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DISSERTATION PRESENTED TO QUALIFY FOR MASTER'S DEGREE IN EDUCATION (BIOLOGY)
(RESEARCH AND COURSEWORK MODE)

FACULTY OF SCIENCES AND MATHEMATICS
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ABSTRACT

This study aims to unravel readiness in implementing Student-Centred Learning (SCL) and thus determine insight to develop a Problem-Based Learning (PBL) module. This study employed a case study research design which was conducted in three national type secondary schools in Hilir Perak district. The participants involved were six administrators, fourteen teachers and seven students and they were chosen using the purposive sampling technique. In-depth semi-structured interviews were conducted to acquire comprehensive information on the school's awareness, readiness and perspective on the issues in SCL implementation. Inductive qualitative data analysis was used whereby the data were compared, contrast and interpreted. Findings suggested that there were three major themes had emerged which were; awareness about SCL, readiness to adopt SCL and issues and challenges in implementing SCL. Subsequently, these findings had provided four main insights for PBL teaching and learning in Malaysian secondary schools which were; i) implementing PBL and developing PBL module should not be in an accelerating manner but introduced carefully and gradually, ii) difficulty of problem scenario in a PBL classroom need to be increased towards the late stage of implementation, iii) PBL guide and support for both teachers and students are crucial along the stage of implementation, and iv) the amount of facilitation decreases towards the late stage of implementation. In conclusion, findings showed that the study's participants were aware of PBL as an approach to encourage students in meaningful learning process. This research implies as a guidance in developing PBL module specific for Malaysian context.

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KESEDIAAN PELAKSANAAN PEMBELAJARAN BERASASKAN PELAJAR: INSPIRASI UNTUK MEMBANGUNKAN MODUL PEMBELAJARAN BERASASKAN MASALAH

ABSTRAK

Kajian ini bertujuan untuk meneliti kesediaan dalam melaksanakan Pembelajaran Berpusatkan Pelajar (SCL) dan seterusnya memberi idea untuk membangunkan modul Pembelajaran Berasaskan Masalah (PBL). Kajian ini mengaplikasikan reka bentuk kajian kes yang dijalankan di tiga buah sekolah menengah jenis kebangsaan di daerah Hilir Perak. Peserta yang terlibat ialah enam orang pentadbir sekolah, empat belas orang guru dan tujuh orang pelajar dan mereka dipilih menggunakan teknik persampelan bertujuan. Temu bual separa struktur yang mendalam telah dijalankan untuk mendapatkan maklumat yang komprehensif tentang kesedaran, kesediaan dan perspektif tentang isu-isu dalam pelaksanaan SCL. Analisis data kualitatif secara induktif digunakan di mana data dibandingkan, dibezakan dan ditafsir. Dapatan kajian mencadangkan bahawa terdapat tiga tema utama yang telah muncul, iaitu; kesedaran tentang SCL, kesediaan untuk menjalankan SCL dan isu serta cabaran dalam melaksanakan SCL. Seterusnya, dapatan ini telah memberikan empat gambaran utama tentang pengajaran dan pembelajaran PBL di sekolah menengah Malaysia iaitu; i) pelaksanaan PBL dan pembangunan modul PBL tidak seharusnya dilakukan secara tergesa-gesa tetapi diperkenalkan dengan teliti dan beransur-ansur, ii) kesukaran senario masalah dalam bilik darjah PBL perlu ditingkatkan ke arah peringkat akhir pelaksanaan, iii) panduan PBL dan sokongan untuk kedua-dua guru dan pelajar adalah penting sepanjang peringkat pelaksanaan, dan iv) jumlah pemudahcaraan berkurangan menjelang peringkat akhir pelaksanaan. Kesimpulannya, dapatan menunjukkan bahawa peserta kajian menyedari PBL sebagai pendekatan untuk menggalakkan pelajar dalam proses pembelajaran bermakna. Kajian ini memberi implikasi sebagai panduan dalam membangunkan modul PBL khusus untuk konteks Malaysia.

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CHAPTER 1

INTRODUCTION

1.1 Overview

The main concept of this study is sparked by the focus of student-centred learning in the National Education Blueprint. This chapter discusses about the background of the study, statement of problems that ignite the need to carry out this study, research questions and research objectives. Besides that, theoretical framework that will be the backbone in designing this study will also be discussed followed by the discussion about the significance of the research, and the operational definition for student-centred learning and problem-based learning.

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1.2 Background

Education plays a paramount role in shaping the lives of individual and to the development of a nation. The best way to improve the personality of people, to provide mental and physical skills and to transform human's living status is through education. Choosing the best educational practices have been a centre of intellectual inquiry for centuries and new knowledge is needed as the world is changing. The best educational practice will be able to produce young generation who are able to face the real world challenges and will be able to contribute for the development of nation.

Student-centered learning (SCL) is now captivating a great deal of research attention internationally, driven by the growing concerns of educators of an ultimate teaching and learning methods including Malaysia. Educational changes is occurring in teaching and learning in Malaysia classroom including secondary schools and higher education especially after the government had acknowledged the importance of implementing SCL approaches (National Education Blueprint, 2013-2025). Some reforms had been done to ensure that education is more organized, effective and responsive to the needs of our nation. Introducing the Smart Schools project indicated a tremendous change in the Malaysian education system. One of the pedagogical implications of Smart Schools is that SCL must be adopted in the learning processes (Tengku Kasim, 2014).

Reforms in Malaysian education have been ongoing since the 1980s in order to create an education system that able to contribute to the well-being of our nation. In 1998, the Malaysian National Education Philosophy was introduced and it is a notable step in the reformation of the education system in Malaysia. Chapter 5 (Ministry of

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Education, 1990, pp. 37-58) of the document frames that teachers are expected to implement more student-centred rather than teacher-centred approaches.

Furthermore, the National Education Blueprint (i.e.Pelan Pengajian Pendidikan Malaysia 2013-2025) has put its emphasize on a balanced education which focuses on the educational transformation from teacher-centred to SCL through various measures. Teacher training and student learning which is student-centred has been given utmost importance as to prepare the younger generations for the challenges of 21st century. To support the statement above, one the shifts in the National Education Blueprint is to introduce Kurikulum Standard Sekolah Menengah (KSSM) and Kurikulum Standard Sekolah Menengah (KSSR) into the Malaysian schools which will be focusing on developing a balanced set of knowledge and skills such as creative and critical thinking skills innovation, problem solving and leadership skills. The skills that are mentioned in the National Education Blueprint are skills which are synonymous with SCL.

SCL is a general term that could refer to various teaching and learning approaches. This is evident when we refer to the definition and concept of SCL. According to Gibbs (1992), SCL is a learning approach where students have greater autonomy of learning methods, subject matter and also their own learning process. SCL involves active participation from teachers and students but focuses on students who are responsible for his own learning process. Some common forms of SCL are inquiry-learning where students investigate and learn to develop an understanding of concepts (Dejene, 2007 ; Zairul, 2020).

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The characteristics and principles of SCL is actually align with various teaching and learning methods that currently practiced in teaching and learning process such as inquiry-based learning, case-based instruction, problem base learning (PBL), project-based learning, discovery learning, and just-in-time teaching. PBL is a student-centred approach that enables students to discover knowledge in a meaningful way and various studies had been focusing on PBL as it is believed to be able to produce students who can face the real world confidently.

Human being faced with various problems in their daily lives and they try to find particular ways to solve these problems adequately. Therefore, it is important for students to be trained for the future to be able to face problems and solve them effectively by including real-life problems or real-like problems in their learning environment and producing appropriate solutions to the problems. What is expected from this education is to developed effective problem-solvers in their real lives (Brooks&Brooks, 1999; Gallagher, 1997; Chin & Chia, 2004).

PBL is an instructional method that challenges students to "learn to learn," working cooperatively in groups to find resolutions to real world problems (Duch et al., 2001; Sorroche et al.,2022). It is also defined as an approach that challenges students to learn through involvement in a real problem and it shows students that learning can take place in anywhere and anytime (Thornburg, 1997; Yustina et al., 2020). Students tend to be more mature when they are more accustomed to the PBL classroom and they will start to develop analytical skills or intellectual skills gradually (Gentry, 2000).

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1.3 Statement of Problem

Students are the one that will carry the responsibilities in developing our country and nation. In order to cope with the rapid changes at the threshold of the 21st century, Malaysia education system should be able to equip our new generation that can think critically and well prepared for the future. Our new Blueprint of education aims to produce holistic students that will meet the need of 21st century (PPPM, 2013-2025).

Parallel with rapid expansion of the education system, the government of Malaysia called for improving the quality of education by employing SCL in teaching and learning. SCL is implemented to help students to uncover their own learning styles and to obtain efficient study skills that will be beneficial in their life (McCabe & O'Connor, 2014). A well planned SCL will have an impact on the understanding of particular knowledge.

The problem of applying SCL in the context of teaching and learning is one of the major challenges in the improvement of education in Malaysia secondary schools. In a study conducted in 1996, the Federal Schools Inspectorate (Jemaah Nazir Sekolah Persekutuan, 1996) found that although most of the teachers (70%) in Malaysia have good knowledge, understanding and skills of the teaching contents, including a variety of teaching methods or techniques, but the prevalent teaching style is still remains teacher-oriented. From a pedagogical point of view, this teaching practice is found to be similar to that practiced in the old curriculum policy, which emphasizes on rote learning methods (Jemaah Nazir Sekolah Persekutuan, 1996). Despite knowing that SCL will be able to produce high quality of students, the practice of SCL in Malaysia secondary school is still at very low account. The reason could simply be lack of

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awareness among that that need to be studied, which would be the focus of this study, that may help to overcome the resistance toward actualising SCL in the Malaysian classroom.

