and the level of implementation is still unclear so the understanding towards new curriculum as well as the reflection of the new curriculum in classroom practices should be examine. The present study therefore aims to determine to what extent the teachers understand, adopt and implement the new primary school curriculum.

1.2 Research Background

The research mainly focusing in understanding and the implementation of the curriculum, it is mainly due to the various research which indicate the curriculum reform always mismatch with its implementation. This is contributed to the unsuccessful of the curriculum (Cheserek & Mugalavai, 2012; Chisholm & Leyendecker, 2008; Curdt-Christiansen & Silver, 2012; Pandian, 2002; Wang, 2006). Besides that, the sudden curriculum reformation is basically from the report by the Malaysian School Inspectorate (Ministry of Education, 2010d) which saying that more on teacher-centered and also chalk and talk drill methods are still going on in Malaysian School. The lack of active learning and student centered learning had become a debate and reinforce to the curriculum reform (Abdul Rahman, 1987; Abdul Rahman, 2007; Aman & Mustaffa, 2006; ASLI-CPPS, PROHAM & KITA-UKM, 2012; Mohd Sofi, 2003; Mustaffa, Aman, Seong & Mohd Noor, 2011; Sidhu, Fook & Kaur, 2010). Moreover, the preliminary report of the Malaysian Education Blueprint 2013–2025 states, “the full potential of the integrated curriculum for both primary and secondary schools has not always been brought to life in the classroom” (Ministry of Education,

2012c,). This report gave a clear statement that need and aim of the integrated curriculum in both primary and secondary schools was not implemented properly in actual classroom.

Even though the curriculum reform reoccurring and keep abreast with current changes it is not necessarily implemented properly as mended in the curriculum. It can clearly state that the same problem will arise in implementing the curriculum due to lack of understanding in the curriculum. Feasibly by examining the effectiveness of the recent curriculum reform will shed light on a new perspective or possible factors affecting successful curriculum implementation. Most of the related studies are more focused on the effectiveness of specific teaching approaches, methods or strategies (e.g., Al-Mekhlafi & Nagaratnam, 2012; Carless, 2004), even though there were more studies needed specifically in the implementation and understanding of the curriculum.

As this study is concerning the Malaysia's primary science education and the implementation of primary science education it will be appropriate if we go through the history of our primary school development. The KBSR implementation following the changes made by the Cabinet Committee Report on the Implementation of the Education Policy was issued in 1979. The study conducted by the Cabinet Committee on the Old Primary School Curriculum (LSR) that had been implemented since independence, has found that there are some flaws need to be addressed. In 1982, KBSR was introduced with much emphasis on 3Rs (reading, writing and arithmetic) and included moral values as one of the important element. Science was taught as the integral part of the subject called 'Man and His Power' which known as *Alam dan*

Manusia. The sequence of the development of curriculum for primary school in Malaysia is stated in Table 1.1.

Table 1.1

Sequence of curriculum development in Malaysia

Year	Curriculum reforms in Malaysia
1982	Attempts at 305 schools throughout Malaysia.
1983	The full implementation in all schools.
1984	The practice of trading inserted and replaced with life skills.
1988	Philosophy of Education officially declared
1993	New Primary School Curriculum changed to Integrated Primary School Curriculum.
1994	Natural and Human Sciences replaced with Science
2011	KBSR is replaced by Kurikulum Standard Sekolah Rendah (KSSR).

The Integrated Primary School Curriculum also known as *Kurikulum Bersepadu Sekolah Rendah* (KBSR), has been in force since 1983 and consists of two level:

i. Level I / lower primary for Primary 1 to Primary 3 and

ii. Level II / upper primary for Primary 4 to Primary 6.

There are two type schools in primary level. They are (i) National Primary Schools referred to as *Sekolah Kebangsaan* (SK) and *Sekolah Jenis Kebangsaan* (SJK) where the medium of instruction is in Bahasa Malaysia, and (ii) the national type of primary schools known as *Sekolah Jenis Kebangsaan* (SJK) where the medium of instruction is either chinese in SJK(C) or Tamil in SJK (T), however Bahasa Malaysia and English are compulsory subjects.

Besides, Norhalynda (2014), mentioned that most of the studies are sole measure of implementation and only focusing attitude of acceptance rather than towards he possession of the knowledge and skills necessary to implement the curriculum behaviourally. Besides that according to Yaacob (2006), implementation of the curriculum with reference to classroom interaction are even scarcer. The present study is designed to examining the effectiveness of the curriculum by looking at the degree of alignment between understanding the science curriculum and the implementation in the context of the Malaysian primary education system. Even though as seen earlier that there will be always present a mismatch between a new curriculum and its implementation. Hence, this study examines whether this is true in the case of the SCPS science, which was introduced in Malaysia in 2011 and which will be rolled out in subsequent phases of primary education.

