UNDERSTANDING CONTENT AND LANGUAGE INTEGRATED LEARNING (CLIL) IN SELECTED MALAYSIAN BIOLOGY CLASSROOMS: A CASE STUDY

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THIS DISSERTATION IS SUBMITTED AS PARTIAL REQUIREMENT FOR MASTER OF EDUCATION (BIOLOGY)

FACULTY OF SCIENCE AND TECHNOLOGY
UNIVERSITI PENDIDIKAN SULTAN IDRIS

2009

DECLARATION

I hereby declare that the work in this dissertation is my own except for quotations and summaries which have been duly acknowledged.

24 December 2009

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M20072000636

APPRECIATION

First and foremost, I am thankful to the Ministry of Education for granting me a full time scholarship to pursue the master degree in Biology Education at Universiti Pendidikan Sultan Idris.

To all staff and lecturers at the Faculty of Science and Technology, I truly appreciate your assistance and advice. I thank the Deputy Dean (Research and Graduate Studies) of this Faculty, Associate Professor Dr. Noor Shah bin Saad who has provided great support towards my studies.

I thank Dr. Hasimah Alimon wholeheartedly for guiding me throughout the study as my prime supervisor. Your dedication and guidance had led me through this difficult but meaningful journey. The experiences you had shared with me about teaching and graduate studies had enlightened me. It is priceless, I really appreciate it.

To Associate Professor Dr. Sopia Md Yassin, my “boss” and my second supervisor. You are the one who brought me into the study of CLIL. The learning experiences as a research assistant of the FRGS research had given me extra insights when I carried out my own study. I enjoyed this RA job which had given me the opportunities to learn from you, Dr. Hasimah, Dr. Ong Eng Tek, and Dr. Sadiah Baharom. The knowledge and experience you all had shared with me is invaluable.

I am most grateful to the three Biology Excellent Teachers who had willing to share their teaching experiences with me. Forgive me for not being able to state your names here because of confidentiality. Your selflessness and devotion into teaching had motivated me to keep going in my career which I still have a long way to go. Not to forget all the cheerful students who had shared their personal learning experiences with me. You are my mirror and I am thankful to you all.

I dedicate my gratitude to my *Guru* in qualitative research, Associate Professor Dr. Ranjendran a/l Nagappan. Thank you for your teaching and guidance, it was most useful. To Dr. Jane Teng Yan Fang, I have learnt so much from you, not only in research but also in life, thank you is just not enough.

My special appreciation goes to my fellow comrades who have walked this incredible journey together with me, especially: Ms. Yoon Sook Jhee, my critical friend and best coffee time companion; Mr. Muhd Ikhwan Mat Saad, my buddy and best friend in needs; Mr. Yeo Chong Eu, my big brother and best teacher; Ms. Roszelina Abdul Rahman, my dear friend and loving listener; Ms. Zalipah Zakaria, my delightful member and friend. I thank God for bringing you all into my life.

The last but the most important person, my mom. Thank you for always being there for me. I love you.

ABSTRACT

The purpose of this qualitative case study was to understand and describe the existing teaching and learning activities of Content and Language Integrated Learning (CLIL) conducted in the selected Biology classrooms in Peninsular Malaysia. The study was guided by three research questions, focusing in the nature of the teaching and learning activities, the cognitive levels reflected by the activities through the lens of Revised Bloom's Taxonomy (RBT), and the language skills that could be learned through the activities in Biology learning. Three experienced Biology Excellent Teachers and their students were purposively selected as respondents in this study. The data collected through classroom observations, semi-structured interviews, and document reviews were validated through member checking and triangulation. Firstly, the findings suggested that the five main nature of the CLIL activities are interactive, student-centered, teacher-centered, ICT integrated and exam-oriented. Secondly, all six cognitive levels of RBT were reflected by the CLIL activities, weighing more on the levels of remember, understand, apply, and analyze, rather than evaluate and create. Nevertheless, a small range of micro-skills within the four basic language aspects: listening, speaking, reading, and writing were found to be learned through the CLIL activities. The findings conclude that different nature of CLIL activities creates a positive and cognitive demanding learning environment for students to learn the content while learning the language skills. The study has provided valuable information to teachers, school administrators, and teacher educators to link teaching and learning practices and teachers' professional development.