The traditional or conventional teaching practices, which have an inclination towards a teacher-centered teaching tend to adopt a one-way communication and teachers are unable to see and dig students' true potential (Valls & Ponce, 2013). The refusal on the part of the teachers to shift or change their paradigm by making the teaching and learning process more meaningful would be detrimental to the government's intention of developing human capital capable of competing internationally. Applying SCL strategies in secondary school class room especially in Biology instruction is apparently challenging for teachers and students as they have been accustomed to traditional way of teaching (Xu, 2004 ; Chang et al., 2020). This may also particularly be true in the Malaysian education system. Therefore, teachers and students perception towards SCL need to be identified in order to improve classroom teaching and learning practices towards SCL can be identified. The root of the problem in using SCL in classroom practices can only be identified if teachers and students' perception on SCL is identified. So, this study intents to look at teachers and students perception on SCL before the implementation ideas can be planned.

On the other hand, a survey conducted by the Organisation for Economic Co-operation and Development (OECD) in 2012 found that approximately one in five Malaysian students could not even reach basic levels of problem solving. As such, PBL which is one of the SCL is now an emerging pedagogical paradigm in Malaysia as many studies have indicated positive effects of PBL on problem solving skills (Hmelo-Silver, 2004; Koray et al., 2008; and Neo &Neo, 2005).

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However, there is still lack of empirical studies on the efficacy of PBL as student centred approach in secondary school Biology classroom context (Abdul Kadir, 2013). Little attempts have been made by the policy documents and other subsequent education strategy documents to give elaborations and to imply how it can be translated into the teaching-learning process at the secondary classroom level. Curriculum designers, textbook writers, teacher training institutions, educational experts and teachers all followed their own ways in implementing this approach (Zwiers, 2007).

Student-centered pedagogy may be commonly understood, but not applied in the classroom, even education personnel at different levels are only phrasing around the term without mastering it (Dejene, 2007 ; Zairul, 2020). The unproductive of many educational reforms in Asian countries including Malaysia during the last decade clearly denotes that simply importing and imposing a new practice on Asian teachers does not guarantee success and reforms need to take teachers' voices into account (Renshaw,2002 ; Pham & Bui, 2019).The reasons for the past reforms and inprovements done in the curriculum did not succeed due to the lack of awareness and understanding at the implementation level namely school administrators and teachers awareness which would create awareness among students (Matawali et al.,2019). The awareness is important in order for any curriculum implementation to be successful. With lack of awareness and understanding among the implementors, any curriculum reform will most likely to fail and revert to teaching for exams and teacher-centred learning, just like the implementation of KBSR/KBSM in the 1980s which met rejection and eventually lead to the development of KSSR/KSSM syllabus (Nurul et al., 2011) . In the same sense, this study intends to understand the level of awareness among school administrators, teachers and students in regards to the implementation of SCL so that

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the awareness level could be identified and the move towards SCL in Malaysian schools can be actualized.

Issues and challenges in implementing SCL in Malaysia secondary school need an insight to guarantee a success in the Malaysian education. Besides that, important element that needed to develop a PBL module in secondary school Biology classroom is crucial. Upon understanding the awareness and perception among teachers, school leaders and students, the development of the PBL module would take place taking into consideration of all the issues and problems that are identified in order to make the SCL to be implemented without much hassle and misinformation among teachers and students. As their perception and awareness level are identified, the PBL module will take that into consideration to make the understanding of teacher SCL through the PBL module a more comprehensive one that would enable teachers to follow and create a better SCL environment in classroom which would further enhance students understanding of Biology through SCL.

Therefore, according to the above mentioned problems, issues and empirical finding, this research aims to unravel issues and challenges of implementing SCL in Malaysia secondary school. In addition, this research also aims to reveal readiness of school administrator, teachers and students to adapt SCL. Subsequently, the information on issues, challenges and readiness will be utilized to develop a PBL based module for a Biology topic for Form 4 students.

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1.4 Research Question

This research is carried out in the quest to answer the three important questions which will be carried out in three phases. The following are the research questions:

1. What is the state of school's administrators, teachers and students' awareness and readiness in SCL implementation?
2. What are the teachers and students' perspective on issues in implementing SCL?
3. How can the findings on awareness, readiness and issues in SCL implementation serves as insights for PBL module development?

1.5 Research Objectives

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The objectives of this study are:

1. To determine the state of school's administrators, teachers and students' awareness and readiness in SCL implementation?
2. To determine the teachers and students' perspective on issues in implementing SCL.
3. To obtain insights for PBL module development through the findings on awareness, readiness and issues in SCL implementation.

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1.6 Theoretical Framework

Theoretical framework is the researcher's idea on how a research problem is explored and it embodies the specific direction by which the research will have to be undertaken. There are several variables involves in this research such as:

- Awareness and readiness in implementing SCL
- current issues and challenges to implement SCL in Malaysia secondary school
- development of PBL module

In order to address the first and second variables, the theories and concept that underlie are student – centred approach and implicitly involve theories and concept of PBL. For the proper understanding of the nature of SCL and PBL in this study, it is imperative to review some of the basic theories of learning. The theories to be given special emphasis here will be those that are related to student-centered education such as Cognitivist Theories of Learning and Constructivism.

Cognitive-learning theories hold a distinctive place in history as they explore the depths of the mind from the perspective of process (Chauhan, 1996). These are again classified as: Gestalt Theory of Kohler, Field theory of Kurt Lewin and E.C Tolman's theory of learning. According to cognitive theorists, mental processes including memory, thinking, knowing, and problem-solving need to be explored while knowledge can be seen as a mental construction.

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Cognitive Psychology is defined as "A view of human behavior that focuses on learning as an active mental process of acquiring and regaining knowledge" (Arends, 1997). Moreover, it is crucial to understand that the most important classroom principles from cognitive psychology include meaningful learning, organization and elaboration. On the whole cognitive descriptions of learning take learners as "active investigators of their environment" (Eggen and Kauchak, 1996 ; Hooshyar et al., 2019). For the purpose of study at hand, the Cognitive Development Model will be considered where in such type of learning perspectives, learners are viewed to be actively involved in making sense of their learning.

Furthermore, constructivism is another theory that needed to be highlighted in this study. It is a theory of knowledge and learning that was pioneered by Lev Vygotsky. Constructivism is defined as a perspective of teaching and learning in which a learner constructs meaning from experience and through interaction with other while the teacher's role is to provide meaningful experience for students (Arends,1997).

A branch of this perspective is "Piagetian constructivism" or usually termed as "psychological constructivism". It is agreed that students come to classroom with ideas that will be altered by teachers who act as facilitators by giving questions that create dilemma for students (Temecheg, 2001). However, this theory did not gain popularity and had been criticized as it does not give proper attention to the classroom and social contexts. On the other hand, "Social constructivism" or "Vygotskian constructivism" is another perspective in the theory of constructivism. It proclaims that there is a strong correlation between individual and socio-cultural environment (Temecheg, 2001).

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Contructivism is a must refer theory as there is a vital connection with the tenets of PBL and also remarkable implication in the PBL setting (Richardson, 2003). Being "student centred" in PBL involves negotiating with learners, focusing on the starting point that each student brings to the PBL process, and allowing greater control by the student in terms of the direction and content of learning. An understanding of constructivism will aid in adopting PBL as a student centred approach in classroom situation.

The findings on the awareness, readiness and issues in implementing SCL serves an insight for PBL module development. In order to develop an educational module for teaching and learning, different model of module development is one of the factors that need to be considered. Besides, it is necessary to reveal some of the teaching model that employed different types of methodology and skills. Nevertheless, this study focuses only on the insights for PBL module development for daily classroom practice which are drawn from the awareness and readiness including perspective on issues in SCL implementation among school's administrators, teachers and students.

For the purpose of this study, only a summary discussion of some models that would lend to SCL will be presented. Teaching model is a coherent theoretical framework that tells what students should learn including specific teaching procedure (Arends, 1997). Therefore, teaching model is also an important element that helps in this research design.

The Inductive model is one of the teaching strategy that students develop higher order thinking abilities while at the same time learning specific content topics (Eggen and Kauchak, 1996). This model places the students at center of learning and thus rests

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on the principle of constructivism while teacher play a crucial role by planning activities that stimulate students to learn through questioning (Arends, 1997 ; Rabgay, 2018). He also suggested that Concept-attainment model is another model that closely related to the inductive model where students are free to think and test their ideas.

Besides that, the Inquiry model is conceptualized as "a process for answering questions and solving problems based on facts and observations" (Eggeen and Kauchak, 1996). Teachers play a role in guiding students' learning and monitor the questioning process. Another teaching model that need to give attention is the Problem Solving approach which is considered as the most effective approach that will help students to construct own knowledge. This model will present students with meaningful problem situations that can serve as spring boards for investigations and inquiry (Arends, 1997 ; Rabgay, 2018).

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Therefore, this research will follow all the theoretical background that had been discussed. Theories that underpinned this research will serve as the major framework in helping the research design.

1.7 Significance of the research

This study is important because various researches about SCL have been done on higher education but there is a lack of research about SCL in secondary school context. Secondary school students have different characteristics than students in higher education institutions, more research about SCL in Malaysian secondary school is

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needed. On the other hand, this study is potentially significant in three ways. It could help the education community to garner information on awareness and readiness to implement SCL in daily classroom practice among teachers and students. Analyzing the awareness and readiness of school's administrators, teachers and students to adapt SCL in school will indirectly help the teachers to think about a preferable way of teaching and learning in school.

On top of that, this study will also help to gain information about the perspective of teachers and students' on the issues in implementing SCL. These findings will then serve as insight in developing PBL module in daily classroom practice and thus helps to promote meaningful learning among students in Malaysia secondary schools. For the school where the study was conducted, knowing the important elements in developing PBL module and lessons learnt from PBL implementation will help the administrators to prepare facilities that meet teacher's need in order to adopt PBL in daily classroom practice later.

The finding of this study will also be useful in Biology curriculum development and instructional improvement toward student-centered approach. This study will also give information for further research work related to alleviating the problems of applying PBL in Biology classroom.

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1.8 Scope of Study

This research studies the awareness and readiness among school's administrators, teachers and students to implement SCL in Malaysian secondary school classroom. This research will also analyze the perspective of teachers and students on the issues and challenges in implementing SCL. Besides that, the important elements in developing PBL module based on the findings on awareness, readiness and issues in SCL implementation will also be studied.