Further development on curriculum were done in early 2013 by introducing separated Student Learning Guide. The student learning guide replaced the performance standard document (evidence and band system). Moreover, since the SCPS is a new curriculum and has just recently been implemented and restructured, there is a need to ascertain its effectiveness in order to ensure its success. Besides that most of the studies were conducted mainly to evaluate the level II science and their implementation and sadly to be said the level I primary science education always omitted. To date, this study also represents one of research to examine the understanding of science SCPS and implementation in level I primary Science.

Developing the policy guidelines and also transforming the education policy into plan will be in charged by the MOE. Besides, curriculum development will be

under supervision of MOE (Ministry of Education Malaysia, 2004). MOE is responsible for the development of curriculum for primary and secondary schools. But the State Education Department is accountable for the implementation of curriculum. The District Education Offices assist the State Education Department in supervising the implementation of educational programmes, projects and activities in the schools of the district (Norhaslynda, 2014). In October 2010, the Integrated Primary Schools Curriculum (ICPS) had been replaced with new Standard Curriculum (ICPS). The implementation of SCPS for all subject were started with Year 1 classes in 2011. By 2016 the SCPS science will be implemented for all primary school's years. The weekly lesson timetable for national and national-type schools (Chinese and Tamil schools) is presented in Table 1.2 below:

Table 1.2

Malaysian Primary Education, Phase I (Year 1–2): Weekly lesson timetable according to the new Standard Curriculum for Primary School of 2011

Modules	Weekly time allocated to each subject (in minutes)		
	National School	Chinese School	Tamil School
Core Modules			
Malay Language	360	300	300
English Language	300	150	150
Chinese Language	-	360	-
Tamil Language	-	-	360
Mathematics	180	180	180
Islamic or moral	180	120	120
Physical education	60	60	60
Health education	30	30	30
Thematic modules			
Visual arts	60	60	60
Music	30	30	30
Science and Technology	60	60	60
Elective modules			
Additional language	90	-	-
(Arabic and other national languages)	30	30	30
Assembly			
Total weekly time	1,380	1,380	1,380

1.3 Problem statement

As mentioned earlier, Malaysia education system underwent major changes, known as revolution in education, and the curriculum reform movement. Rapid curricular changes occur in single decade became an accustomed style of education life which is from Integrated Secondary Schools Curriculum (ISSC) which known as *Kurikulum Bersepadu Sekolah Rendah* (KBSR) to Standard Curriculum for Primary Schools' (SCPS) or known as *Kurikulum Standard Sekolah Rendah* (KSSR). This sudden changes in curriculum provoke variety of controversy especially in understanding and the implementation of curricular in school specifically the science teachers, Head of the Science Panel, and the management itself. The understanding towards curriculum is a major aspect in producing effective teaching and learning environment with initiative, rich activity and assessment based on the pupils' IQ level of the pupils in the classroom (Bates, 2008).

However, current study shows Malaysia lack of teachers with necessary knowledge and skills, and its directly gives impact to the quality of teaching and learning Science. Doubtfully, Malaysia, like many other countries in the world (e.g. Pakistan, Australia, New Zealand, United States of America and Britain) facing a problem of inadequate trained teachers in teaching science especially in the teaching of Physics, Chemistry and Mathematics (Subahan, Lilia, Khalijah & Ruhizan, 2001). Due to the insufficient number of science teacher who were trained to teach or deliver science curriculum, this problem was overcome by recruiting teachers with other options (Subahan, Lilia, Khalijah & Ruhizan, 2001).

Yildiz-Duban, N. (2013) finds that the changes in the education system, especially in the content of science subject curriculum, make it difficult for the teaching process. Especially in distribution and time management. Teachers have not found enough time to plan and conduct teaching. Furthermore, participants were found to have complaints about not being fully informed about the use of alternative measurement methods and techniques. In Addition, the main factor to the unemployment problem among graduates is the failure to ensure educational syllabus or curriculum consistent with the matters required in the job market (Zaliza & Safarin, 2014). This prompts the troubles among the graduates to get occupations, which coordinate their abilities and capabilities. This likewise prompts an issue, in which graduates are not ready to execute what they have realized at the instructive foundations in their working field.

When the teachers with other educational backgrounds were assigned to teach science then there is a possibility that various kind of strategies in coping teaching science has been implemented. The proper knowledge and in-service training courses should be given to the non-optioned science teachers as it is importance to deliver the science knowledge correctly. Meaningful and the successful of science content delivery only if the teacher is occupied with proper knowledge, (Subahan, Lilia, Khalijah & Ruhizan, 2001). Many developed countries such as America and United Stated encountering the same problem (Millar, 1987). Thus, this study will focus on the teachers who are appointed to teach level I science in order to determine the relationship of their understanding towards science curriculum and the implementation of science curriculum. These will be seen through preparation of lesson, conducting the prepared lesson with proper approaches and methods as stated in Science SCPS and assessment

of the conducted lesson. Besides that, the issues and challenges faced by the teachers who are teaching science also will be discussed.

1.4 Research objectives

The purpose of this study is:

1.1 To determine the relationship between the teacher's understanding and transmission of SCPS science into lesson plan in level I primary science.