ABSTRAK

Tujuan kajian kes kualitatif ini adalah untuk memahami dan menerangkan aktiviti pengajaran dan pembelajaran CLIL *sedia ada yang diadakan dalam kelas Biologi yang terpilih di Semenanjung Malaysia. Kajian ini terarah oleh tiga persoalan kajian yang menfokuskan sifat aktivit p&p, aras kognitif yang dicerminkan oleh aktiviti p&p melalui lensa* Revised Bloom's Taxonomy (RBT)*, dan kemahiran bahasa yang boleh dipelajari melalui aktiviti dalam pembelajaran Biologi. Tiga orang Guru Cemerlang Biologi yang berpengalaman dan pelajar-pelajar mereka telah dipilih sebagai responden kajian melalui persampelan bertujuan. Data yang dikumpulkan melalui pemerhatian kelas, temu bual semi-berstruktur, dan tinjauan dokumen telah ditentusahkan menggunakan strategi pemeriksaan oleh partisipan dan triangulasi. Pertamanya, dapatan kajian mencadangkan lima sifat aktiviti* CLIL *iaitu interaktif, berpusatkan pelajar, berpusatkan guru, berintegrasi* ICT*, dan berorientasikan peperiksaan. Keduanya, aktiviti* CLIL *mencerminkan kesemua enam aras kognitif yang dicadangkan* RBT*. Pemberatan lebih telah diberikan kepada aras mengingat, memahami, mengaplikasi, menganalisa, berbandingkan aras menilai dan mencipta. Namun, beberapa kemahiran mikro daripada aspek bahasa seperti mendengar, bertutur, membaca dan menulis didapati boleh dipelajari melalui aktiviti* CLIL*. Kesimpulannya, aktiviti* CLIL *yang berbeza sifatnya menghasilkan persekitaran belajar yang positif serta mementingkan perkembangan kognitif untuk pelajar-pelajar mempelajari konten selain daripada memperolehi kemahiran bahasa. Kajian ini telah menyumbangkan maklumat yang bernilai kepada para guru, pentadbir sekolah, dan pendidik guru dalam menghubungkaitkan amalan pengajaran dan pembelajaran dengan pembangunan profesional guru.*

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LIST OF ABBREVIATIONS

BSS	Buddy-Support System
BT	Bloom's Taxonomy
CLIL	Content and Language Integrated Learning
ESL	English as Second Language
GC	*Guru Cemerlang* [Excellent Teachers]
ICT	Information and Communication Technology
MOE	Ministry of Education
PPSMI	*Pengajaran dan Pembelajaran Sains dan Matematik dalam Bahasa Inggeris* [Teaching and Learning Science and Mathematics through English]
RBT	Revised Bloom's Taxonomy
SLA	Second Language Acquisition
TT	Taxonomy Table
WWW	World Wide Web

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CHAPTER 1

INTRODUCTION

1.0 Introduction

This chapter begins by providing an overview of the background of study. Then, the rationale of the study is explained, followed by the statement of problem. Next, the research questions and the objectives of the study are stated. The significance of study is justified and limitations of the study are explained. Specific terms used for the study are defined, before it ends with conclusion of the chapter.

1.1 Background of the study

In the recent years there has been a growing research attention for the pedagogical approach involving teaching and learning of non language subjects through a foreign, second, or an additional language, or more widely known as Content and Language Integrated Learning (CLIL). This dual-focused educational approach enables the students to learn the content which is related to the subject while at the same time acquiring language used as the medium in the teaching and learning process (Marsh & Lange, 2000). CLIL is practiced in many European nations for the last decade as a core instrument for achieving policy aims towards creating a multilingual population in Europe (Eurydice, 2006). It is also a strategy used in preparing their citizens towards the international society (Maljers, Marsh, & Wolff, 2007).