1.9 Limitation of Study

There are some unavoidable limitations in this study. Due to time constrains, this research only conducted in secondary schools that located at Hilir Perak. Furthermore, this research only will be conducted among form 4 students enrolled in pure Science subject.

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1.10 Operational Definition

1.10.1 Student centered learning (SCL)

Student-centred learning, as the term suggests, is a method of learning or teaching that puts the learner at the centre (Boyer, 1990 ; Gover et al., 2019). Student-centred learning approaches involve activities that are intended to assist students to construct their own understandings and develop skills related to problem solving.

1.10.2 Problem-Based Learning (PBL)

An instructional method of hands on and student - centred learning that challenges or encourages students to "learn to learn," and work together in group to seek solutions to real world problems. These problems are important to stimulate students' curiosity and enthusiasm in learning the subject matter. PBL prepares students to think critically and analytically, and to find and use appropriate learning resources (Dahlgren, 2000).

1.10.3 Awareness

In education, awareness means knowledge from milieu without being taught where someone has common knowledge about an issue. According to Abdul Gafoor (2002), awareness has the object of what respondents know as well as what they do not know.

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1.10.4 Readiness

According to Bakers (2002), readiness involves the integration of willingness and capacity of someone in carrying out a task. In terms of education, readiness meant that educators are more likely to participate in a task and excel in what they are doing when they are self-assured or optimist in what they are doing (Bandura,1993).

1.10.5 Challenges

According to Jason et al., (2018), challenges can be described as difficulties attributed to achieving the outcome in learning where the challenges can be in the form of productive failure (Kapur, 2008), desirable difficulties (Bjork & Bjork, 2011) as well as impasse – driven learning (Vanhenn, 1988).

1.11 Summary

This chapter provides an overall glance on how recent focus of Malaysian Education to student-centred approach in order to prepare a generation that will be able to face the challenges in today's world. PBL as one of the student-centred approach has been captivating great attention due to many reported positive outcomes. However, there are many challenges in implementing SCL and PBL in Malaysian secondary schools and as such, three research questions and research objectives are formulated based on the aforementioned issues whereby the first and the second research question are meant to

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garner information on the awareness and readiness in implementation of SCL and also issues and challenges to implement SCL in Malaysia secondary schools. Third research questions will involve gaining insights for developing a PBL module.

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CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter provides literature review that examines key concepts associated with this research. Specifically, concepts on learning, introduction of student-centred learning (SCL) and problem based learning (PBL) will be discussed. This will be followed by the next section that will highlight the principles or concept of SCL and PBL. Besides that, previous finding on SCL and PBL including the challenges in implementing SCL and PBL in Malaysia will be explored. This chapter ends with the discussion about the model for developing educational module.

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2.2 Concepts of Learning

Understanding of some concepts and definitions about learning as propounded by different educationalist in the literature is somehow important in this study as it will provide a reference to teaching and approaches used in a classroom. Learning is an essential process in which humans engage to gain knowledge. The term learning has been defined in various ways by different educationalist. According to Gagne (1985), learning is a change in human disposition that persists over a period of time. Learning is also defined as a transformative process of obtaining information when internalized with our experiences that based on input, process and reflection (Aggarwal ,1996 ; Magolda, 2020).

Besides that, learning is a process that will lead to changes, improve performance and lead to future learning (Bedru ,1998 : Aldowah et al., 2017). Meaningful learning will take place when someone connecting the information gained with what they had known earlier (Hergenhann & Olsom,1997). This is aligned with the current practices in the classroom in which teacher will conduct an induction set to gather prior knowledge among learners. Learning is about obtaining knowledge or skills and makes them readily available from memory so that one can make sense of future problems or opportunities.

From those definitions, it can be summarized that learning denotes some degree of adaptation to new situation on the part of student themselves. Students are expected to engage actively in their attempt for the adaptation.

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2.3 Introduction of Student-Centred learning (SCL) and Problem Based Learning (PBL)

Student-centred learning (SCL) is a central concept in the field of education and it has become a foremost topic in education systems nowadays. The term SCL is widely used in the teaching and learning literature and it is found that many terms have been related with SCL, such as flexible-learning (Taylor 2000), experiential–learning (Burnard, 1999) and some called it as self -directed learning or peer-led team learning.

The concept of students as the core of learning or SCL started off in 1905 by Hayward and it is then developed by Carl Rogers, with his theory of client-centred counseling which later influenced the approach into a general theory of education (O'Sullivan, 2003). Rogers (1983), in his book "Freedom to learn the 80, s" describes the shift in power from the expert teacher to the student learner, driven by a need for a change in the traditional environment where in the "so called educational atmosphere, student become passive, apathetic and bored".

On the other hand, Gibbs (1995) and Lee & Branch (2018) had described SCL as those that highlighted learner activity rather than passivity where the major learning activities are constructed through discussion with teachers. Although there are many definitions of SCL, it is circumscribed as: SCL outlines ways of thinking about learning and teaching that highlighted student in developing their own knowledge (Cannon, 2000 : Jacobs & Power, 2016).

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PBL on the other hand is an example of SCL that has been used for over 30 years and continue to gain acceptance in various disciplines. The modern history of PBL begins at McMaster University's Clinical Medical Department in Ontario, Canada in the early 1970's (Rhem, 1998). McMaster designed a program which is PBL that involved students interacting with simulated patients after found out that students were unable to apply their knowledge in real life situation (Albanese & Mitchell, 1993 ; Hoidn & Reusser, 2020).

PBL is a student centred approach that focuses on ill-structured real world problems which then inspires the practice of information-gathering, reasoning and problem-solving skills among a collaborative group (Barrows & Kelson, 1993; Nurtanto et al., 2020). It is believed that PBL is a learning style that involves active and constructive process affected by social or contextual factors (Barrows, 1996; Gijselaers, 1996; Novianti et al., 2020). In PBL, the teachers facilitate the learning process and contribute by giving enlightenment through questioning or cognitive coaching rather than to provide knowledge directly to the students (Albanese & Mitchell, 1993; Bilgin, Senocak, & Sözbilir, 2009; Dochy, et.al, 2003; Newman, 2003; Norman & Schmidt, 1992; Vernon & Blake, 1993).

The history of PBL and the theory behind it is one that emphasizes on students' learning. PBL helps students to take the knowledge they have, and apply it meaningfully in real-life situations. Students must learn to use the knowledge they have in solving daily life's problem. In conclusion, PBL is an approach that facilitates students to be a lifelong learner by engaging them in meaningful and provoking way (Utecht, 2003; Serevina et al., 2018).

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2.4 Theories and Principles Related to SCL and PBL

SCL emerged from the constructivist learning theory in which students construct and develop knowledge for themselves. Students will not passively acquire or learning new knowledge (Brooks & Brooks, 1999). In SCL, students are the main recipients of the learning process and teachers cannot offload information into students' brains and expect them to process and apply it.

SCL reflects that both learners and learning are needed to be the main focal point (McCombs & Whisler, 1997 ; Utama & Kristin, 2020). There are a few principles related to SCL. The main philosophy of SCL is such that students need to be active learners. Active learning is an instructional activity where students take their ownership of their own learning and constantly discover ways to enhance their experiences (Bonwell & Eison, 1991; Hartikainen et al., 2019). As such, active learning is crucial in SCL.

Besides that, the key concept underlying SCL is the realization where all teachers and students are different and there is no one-size-fits-all solution. In order for SCL to take place efficiently, appropriate support structures including physical and non-physical are very much needed (McCombs & Whisler, 1997). SCL recognizes that different students have different pedagogical needs and everyone have different learning styles where some might learn better through reading while some prefer to debate or discuss with others.

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Furthermore, when students are given opportunities to decide about subject matter related to learning methods, they will be more advanced in gaining knowledge (Weimer, 2002). Even though the learning paradigm has shifted from teachers to students, this does not mean that teachers' role had become marginal and limited. The central to the principles of SCL stated that cooperation and mutual respect between teachers and students will create a positive effect in maximizing the learning outcomes.

The main principle behind PBL is that knowledge and skills are obtained through a progressive sequence of contextual problems, in collaboration with learning materials and reinforcement from the instructor (Torp & Sage, 2002). PBL lessons model real-world problems. As students take on the role, the problem becomes their own while particular connection between the student and the problem at hand stimulate learners to discover a viable solution to the problem (Gentry, 2000).

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Torp and Sage (2002) had listed three characteristics of PBL where PBL is a method that involves students as stakeholders in a problem situation, an organized curriculum that enable students to learn in relevant and connected ways. Besides that, PBL will create a meaningful learning environment where teachers guide students' thinking, coach the inquiry of students and then facilitating extensive levels of understanding.

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2.5 Previous Findings on SCL

In investigating previous findings on SCL, I explore literature examining the following dimensions: the benefits shown in SCL, teachers and students' readiness towards SCL and also the implementation of SCL in Malaysian school context. SCL has many advantages from the students' point of view and there is a strong assurance within the education research literature that SCL will create positive changes in all students. Studies show that students involved in SCL are more motivated to learn and have greater contentment with school (Johnson, 1991; Maxwell, 1998; Slavin, 1990). Personal involvement in learning and intrinsic motivation will then lead to better or higher performance in school (Alexander & Murphy, 2000).

Students that involved in SCL had greater opportunities to nurture and strengthen their transferable skills such as leadership, communication skills, reasoning skills and problem solving skills (Chadha, 2006). These skills are useful not only in their professional life but also in their daily life as well (Morgil & Ural, 2006). In addition, SCL also plays an important role in helping students to develop problems dealing skills and thus provide them a mental framework to analyze their own learning (Boyle, 1999). SCL is an approach that involves many discussion and communication which will help students to develop a higher level of dialogue. This will indirectly encourage students to enhance their critical thinking skill (Tseng et al. 2008).