1.2 To determine the relationship between the teacher's understanding of level I primary science curriculum and the strategy of teaching and learning used to teach the planned lesson.

1.3 To determine the relationship between the teacher's understandings of level I primary science curriculum and assessing the pupils in classroom.

1.4 To identify issues and challenges towards the implementation of level I primary science education.

1.5 Research questions

The research study the understanding and implementation of level I primary science curriculum through these questions:

1. Is there any relationship between the teacher's understanding of level I primary science curriculum and transmission of SCPS science into science lesson plan?

2. Is there any relationship between the teacher's understanding of level I primary science curriculum and the strategy of teaching and learning used to teach the planned lesson?
3. Is there any relationship between the teacher's understanding of level I primary science curriculum and assessing the pupils in classroom?
4. What are the issues and challenges faced by teachers in implementing the level I primary science curriculum?

1.6 Research Hypothesis

Ho1: There is no relationship between the teachers' understanding of level 1 primary science curriculum and the transmission of SCPS science into science lesson plan.

Ho2: There is no relationship between the teacher's understanding of level 1 primary science curriculum and the strategy of teaching and learning used to teach the planned lesson.

Ho3: There is no relationship between the teacher's understanding of level 1 primary science curriculum and assessing the pupils in classroom.

1.7 Research conceptual framework

Curriculum and pedagogical reform is a complex process which cannot be targeted singly and in isolation from other interlinked components within the education system

or the social, economic and political context in which the reforms are implemented. Numerous studies identified the need to link curriculum (reforms) to teacher education and pedagogy (Coultas & Lewin, 2002, Lewin &Stuart, 2003, Dembele & Lefoka, 2007, Pridmore, 2007, Bates, 2008, World Bank, 2008, Pryor et al., 2012), as curriculum reforms are often designed and implemented without parallel reforms in initial teacher education and continuing professional development (Dembele & Lefoka 2007; World Bank 2008).

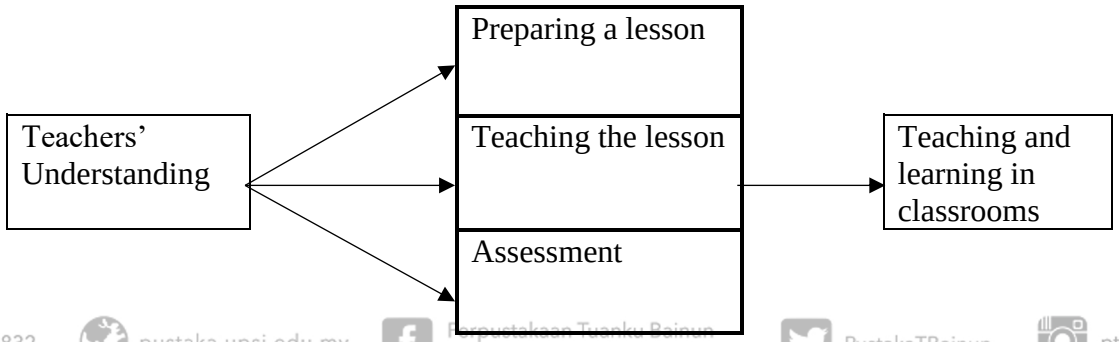

Figure 1.1 Conceptual framework: teachers' understanding and implementation of science curriculum

From the discussion in Section 1.2, understanding of curriculum reforms plays an important role in the implementation of the curriculum. Implementation here refers to the writing of lesson based on SCPS science, then conducting the science curriculum based on the planned lesson using the approaches stated in SCPS science and following that assessing the pupils using a proper guide from the guidebook provided for assessing pupils (separated document from SCPS science) as seen in Figure 1.1. The relationship of curriculum and its implementation are part of this conceptual framework, and can be conceptualized as enabling teachers' understanding towards the implementation or vice versa.

It can be asked if and in what way the planned learning outcomes were realized in the curriculum. This circle focuses on the curriculum as a process (Stenhouse 1975). It is about how students experience the sequencing in the learning process and assess the (learning) strengths and weaknesses of the curriculum. A curriculum map is a useful tool to demonstrate the link among learning outcomes and their realization in curriculum through lesson planning, conducting the planned lesson and assessment. Curriculum maps also allow identifying the actual or potential deficiencies in the curriculum through consultation of different stakeholders.

1.8 Importance of the research

As discussed earlier, the overall purposes of the research is to critically examine teachers' understanding of the science SCPS or science curriculum and its implementation based on their understanding. In this study implementation refers to the transmission of science curriculum into lesson plan then the strategy used to conduct the planned lesson and the assessment conducted to assess the pupils using Student Learning Guide. Besides that this study also investigate the issues and challenges faced by the teacher in order to implement the curriculum reform. This study is significant because it is important to continuously study and understand the curriculum and its implementation in the local context as learning is a dynamic process. It is important to focus on implementation because, by conceptualizing and measuring it directly, one is able to know what has changed.