Meanwhile, since 2003 the Malaysian government has been implementing the policy of Teaching and Learning of Science and Mathematics through English (PPSMI) beginning with Year 1 (primary level), Form 1 (secondary level) and Lower Form 6 (post secondary level) (Professional Circular Letter No. 11/2002, 2002). In this policy, all subjects of sciences and mathematics (non language subjects) are to be taught through English (second language). Given the similarity in the vision and the definition of CLIL, PPSMI is thus considered as a CLIL approach in Malaysian context. PPSMI was initiated with the aims to prepare the nation's human resource capital to be competent in the era of globalization and knowledge-based society, where the dynamic knowledge and information of science and technology are largely available in English as the most important global lingua franca (Gill, 2005). The

rationale of implementing PPSMI was emphasized by the Director of Curriculum Development Centre of Ministry of Malaysia, in the preface of Form 4 Biology Curriculum Specifications which states the following:

> In a recent development, the Government has made a decision to introduce English as the medium of instruction in the teaching and learning of science and mathematics. This measure will enable students to keep abreast of developments in science and technology in contemporary society by enhancing their capability and know-how to tap the diverse sources of information on science written in the English language. At the same time, this move would also provide opportunities for students to use English language and hence, increase their proficiency in the language. Thus, in implementing the biology curriculum, attention is given to developing students' ability to use English for study and communication, especially in the early years of learning.
>
> (Curriculum Development Centre, 2005: ix)

Ironically, the biology teachers as the key executors of this policy have been teaching in Bahasa Malaysia since 1980s based on the *Dasar Pendidikan Kebangsaan* (National Education Policy) (*Pusat Maklumat Rakyat*, n.d.). Hence, it is important to know and understand how the biology teachers accommodate the learning needs for both content and language aspects to their English as Second Language (ESL) students through their teaching and learning activities.

1.2 Statement of the problem

The PPSMI has been in place for seven years. The Ministry of Education (MOE) invested in the form of monetary, facilities, materials, and training to support the implementation of this policy. However, the efforts didn't seem to be repaid as expected. There are always issues and problems throughout the implementation of PPSMI. As one of the MOE efforts to ensure the successful implementation of PPSMI, ETeMS was launched as a professional development course to enhance teachers' linguistic skills. However, teachers needed more in-depth training specifically on how subject content should be delivered in English (Ong Saw Lan & May Tan, 2008).

The qualms from the teachers were understandable. English is taught as a second language in Malaysian schools, the Malaysian students are considered ESL students. Students in rural areas particularly have very limited exposure to the usage of English thus English was almost like a foreign language to them (Gill, 2005). Among the significant studies about PPSMI shows that the students from primary schools at rural areas are said to be "sacrificed" in this policy because making them learn Science and Mathematics is burdening and weakening them (Isahak Haron, Abdul Latif Gapor, Md Nasir Masran, Abdul Halim Ibrahim, & Mariam Mohamed Nor, 2008).

Moreover, other studies revealed a number of language problems faced by secondary pupils. These include pupils' language needs (Chan Kim Fook, 2003), lack

of vocabulary and confusion with certain words (Hashimah Zubir, 2003) and difficulty in understanding non-scientific terms in the scientific context (Saidi Samsudin & Zurida Haji Ismail, 2004). Testimonies from practitioner's coping strategies in overcoming these problems were mentioned. Findings from the research within this issue was re-emphasized by Noraini Idris, Sau Cheong Loh, Ahmad Zabidi Abdul Razak, Norjoharuddeen Mohd Nor, and Rahimi Md Saad (2006) whereby, teachers indicated the need for professional development on treating problems in the acquisition of English language among learners.

If the students are not proficient enough, their learning in Science (including Biology) and Mathematics subjects through English could be slow and insufficient. Therefore, the Science and Mathematics teachers need to adapt their pedagogy to meet the needs of teaching and learning Science and Mathematics through English (Clegg, 2003). The idea of adapting pedagogy for the needs of PPSMI affirms Ong Saw Lan and May Tan (2008) who claimed that the change in language of instruction inevitably leads to change in teaching practice, and the needs of modifying teaching strategies to ensure the students will not be denied a quality Science and Mathematics education.

The discussion above justified the special interest given on the teaching and learning activities being conducted by the experienced Biology teachers in facilitating the content learning of different cognitive levels, as well as the acquisition of language skills in the context of science learning. Hence, this study filled up the gap on exploring pedagogy that integrates content and language learning in the Malaysian

classroom context, by understanding and describing the existing teaching and learning activities being conducted by the experienced Biology teachers in their classrooms with English as the medium of instruction.

1.3 Rationale of the study

The study was crucial to be carried out as the debate of PPSMI never subsides even though the announcement of regressing the teaching of Science and Mathematics has been made on 8th July 2009. The teaching and learning of these subjects are to be taught in Bahasa Malaysia again effective 2012 for primary and secondary levels. However, the continuation of PPSMI in post secondary level proves that CLIL approach is still relevant as a bridge to higher education learning. Hence, the in-depth understanding of how content and language could be learned simultaneously in the Biology classrooms is vital.