In comparison studies between students in lecture and active learning courses, there are significantly more learning gains in the active learning courses (Springer, Stanne, & Donovan, 1999). Moreover, Bransford et al. (1999) had also concluded that constructivism is one of the best practices for learning. A study carried out by Tsou et

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al. (2009) which review the effects of SCL approach in learning attitude found that students are more active in conveying their opinions and have more enthusiasm to find out things they do not know.

Recent research carried out on SCL also shows some positive outcomes. D'Souza (2013) and Hallinger (2013) had found that carefully constructed SCL will increase students' engagement in learning and SCL can be a suitable approach to a wide range of students. Another study on SCL also found that students who were involved in SCL are more responsible and independent in seeking knowledge (Enfield & State, 2013)

Generally, Malaysia Education aims to produce holistic students with a sense of balance and proportion. At both school and university levels world-wide including Malaysia, there has been a call for a transform from teacher-centred learning to SCL. In line with the Malaysia National Higher Education Action Plan, a study had been carried out by Nurahimah Mohd. Yusoff et al. in order to investigate the status of SCL in Malaysia Higher education Institution classrooms. The findings of the study show that many instructors are aware of the active facilitating role in SCL in order to promote positive knowledge gaining environment.

Besides that, lecturers in USM agreed that by implementing SCL, they had provided the students with multiple resources to access information and they are ready to help students in order to refine their understanding through SCL (Md Osman, Jamaludin & Iranmanesh, 2015). In a study conducted to investigate the perceptions and attitudes of 167 students specializing in the area of Product Design and Process Manufacturing Engineering Technology at the Faculty of Engineering Technology

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(FTK) in Universiti Teknikal Malaysia Melaka (UTeM), it is found that readiness and positive awareness towars SCL should be encouraged (Hamzah, Salim, Johari, 2013).

Furthermore, students of pre-university in Malaysia agreed that SCL in Mathematics enable them to realize the importance of Mathematics in daily life. They are more active and more responsive in gaining knowledge of Mathematics through SCL and thus they are ready to adopt SCL in learning (Syed Zain, Rashidi &Zainol Abidin, 2012).

However, there is still very less empirical research on SCL implementation in Malaysian secondary school context. In a study carried on selected secondary schools in Negeri Sembilan, it was found that Science teachers have adopted SCL in science laboratories but they are only moderately ready to assume the student-centred role fully in the instruction within the classroom (Wong, Atan & Sabudin, 2010).

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2.6 Previous Findings on PBL

In investigating previous findings on PBL, literature examining the following dimensions had been explored: benefits of PBL and also implementation of PBL in Malaysia. Benefits of PBL had been widely documented and only a few findings will be discussed in this study.

Students learn best when they are engaged in the learning process and discover for themselves the meaning of knowledge (Gentry, 2000). Problem-Based Learning (PBL) in the student centered classroom provides students the chance to discover

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knowledge in a meaningful and applicable way. Various studies using PBL in many disciplines including science, Biology and Chemistry suggested that PBL works well especially for complex subjects like medicine (Tan, 2004). It is reported that trainee doctor who learnt via PBL method showed enhanced social and cognitive competencies in their field of work.

In this study, literature about PBL in the Science classroom will be highlighted. A panel of high school biology teachers and university professors at the National Association of Biology Teachers' 2008 National Conference in Memphis, Tennessee, felt that teachers played an important role to ensure students' success by fostering problem solving skills and independent thinking skills. PBL had been identified as one of the best method that allows students to apply knowledge in a thoughtful manner (Mackenzie, 2009). College biology professors also reported that students felt contented by engaging in PBL compared to their high school experiences which is more to one dimensional learning style (Mackenzie, 2009).

Besides that, in a study that directly compared PBL to lecture based learning that carried out on one hundred twenty five high school biology students in Hong Kong, results of assessment had showed that PBL caused significant improvement in students' comprehension and application of knowledge (Wong & Day, 2008).

PBL has gain considerable prominence in Malaysia education system as it had promised a positive outcome in various disciplines. It is reported that PBL was first introduced in Malaysia particularly in health science in the early of 1970s (Achike and Nain, 2005). It was then introduced in Malaysia within various fields in higher

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education including technology, engineering, nursing education and also teacher education after inspired by the success of PBL in other countries (Borhan, 2014).

University Teknologi Malaysia (UTM) which is a technology-based university had implement PBL within the engineering schools in order to produce higher quality of graduates. PBL also had been implemented in University of Malaya at the Department of Chemical Engineering so that the graduates are well equipped with critical and analytical skills (Borhan, 2014). PBL also has gain interests of some lecturers in teacher education and it had been implemented in both graduate and undergraduate level.

On the other hand, polytechnic graduates are always expected to be accomplished in technical skills as well as the capability to face the challenges in the real workplace environment and a well planned PBL method is believed to have a great potential in producing such desire graduates (Masek, 2010).

Although PBL is increasingly popular in higher education in Malaysia, it is still rarely applied in a primary or secondary education context. From the meta-analysis of PBL in school that done by Najihah Mustaffa and Zaleha Ismail in the year 2015, it was found that PBL had been implemented in Mathematics and Science of Primary school but only three out of eighteen articles had discussed the subject of PBL's implementation in primary school. Fifteen papers revealed that PBL was implemented in various disciplines of secondary school context: Chemistry (Peen&Arshad, 2014), Mathematics (Ali et al., 2011), Science (Wong & Day, 2009), Electrical and Electronic (Mustapha&Laila, 2011), Geography (Ratinen&Keinonen, 2011) and Physics (Saka&Kumaş, 2009).

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2.7 Challenges in Implementing SCL and PBL in Malaysia

Despite of various findings about the benefits of SCL, a large number of challenges and issues in learning reforms at Asian universities have been documented recently in the literature. Malaysian students basically are used to passive learning as inferred from the results that they still prefer lectures and want to rely on tutorials rather than self-learning (Ahmad, 2013). They just want to fully absorb what is being taught rather than trying to involve actively in searching answer on their own. Some of the students even prefer to preserve the harmony in the classroom by avoiding questioning in the classroom (Chuah, 2010).

In addition, O'Sullivan (2003) stated that SCL is a Western approach to learning and it may not suitable for developing countries including Malaysia where different learning cultures do exist. Every child is unique and each of them requires specific pedagogical approach that for him or her (Simon, 1999). This is one of the challenges to implement SCL in Malaysia as Malaysia is a multicultural country where all the students come from different cultural background and from different socio economy background. SCL in school system will not be successful if the needs of whole class are not taken into consideration.

Every year Asian governments spend millions of dollars in staff development such as organizing workshops and conferences to train teachers in student-centred practice. However, in a study conducted in 1996, the Federal Schools Inspectorate (Jemaah Nazir Sekolah Persekutuan, 1996) found that although most teachers (70%) are well equipped with good knowledge, understanding and a various teaching methods or techniques, the prevalent teaching style still remains teacher-oriented.

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There are many challenges or obstacles when practicing SCL in Malaysia. According to Tseng et al. (2008), when students learned using SCL approach for the first time, they needed more time to adapt to the new ways such as team-work and learn how to solve it. Other findings by Carlisle and Ibbotson (2005) found that the adjustment to SCL approach can be burdensome.

Some of the research claimed that SCL may demand students to learn and study an exceeding amount of information which is not part of the intended content but merely for solving some problems. SCL does not provide a clear and precise guide for students to learn and study the intended content knowledge (Hung, 2009). Moreover, some of the students may perceive that the assignment did not enable them to reveal the full range of knowledge that they had obtained (Carlisle & Ibbotson, 2005).

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In addition, students may develop inappropriate knowledge structures in SCL and students reasoning errors or misconceptions will likely to occur (Johnstone & Biggs, 1998). Students might misuse the freedom provided by the SCL approach and this might affect the learning process. SCL is individual centered and needs proper guidance and resources for its implementation (O'Neill & McMahon, 2005).

On the other hand, PBL as a student centred approach also encounter with some challenges to be implemented in Malaysia classroom. In an explorative survey done by Chakravathi and Heleagrahara (2010) on the strategic challenges of PBL in a medical education environment at the International Medical University in Malaysia found that interpretation, empowerment and motivation are the main challenges in implementing PBL. Some students think that facilitator's role of guiding and triggering curiosity is not helpful in their learning. Teachers at the medical school found that it is so difficult

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to convince students about the benefits of PBL and it had been a baffling challenge to implement PBL in an environment where conventional teaching is still predominate (Chakravathi & Heleagrahara,2010).

Time constrains are among the barriers in implementing PBL in Malaysia classroom as students always claimed that do not have sufficient time for discussion or dealing with the PBL tasks given (Borhan & Yasin, 2014). A proper planned PBL is somehow important to convince the students about the benefits of PBL.

Furthermore, PBL facilitators must adopt a good questioning skill in order to enhance meaningful discussion with students in the PBL classroom (Zhang, Lundeberg, & Eberhardt, 2011). Good questioning skill is one of the challenges faced by Malaysia teacher in adopting PBL approach. Malaysia teachers are still behind in techniques and skills of asking question as reported by some researchers such as Supramani (2006), Tay & Arshad (2008) and Zamri&Lim (2011). Malaysia students are also not actively involved in asking question (Nazrulhaiza, 2003) and all these had limited the implementation of PBL in Malaysia classroom.

As a summary, implementing SCL and PBL in Malaysian classroom can be challenging and more studies on secondary school context are needed.

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2.8 Model for Developing Educational Module

In education, module is an instructional unit that have been planned methodically to accomplish certain objectives and it focuses on a particular topic in learning context. The goal of developing a module is to organize activities more systematically in order to meet the objectives of teaching and learning process (Russell, 1974; Sidek & Jamaludin, 2005). Most of the educational modules contain information for a particular topic, emphasis on student-centered learning activities and often culminate in a project for students to testify their understanding of a topic (Russell, 1974).

Module is not developed in isolation without thinking about the professional requirements or without taking internal or external factors into account. Besides, module design is not only meant for inside classroom learning process, but also meant for activities outside the classroom (McArdle, 2007). In order to develop a module, one can always refer to particular theories align with the educational purposes, models or literature. However, some existing module or model that meets the needs of a study can be adapted in developing a module (Milano & Ullius, 1998; Richey & Klein, 2007).

In developing a module, the design message has to be planned carefully (Abdul Hadi, 2010; Morrison, Ross, Kemp, & Kalman, 2007). The most often referred model for developing module include ADDIE model, Kemp's model and Sidek Model. ADDIE model was first developed for the U.S. Army during the 1970s by Florida State University's Center for Educational Technology and it was then adapted or modified for the practice in some private sectors (Branch, 2009).

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According to ADDIE model, module development involves five major phrases such as analysis, design, development, implementation and evaluation. Flexibility is the main attraction of ADDIE model where the phrases involved can always be altered to meet the user needs and it can also be employed in combination of other model (Konero, 2010). However, time consuming had been the stumbling block of ADDIE model as it is a linear process for instruction design where a phrase must be completed before moving to the next phrase.

Kemp's model is another innovative approach for instructional design that first developed by Jerrold Kemp in 1985 and was modified later by Kemp, Morrison and Ross in 1994. Kemp model is comprised of nine key elements including instructional problems, learner characteristics, task analysis, instructional objectives, content sequencing, instructional strategies, designing the message, instructional delivery, and evaluation instruments (Nekvinda, 2011).

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Kemp's model is different from other model and it is unique in a way that it adopts a circular structure rather than one that is linear (Akbulut, 2007). Nine core elements of the model are viewed as interdependent rather than independent. This characteristic enables the instructional designer to begin with any of the nine components and do not need to work in a linear pattern (Akbulut, 2007). Kemp's model that put priority on the learner's needs and goals had been the most outstanding strength of that model. Besides that, Kemp's model also allowed all factors in the learning environment to be taken into consideration and also allowed continuous feedback.

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An integration model which is more comprehensive in developing module had been introduced by Sidek Mohd Noah in 2001. According to Abdul Jalil and Mahfar (2016), sidek model had been employed by many researchers including Malaysia researchers such as Amalia Madihie and Sidek Mohd Noah (2013), Mastura Mahfar (2011), Mohd Ali Jaamat (2010) and Abdul Hanid Halit (2007).

There are nine steps involved in the Sidek Model. It starts off with developing an aim of the module and then theories, rational, philosophy, concept target and time allocation will be determined. After that, it will be followed by needing an assessment, setting the objectives, selecting the content, strategy, logistic and media. Lastly, it ends with integrating the draft module. The module itself will then be tested and evaluated to assess its validity, reliability and norms. If the module is high in validity and reliability, it is considered as a complete module and will be proceeded to effective evaluation. The module can be implemented to target population after following all the stages mentioned (Sidek Mohd Noah, 2001). The steps are visualized in the chart below.

This research will adopt Sidek Model for module development as it is more flexible and more comprehensive. However, the main reason for choosing Sidek Model is that it is more suitable to be used in Malaysia context.

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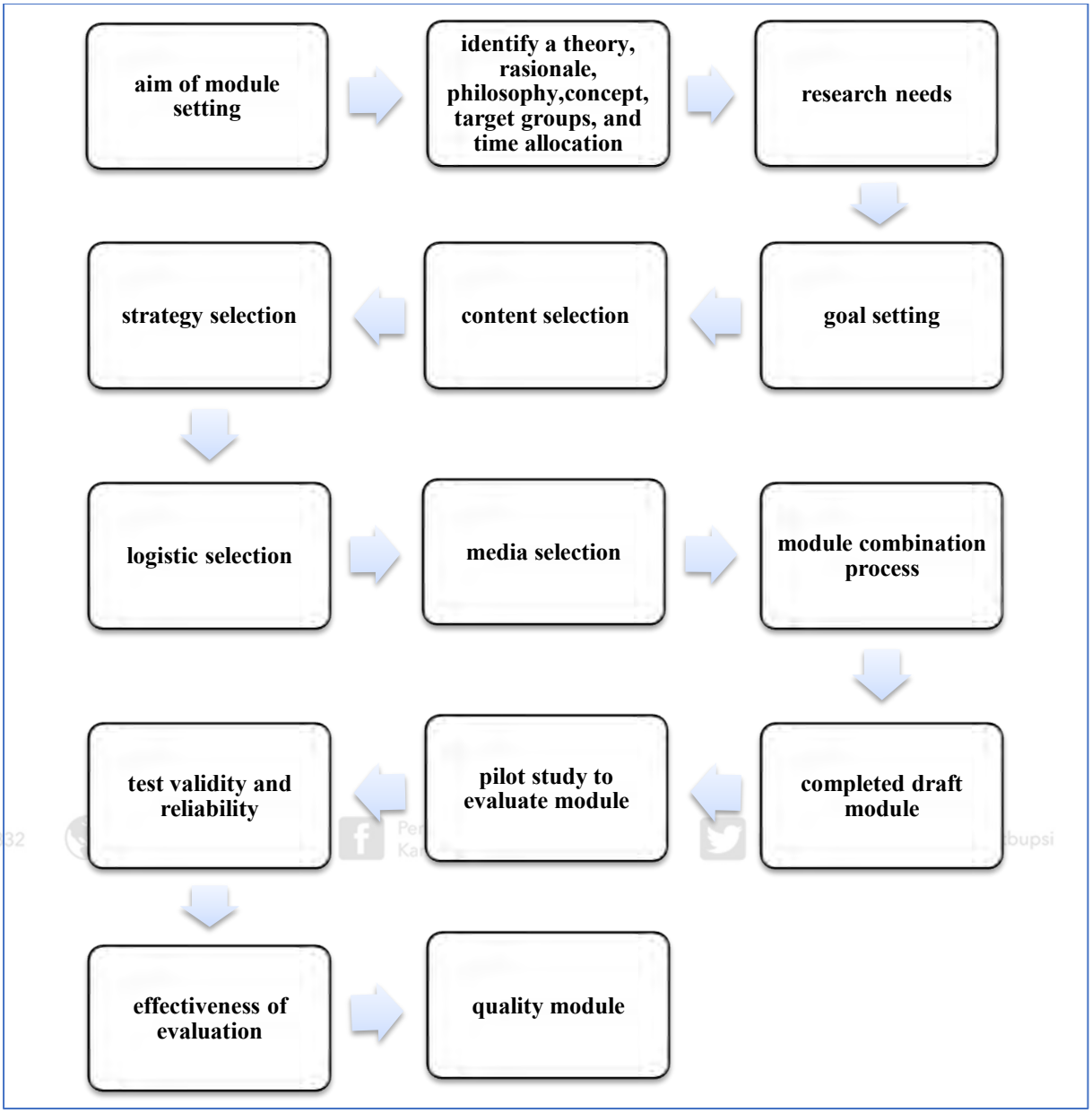


Figure 2.1. Sidek Module Development Model

2.9 Summary

All the discussed studies provide valuable information about the implementation of SCL and PBL in Malaysia. However, the findings from the literature review reveal a lack of significant extant literature on the specifics of the objectives in this research. Most of the empirical studies regarding the main topic of this research were carried out on higher education level. Therefore, there is a need to carry out this study to gain

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insight about awareness and readiness in implementing SCL among administrators, teachers and students in Malaysian secondary school context and also to gain information about issues in implementing SCL in the daily classroom practice. All the information gathered will serve as an insight for developing a PBL module for daily classroom practice in Malaysia secondary schools.

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CHAPTER 3

METHODOLOGY

3.1 Introduction

Student-centred learning (SCL) is an instructional approach that actively involving students in learning to construct their own understanding and developing problem solving skills (Biggs, J. B., 1987). SCL that implemented systematically will lead to increased enthusiasm to learn, better retention of knowledge, deeper understanding, and greater attitudes towards the lessons being taught (Collins & O'Brien, 2003). However, despite being well – known, very little has been mentioned about the proper implementation of SCL in Malaysian secondary school classroom settings. Besides that, Problem Based Learning (PBL) is an example of SCL that offers the potential to help students in developing flexible understanding and lifelong learning skills. Despite being in existence SCL including PBL seems to be not getting proper attention in Malaysian secondary's schools, therefore the research aimed to look for the awareness and readiness in implementing SCL among administrators, teachers and students in

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Malaysia secondary school and also to garner information on issues in implementing SCL through the following research questions:

1. What is the state of schools' administrators, teachers and students' awareness and readiness in SCL implementation?
2. What are the teachers and students' perspective on issues in SCL implementation?
3. How can the findings on awareness, readiness and issues in SCL implementation serve as insights for PBL module development?

This chapter begins with the description of research design and followed by detail description on methodology and activities involved in this research.

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3.2 Research Design

Educational research is the best way in which people obtain reliable information about education process or issues and it is typically divided into two broad categories: quantitative and qualitative research. The terms quantitative and qualitative research are commonly seen to indicate more than different ways of gathering data as they are taken to denote and represent various assumptions about the nature and purpose of research (Bryman 1988). Quantitative research uses objective measurement and statistical analysis of numeric data to investigate and explain phenomena and it requires a well-controlled setting. In contrast, qualitative research focuses on understanding social phenomena from the perspective of human participants in the study itself. In a

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qualitative research, the data will be collected in a natural setting with the aim to gather theory rather than testing theory (Donald, 2002).

Choosing an appropriate research paradigm for a study is very important for a research. This is a qualitative oriented research aims at exploring awareness and readiness of school administrators, teachers and students in SCL implementation and also to find out the issues in implementing SCL. Besides, this study aims to gain insight in developing a PBL module based on the findings on awareness, readiness and issues in SCL implementation in daily classroom practice.

The aims of the study and the questions that have emerged, pointed to case study as being the most appropriate methodology. Case study has been chosen as it is an approach that involves systematic information gathering about a situation and this will allowed effective understanding about the research questions. Case studies can penetrate situation in ways that are not always accessible through numerical analysis (Cohen et al., 2000). Case study had been deemed as the most appropriate research design as this study aimed to explore a particular phenomenon in a specific geographical boundary.

The method utilized to gather data is mainly qualitative which is semi structured interview. The data collected through the instrument aided in validating answers from the participants.