Based on the research results, the nature of teaching and learning activities conducted in the selected Biology classrooms with English as medium of instruction was analyzed. The teaching and learning activities were further examined through the lens of the Revised Bloom's Taxonomy (RBT) (Anderson & Krathwohl, 2001). The language skills that could be learned through the teaching and learning activities were also identified. This study provides insights to the teaching and learning practices of

three experienced Biology teachers on how the aspects of content and language learning are being addressed in their classrooms.

Furthermore, the background of the researcher as a science teacher major in Biology provided strong motivation and intention to elucidate the teaching and learning practices adopted by Excellent Teachers for the subject of Biology in adapting their pedagogy to teach Biology to the ESL students. Excellent Teachers, or more specifically in Malaysian context known as *Guru Cemerlang* (*GC*s) are a group of experienced teachers identified and promoted by the MOE based on their immense knowledge, skills and expertise of teaching and learning in their subject area (MOE, 2007). The valuable experiences that embedded within each individual GC are role models to teachers in the field, thus good strategies can be shared; mistakes can be corrected; and practices can be improved.

1.4 Objectives of the study

Although much work has been done to understand the problems and effectiveness of PPSMI, little emphasis has been given on the actual situation that is happening in the Biology classrooms. The objective of this case study is to describe the nature of the teaching and learning activities conducted by the experienced Biology teachers in their classrooms.

This study also examined the two core aspects involved in PPSMI for Biology, namely the content and the language. This study would illustrate how the Biology content is delivered by the teachers from the cognition perspective. Furthermore, this study would exemplify how language skills are learned by the students in the Biology classrooms.

1.5 Research questions

The research questions that prompted this study to be carried out are as follow:

1) What is the nature of teaching and learning activities being conducted in the selected Biology classrooms?

2) What are the cognitive levels reflected by the teaching and learning activities being conducted in the selected Biology classrooms?

3) What are the language skills that could be learned through the teaching and learning activities being conducted in the selected Biology classrooms?

1.6 Significance of the study

The attention on the policy of teaching and learning of Science and Mathematics through English seemed to focus more on language problems and challenges faced by teachers and students. Local publications on how teachers execute the policy at classroom level were limited. Therefore, there is a dire need in investigating how the teaching and learning process of both the content and language is conducted in the classrooms.

This study could contribute to the body of knowledge for CLIL, by providing insight for integrating content and language learning in the Malaysian context. The research results derived from the Biology Excellent Teachers could be applied by other Biology teachers who are teaching in the similar setting. They could use the findings of this study as references to modify or enhance their Biology teaching to make it comprehensible for students with different English proficiency levels.

This study also aimed to provide clues for school administrators in justifying needs for professional development of in-service teachers, especially for those teaching science, mathematics, or English. Other than that, the results of study could provide a glimpse of current needs towards future teachers which requires attention from the teacher educators.

1.7 Limitations of the study

The data for the present study was collected only from the selected Biology classrooms from two states in Peninsular Malaysia. Secondly, this qualitative study was only able to collect data from three different national secondary schools due to the restriction in accessing the schools and teachers. Although the findings could not be generalized to other Science and Mathematics subjects, the findings gained from this study still carry significance in understanding the teaching and learning activities in the urban English-medium Biology classrooms in Malaysia.

1.8 Definition of terms

Cognitive levels

In this study, cognitive levels are referred to the six levels of the Cognitive Process dimension in the Revised Bloom's Taxonomy (Krathwohl, 2002). The six levels, ranged from lower-order to higher-order include remember, understand, apply, analyze, evaluate, and create.

Language skills

Language skills in this study refer to the four language aspects namely listening, speaking, reading, and writing. These four skills are essential in developing "communicative and scientifically literate" (Hoyle & Stone, 2000, p. 90) students. The

micro-skills within the four language aspects that involved in this study are listed in Appendix A.

1.9 Conclusion

This chapter provides a brief introduction, followed by the background of study. The central problem of study is stated, continued with the statement of three research questions. The objectives of study are explained, and the significance of study is defended. It proceeds with the justification for limitations of this study, before ending with definition of terms used in the study.