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3.3 Research Procedure

To scientifically carry out the research, this study adopt a specific research procedure as visualized in the following diagram.

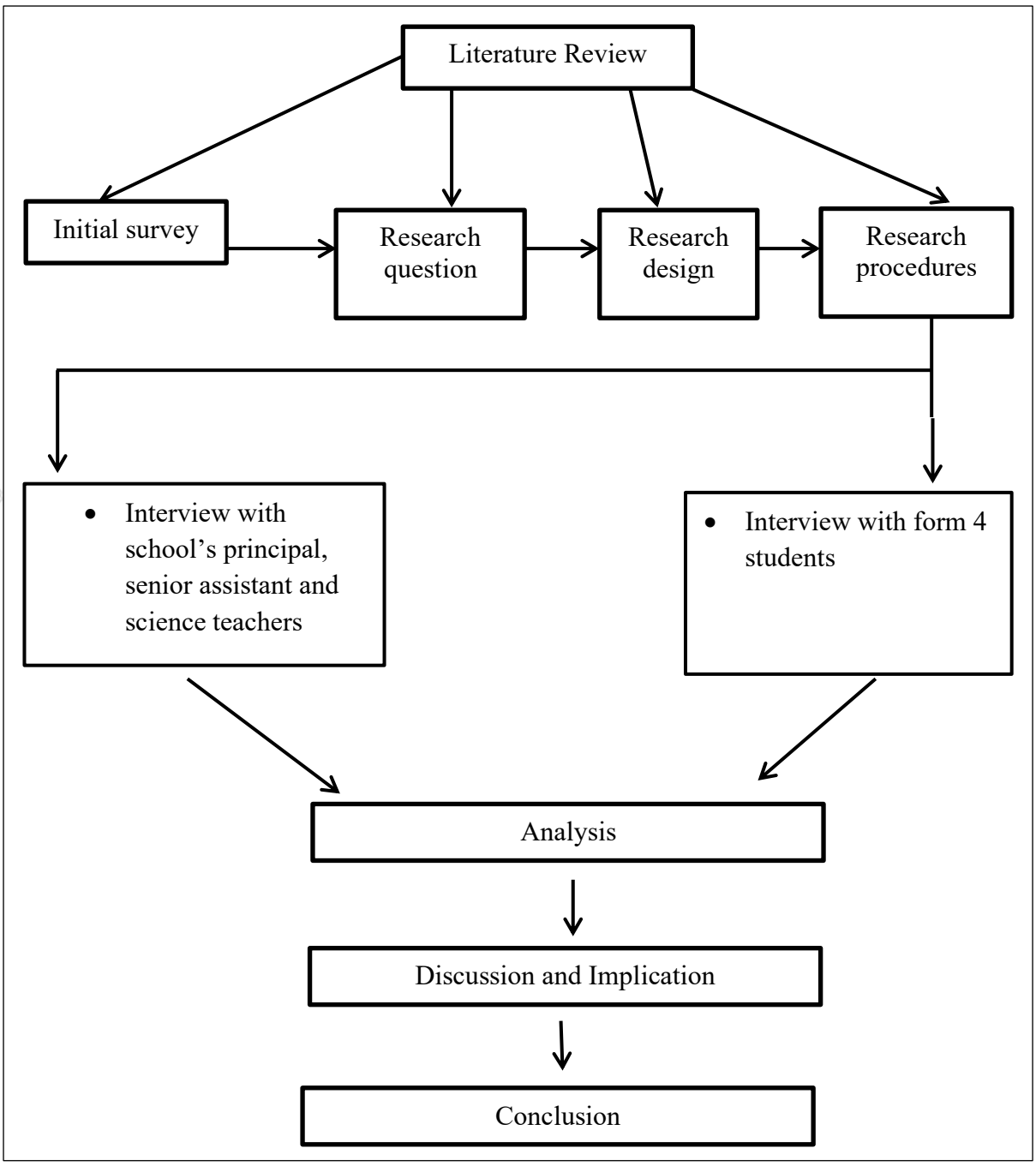


Figure 3.1. Research Procedure

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In order to answer the research questions, exploratory study is involved to find out the awareness and readiness among schools' administrators, teachers and students in SCL implementation and also to gain information on the issues in SCL implementation. According to Yin (2003), exploratory study is used to explore those situation in which the intervention being evaluated has no clear outcomes. Data for the first and second research questions will be collected through interviews. The findings on awareness, readiness and issues in SCL implementation will then serve as insight for PBL module development.

3.4 Research Participants

Purposive sampling will be used to select sample for the research. Cohen et al. (2000) defined purposive sampling as sampling for a specific purpose and picking a group who fit a criteria. The sample of this research consist of three Principals, three Head of Science Department and six Head of Panel from three different secondary schools located in Hilir Perak. Besides that, eight teachers who are teaching Science and Biology from 8 different schools and seven students from a secondary school will also participate in this research. The major criteria for choosing the samples including the subjects they taught in secondary schools and the number of years they have been a teacher in secondary schools. A lot of information can be squeezed out from the participants of this study. Cuban (1991) had once said that educators with many years of teaching experience will be more suitable to evaluate an instructional practice in school. In this study, the main focus is to inquire the extent to which teachers and

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students are aware and ready in SCL implementation as proposed in the national education blueprint.

In order to conduct interviews on school's administrators, teachers and students in the particular schools, approval from Education Planning and Research Development (EPRD) of the Malaysia Ministry of Education (MOE) must be obtained. In addition, permission from Perak State Education Department will also be obtained.

3.5 Research Instruments

In depth, semi-structured interview will be adopted to gather information for the study. The interviews were utilised to gain rich and detailed information from the research sample.

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3.5.1 Interview

In order to gather data from the schools' administrators, teachers and students about the awareness and readiness in SCL implementation in Malaysian secondary school and also information on issues in implementing SCL, semi-structured interviews will be utilized. Interviews allow respondents to substantially express their views with their own words. The interview protocol is developed to align with research questions, previous findings and variable of interest. Semi-structured interview are deemed appropriate for this research and questions are open-ended thus not limiting the

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respondents or interviewees choice of answers (Gubrium & Holstein, 2002; McCracken, 1988). In the semi-structured interview, interviewer can make use of cues and prompts to help or direct the interviewee into the research topic area thus being able to gather more in-depth or detailed data set (Creswell, 2003; McCracken, 1988; Patton, 2002). Probing technique will also be adopted by the researcher in order to obtain appropriate feedback from the interviewee.

Interviews will be held in a quiet and convenient place such as school meeting room. Interviewees will be informed that their names were identified by pseudonyms throughout this research and other identifying information will not be revealed by any means. Besides, there will be no specific time limitation for the interview as question will be asked and the interviewees will be given as much time as they need to answer each question. Each interview will be audio recorded. An initial round of data analysis will be carried out immediately after each interview and the interview questions will be amended where necessary to further examine emerging issues.

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3.6 Validity and Reliability

According to Nunan (1992), validity means a measurement on research study on how far the study investigates the researchers' investigation in a study, whereas reliability measures consistency of the results obtained from a research study. In order to ensure the reliability of the research instruments, the interview question in this study is given to 3 experts to check the reliability. The experts are three senior lecturers and their expertise is in Science and Engineering Education. Two of them are from Science and

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Mathematics Faculty of UPSI while another expert is from Faculty of Education, UTM. (Please refer to Appendix 2 for interview protocols that have been checked by the experts). Inter-rater reliability will be adopted and the statistic which can communicate the measure of inter-rater reliability is Cohen's kappa coefficient.

3.7 Data Analysis

The data collected from the instruments of this research will be analyzed qualitatively. Inductive qualitative data analysis will be used to analyse the interview data in this study. Inductive analysis is an approach that fundamentally employ readings of raw data in order to acquire concepts or themes through interpretations made from raw data by the researcher. All the interviews will be transcribed and the samples of the study will need to verify that the transcribed interviews were their genuine responses and without any bias. At the beginning of analysis process, the interviews transcripts will first read carefully and thoroughly to get a mainstream or general idea about the interviews. Coding process will only starts after the second reading. According to Charmaz (2006), coding interview transcripts line by line will ensure data to remain open besides determining the samples' implicit or explicit concerns of a particular issue. Cross-case comparison will be carried out to compare and contrast the sample responses before themes across the interviews data were identified just after the coding process is completed. The codes produced will then converged into categories and eventually themes that represent the findings of the study will be formed.

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3.8 Research Trustworthiness

Trustworthiness, a term coined by Guba (1981), serves to ensure rigour in qualitative research paradigms without neglecting the relevance of a qualitative research. It refers to the degree of confidence in data, interpretation and also methods used to assure good quality of a research. In order to enhance the trustworthiness of this research, various strategies suggested by Wolcott (1994), such as talk a little, listen a lot, record accurately, begin writing early, report fully, seeking feedback, and write accurately will be adopted. Table 1 highlights how these strategies were used throughout the data collection phase:

Table 3.1

Application of the Wolcott (1994) strategies to ensure trustworthiness of the research

Wolcott strategies	**Description**
Talk less, listen more	Researcher waited patiently for the response from the respondents. While waiting, think of some probing question instead of just giving hints that might affect the response given.
Record accurately	Jot down important points even though interviews will be fully recorded.
Begin writing early	This action will reveal on what questions to be asked later.
Report fully	This process involved reporting all kinds of data including discrepant data or data that were unfavourable to the research aims.
Seek for feedback	Interview transcripts need to be given to the respective interviewees for them to verify and assure that what were written in the transcription were their genuine response
write accurately	It is vital for the researchers, whose English is not their first language, to determine the clarity of the communication pattern in the research

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3.9 Summary

This chapter summarizes the research design and research procedure in this study. Accordingly, interview will be carried out to school's administrators, teachers and students in order to garner information about awareness, readiness and issues in SCL implementation. The findings from the first and second research questions will serve as insights for PBL module development. On top of that, inductive qualitative data analysis will be used to analyse the interview data in this study.

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CHAPTER 4

FINDINGS AND DISCUSSION

4.1 Introduction

The chapter draws together the findings of data derived from the interviews of Principals, Head of Department, teachers and students on issues and challenges in implementing SCL in Malaysia secondary school besides the awareness and readiness to adopt SCL. This research aims at answering the following questions:

i) What is the state of school's administrators, teachers and students' awareness and readiness in SCL implementation?

ii) What are the teachers and students' perspectives on issues in SCL implementation?

iii) How can the findings on awareness, readiness and issues in SCL implementation serve as insights to developing a PBL module?

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It begins with the themes that emerged from the interview transcript and then moves to aligned the findings and research questions by applying the evidence that emerged from inductive qualitative analysis. The research findings were established based on the aims of the research. This study reports data analysis from 27 interviews collected from Principal, Head of Department, teachers and students of Malaysia secondary schools. 3 Principals, 3 Head of Science Department and 6 Head of Panel from 3 different secondary schools had been interviewed. Besides that, 8 teachers who are teaching Science and Biology from 8 different schools and 7 students from a secondary school were interviewed to garner important information for this research. Responses from the participants had provided rich data to this study. Three major themes had emerged from the data collected based on the analysis and interpretation process. Awareness about SCL, readiness to adopt SCL and issues and challenges in implementing SCL were the main themes indicated from the interviews.

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4.2 Awareness about SCL

21st Century Learning had been a fundamental issue in the second wave of Malaysia Education Blueprint 2013-2025 and teachers have shoulder the new challenges in producing young generation that able to cope with the 21st century globalization. Teachers nowadays have a substantial need to be creative in carry out daily practice in classroom in conjunction with 21st Century Learning. However, in order to embrace 21st century learning, it is vital for teachers and students to understand the learning approach including the rationale of 21st Century Learning. Therefore, it is important to gain information on teachers' and students' awareness about 21st Century Learning that

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include SCL as the main approach. Generally, awareness means getting to know, to realise and interested in something or conscious about something which is important. According to Abdul Gafoor (2002), awareness has the object of what respondents know as well as what they do not know. In education, awareness means knowledge from milieu without being taught where someone has common knowledge about in issue.

This section discusses about the extent of teachers' and students' awareness about SCL and it is elaborated according to the definition and clarification of the characteristics of SCL given by them.

4.2.1 Awareness About SCL From Teachers' Perspective

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Respondents comprised of teachers were well equipped with the knowledge about 21st century learning and they managed to picture SCL as one of the learning methods that focus mainly on students. Respondents were able to establish an explicit understanding about 21st Century Learning approach by explaining the characteristics and scenario of a 21st Century classroom.

All the teachers agreed that 21st Century Learning is a practice that focus on students where students are responsible for their own learning process and they were aware that the days of talk and chalk by teachers in a classroom are slowly eliminated. According to the respondents that comprised of teachers, the definition of 21st Century learning was incorporate with the roles played by teachers and students in the classroom and also the focus on students' need in learning processes. Respondents stressed that

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21st Century Learning involved an abundance of students' activities compare to traditional learning style where teachers dominate the learning processes.

Some of the mentioned students' activities include group presentation, group projects, science experiment, role plays and brainstorming session. Respondents realised that in 21st Century Learning, teachers need to use a variety of activities which are appropriate and suitable with syllabus to convey knowledge to their students. Learning will be more meaningful and fun when knowledge is obtained through students' activities. This is somehow aligned with some empirical studies that had been carried out on the understanding about 21st Century Learning. For examples, Azmi and Nurzatulshima (2017) had stated that knowledge should be delivered to students by involving students in the activities planned. Besides that, Langworthy (2013) also stated that students will be motivated to learn when they are actively involved in special designed activities. The respondents stated that:

> *What I understand about 21st Century Learning is that students become the main focus in learning process. Teachers no longer provide all the information but students are the one who need to search for information and then present the information gained in classroom. (I2_05)*

> *In 21st Century Learning, students involved actively in inquiry learning where they find information on their own. (I5_06)*

From the results obtained, the teachers level of knowledge on 21st Century Learning will enable the teachers to carry out the best practice in classroom. When teachers managed to grasp the main focus of 21st Century Learning, it will have a big

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impact on decision makings and also in the classroom practice (Calgren,2013). Teachers' understanding about 21st Century Learning is crucial as they are the one who are going to execute them and make 21st education a success.

On the other hand, respondents were aware that SCL is a learning approach that put students as main focus and students are accountable for their learning process. They acknowledge that SCL is an approach that relies on students' involvement in a learning classroom. Two of the respondents stressed that:

> *SCL engages activities that focus on students and students are responsible for their learning process. (I15_08)*

> *SCL involves students more, not only teachers teaching in front and students just do the listening. (I3_08)*

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All teachers interviewed seemed to share similar beliefs that SCL provides freedom and autonomy for students to search for information and construct their knowledge based on their research or findings. They defined SCL as an approach that involve the active participation of students in learning classroom. Taking part in group discussion, questioning and conducting science experiment are considered as active involvement of students. In this regard, the respondents' opinions are concurred with the previous studies. Attard, Di Iorio Geven & Santa(2011) had stated that students are part of the educational community and they are responsible for their own learning process in SCL approach. Besides, Omar Al-Hadad (2015) also stated that SCL relies on active learning that engages students where students are stimulated to think about a discussion or explanation in a classroom.

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Moreover, respondents revealed that teachers only act as facilitators in SCL and teachers are meant to provide guidance to the students in making learning meaningful. This was apparent from the statement made by one of the respondent:

> *In SCL, teachers are just like a facilitator, they only conduct the learning activities by preparing a module or giving a task while students will do the information searching to solve the task given. (I3_03)*

As a facilitator, respondents revealed that they need to spare some space for the students to be creative and innovative by being a good listener to students' point of view and then stimulate cooperation among students in all the group activities conducted. On the other hand, respondents understood that teachers as facilitator should be able to assign variety means of accessing information for the students to learn in solving problems. Ahmad Saiful Azlin (2010) also stated that facilitator in a classroom needs to prepare a model answer that can assist students to refine their understanding on certain issues or problems. Facilitators play an important role in correcting the misconception of students on certain topic and handy tips should be given in order to clarify the misconceptions. Moreover, he also stated that comprehensive discussion can be conducted by facilitators based on the understanding or performance by the students in a classroom.

Respondents also found that teachers play an important role in SCL where teachers need to encourage students to express their opinion throughout the learning process. This can be proofed by the following excerpt:

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When we discuss about certain issues, teachers can always encourage students to give their ideas and talk about what can they do as students to solve certain problems. (I7_15)

Respondents understood that in SCL approach, teachers give authority for the students to do the talking and students are encouraged to give their opinions on a task given. SCL involves more communication and interaction between teachers and students or between students and students. In SCL, students will need to do more talking than teachers for example when students are given a task to solve a problem, they will need to present their findings from various perspective (Britzman, 2011). Moreover, there was an interesting finding stated that SCL should be occurred in a democratic way where all the students in the classroom have the same opportunity to voice out their opinions without any discrimination while teachers should facilitate the discussion without bias. This is similar to Dewey that stated school is a place where students learn through sincere interaction and discussion.

Furthermore, respondents understood that SCL involved the integration of technology where computers or tablets are utilised to make learning more meaningful and fun. Technologies make the information searching become easier and this will empower the learning process among students in schools. One of the respondents stated that:

SCL focus a lot on the use of technology such as computer and tablets. (I4_03)

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As such, in order to make SCL a success, teachers need to be a knowledge practitioner by being knowledgeable in their content area and also in the use of technology. Teachers must be able to keep up with the latest advancement of technology so that they can implement the use of technology devices in a students centred classroom. The use of technology is somehow very important especially in a students centred classroom as the students nowadays are labelled as digital native and teachers must be able to always boost students' enthusiasm to learn via technology. Teachers who are not well equipped with the knowledge of technology will cause the students to left behind the globalised world.

4.2.2 Awareness About SCL From Students' Perspective

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Interviews were also done on students from a secondary school in order to gain information about the awareness on SCL. Students' awareness on SCL is somehow important and can be a partial explanation on the current practice of SCL in Malaysia secondary schools.

Based on the findings, most of the students imparted vague definition of 21st Century Learning. Students explanation about 21st Century Learning only centralised on the arrangement of desks in their classroom and the use of technologies in their learning activities. Two of the respondents claimed that:

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I don't think that I really know about 21st Century Learning but I think that 21st Century Learning is the learning situation where technologies such as mobile phones and computers are widely used in the classroom. (I22_03)

In 21st Century Learning classroom, students sit in groups and allowed to move around in the classroom. (I27_02)

Students understood that there is flexibility in the arrangement of furniture such as desks and chairs in the 21st Century Learning classroom. It was noteworthy that all the respondents that comprised of students managed to relate the flexibility arrangement of classroom to collaborative learning. They revealed that in 21st Century Learning classroom, they were allowed to sit in groups and carry out discussion in groups. Besides that, most of the students mentioned about the use of technologies in 21st Century Classroom and this indicated that they are provided with opportunity to choose different methods of learning. Technology enables students to access to various information or educational resources that inspire creativity among students (Hallinger,P, 2013).

Despite the vague definition on 21st Century Learning given by the respondents, it was somehow surprising and inspiring that all the respondents showed awareness on the concept of SCL. The respondents managed to state some general principles of SCL including the focus on students in every learning classroom but they did not express a common definition. These can be revealed from the following claims:

SCL is a learning style that focus on students. (I21_10)

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SCL means students sit in groups and find information for the tasks given by teachers. (I24_09)

In SCL, students carry out experiment to test a hypothesis. (I23_06)

It is found that respondents came across the information about SCL from teachers in schools. They managed to identify activities such as experimenting, group discussion and group presentation as parts of SCL approach. Students realised that SCL emphasizes on the activities that involve students actively in the classrooms.

Teachers and students are aware of SCL as they managed to provide explanation and talk about the principles behind SCL. SCL has been defined most by teachers and students as a learning approach that involves students actively in the learning process which is in contrast with the conventional learning style where students are less given opportunity to convey their opinions or ideas. They realised that SCL involves the changes of roles and responsibilities between teachers and students in the daily learning classrooms. Moreover, teachers and students also shared the same ideas about the arrangement, activities of SCL and the use of technology in SCL classrooms. Awareness of participants on SCL is generally inclined towards readiness and optimisms in implementing SCL in schools.

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4.3 Readiness to Adapt SCL

Based on the findings from the interviews, there are some opinions that will shed a light on the readiness to adapt SCL among the administrators, teachers and students in schools. According to Bakers (2002), readiness involves the integration of willingness and capacity of someone in carrying out a task. In terms of education, readiness meant that educators are more likely to participate in a task and excel in what they are doing when they are self-assured or optimist in what they are doing (Bandura,1993). Readiness to adapt SCL among administrators and teachers will have a significant impact in framing students' attitude to accept SCL in schools. It is found that teachers' readiness in implementing SCL can be enhanced by the positive attitude of school administrators towards SCL while students' readiness in accepting SCL also can be developed by teachers' positive attitude or enthusiasm in adapting SCL (Geraldine O'neill and Tim McMahon, 2005).

4.3.1 Readiness to Adapt SCL From School's Administrators Perspective

School's administrators including principals and head of departments play a major role in motivating teachers to adapt SCL in school and also they share the responsibility with teachers in order to create a conducive environment for the implementation of SCL. From the findings, it can be revealed that school administrators are ready to adapt SCL in school and teachers are always encouraged to practice SCL in schools. When asked about the efforts done in order to make SCL a success, all the respondents from the administrators' group unveiled that they had been encouraging teachers to carry out

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SCL in their daily practice regardless of subjects. One of the respondents mentioned that:

> *I always encourage my teachers to carry out SCL by involving collaborative and cooperative learning. (I4_10)*

Respondents understood that one of the most effective way to make SCL a success is the application of collaborative and cooperative learning by promoting communication and social skills among students in the classroom. They mentioned that in collaborative and cooperative learning, students will be teamed up and work together to explore a task given and this is where they develop their interpersonal skills. In addition, empirical studies show that students will learn better when there is a face to face communication with others and this will somehow improve their academic achievement (Bianchini, J. 1997).

Respondents revealed that an effective administrators group in school will be able to promote a positive climate for the implementation of SCL. Principals and the head of departments need to play a key role in conveying effective commands and also to assure that the latest educational strategies including SCL are in place for the meaningful learning among students in their school. Respondents from administrators group knew that quality instructions will be able to motivate teachers to practice SCL daily besides on- going support that given to the teachers. Without hesitation, guidance and supervision from the administrators in a school will help teachers to work effectively in a SCL classroom. Teachers will be more confident in adapting SCL when the administrators are conscious of the importance to carry out SCL and put emphasize on SCL.

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On the other hand, most of the respondents from the administrator group realised that teachers need to be provided with professional learning programmes or courses to result the best practice of SCL among teachers. They mentioned that teachers need to be given systematic guidance to kick start the implementation of SCL in school. Besides encouragement and motivation, teachers need references and valuable resources to reinforce the implementation of SCL. This was noticeable from the following excerpt:

> *I encourage my teachers to adapt SCL through courses and in-house training. Written report and education portal about SCL also provide fundamental information to teachers in carrying out SCL. (I11_12)*

It was a noteworthy finding that school administrators had already planned and carried out a series of activities in order to guide teachers to adapt SCL in their classroom practice. Respondents believed that teachers need some up-to-date information and training before carrying out SCL. Perhaps, professional development programmes will help teachers to relate their knowledge about SCL to their daily practice in classroom. This is apparent with a study done by Rajendran (2001) that stated teachers need to be given appropriate courses and well-prepared references in developing their professional skills. Educators cannot work alone in making learning meaningful for students, there must be a platform for administrators and teachers to discuss issues related in teaching practice. Through courses or in house training about SCL, teachers will be able to gain an insight on how to practice SCL accordingly besides having opportunity to voice out the needs or opinions to the administrators of school.

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Another finding from the administrators' group is that teachers are given freedom on when and where to carry out SCL. Respondents understood that different students have different ability in learning process and thus teachers are given freedom to plan activities or learning method that suitable for their students. This can be indicated from the following excerpt:

> *I give freedom to my teachers to carry out SCL in their classroom. Different students need different activities. (I12_33)*

Most of the administrators (I4, I5, I7, I11 and I12) are ready to adopt SCL but they understood that the first few years of SCL implementation might be stressful for teachers as they need to plan the suitable activities to make learning meaningful. They are ready to provide helps to maintain the positive attitude among teachers towards SCL and they are willing to provide advice in order to reduce the unavoidable stress among teachers. Such positivism among administrators of school will enhance teachers' performance and teachers will be more motivated to continually strive to be a good practitioner of SCL. Sheppard (1996) had also mentioned that effective instructional leadership in school will be able to enhance professional development among teachers in school.

A successful SCL implementation is much more than teaching and learning process itself. While good teaching and learning process are vital, the administration that underpins it will lead to the well-rounded education system. A productive administration indirectly enlighten an education approach that goes well beyond imparting knowledge to students. School administrators play a very important role and

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they cannot remain static but must always adapt to changes as the world of education always embraces new challenges.

4.3.2 Readiness to Adapt SCL From Teachers' Perspective

In this study, a few interview questions are asked with the intention to get wind of teachers' readiness in implementing SCL in daily classroom practice. Respondents are asked about to what extend they had been carrying out SCL in the school and also how do they response towards the practice of SCL in their classroom. Results of the interviews revealed that there was a positive attitude in carrying out SCL and teachers also show optimism in SCL implementation. This helps to identify teachers' readiness in practicing SCL as Anastasi (1957) had been saying that beliefs and attitude is an inclination towards a designed classroom. Attitude was described as physical and mental readiness to response to the related situation. Teachers enthusiasm to adapt to SCL will somehow help to create a positive atmosphere for students to accept SCL as well. Nima Farzaneh (2014) also said that teachers' optimism towards SCL will boost students' interest in adapting to SCL.

Majority of the teachers interviewed seemed to share similar beliefs that SCL will bring advantages to the students in schools. Respondents managed to explain briefly about the advantages in adapting SCL in which the similar points of view are mostly related to the increasing motivation to learn, active involvement of students to search for information and also increasing self confidence among the students through

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group activities. One of the respondents expressed her belief that students will learn to search for information on their own through SCL. The following is the excerpt:

> *SCL encourages students to search for information on their own and then use the information to solve the problems given. (I1_21)*

Respondents believed that when students learn to search information on their own, self-learning process is developed and this may promote deeper understanding about certain topics in the classroom. The finding is in line with a study carried out by Oinam (2017) who mentioned that SCL will allow students to be more responsible and more accountable in their studies. According to the respondents, students will be more responsible when a task is designated to them individually and directly. Respondents understood that through SCL, students will have more flexibility in choosing the mode of obtaining knowledge and teachers play role as a facilitator to give assistance to students on relating the information searched with the tasks given. Learning will become more meaningful when students involved actively and this is in line with the study carried out by Ernest Lim Kok Seng in 2014. Ernest (2014) also said that analytical skills can be developed when students learn actively through SCL. Analytical skills such as problem solving skills can be thrived through project or assignment where students learn to observe a problem and then think on how things work. It is somehow helps the students to deal better with the real life situation when they are graduated from the school or universities.

This was echoed by another respondent who revealed that SCL enables students to look for more information besides information given by their teachers. The opinion is:

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One of the benefits of SCL is that students will learn to search for more information through mass media including internet, newspaper and magazines. (I13_16)

Teachers understood that knowledge transfer will be more effective when students involve actively in learning or through searching information and through SCL, learners become more independent. Learning environment had become more robust with the advent of technology nowadays. SCL will immerse students in deeper learning and substantial experiences utilizing various resources or tools (Hannafin Hill & Land, 1997). Respondents acknowledged that technology and mass media seems to fit together with SCL where it enhances self-learning among students. Furthermore, respondents also brought up that the world wide web had provided a speedy access to knowledge and information. Teachers only act as facilitators that design a problem context while students are given chances to enhance deeper understanding through thorough exploration by themselves. Hence, teachers should encourage students to explore knowledge beyond classroom at this digital age of knowledge.

On the other hand, respondents also reviewed that SCL helps to instil interpersonal communication skills and self-confidence in students especially when they held a group discussion activity in the daily classroom practice. Generally, all the respondents stated that variety of group discussion activities had been carried out in their classroom including group discussion on a topic given, discussion on the picture or diagram set up in the classroom or debate on experiment's result. They realised that during the discussion activities, students will be given opportunity to give their ideas and they will refine understanding through their own investigation or learning style. One of the excerpt is as follow:

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SCL is very good as it will train students to talk in front and they can learn to be a good leader through group activities. (I6_28)

The above excerpt exemplifies that group activities such as presentation or group experiments will help to promote a better communicating skills among students. Respondents realised that students will learn to talk and listen when they are actively involved in group activities. Through group activities in SCL, students collaborated in finding information and also cooperated in doing the discussion. This is where the communication skills are instilled. Interpersonal communicating skills is very important and it helps a lot when students are out in working life (Young &Chapman, 2010). A good communicating skill whether verbal or written are necessary to convey and understand information precisely. This is one of the reason why respondents are willing to carry out SCL in the classroom knowing about the benefits of it.

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Respondents also raised up the issue that students in secondary school may be easily get through high school with straight As in examination but always face difficulty in making a successful transformation when they go into higher education or even when they go into work place as they are lack of leadership skills to work out for problems or to accept challenges in work place. Respondents mentioned that SCL will help to solve the mentioned problem as SCL will enhance and build leadership skills among students and they found it important to implement SCL in their daily classroom practice. One of the respondents claimed that:

SCL will help students to be a good leader. (I6_33)

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According to the respondents, SCL will create an environment for students in the class to teach each other and to stand in front of their friends to present their findings. They will be trained indirectly to be good in public speaking and this will help them to gain essential asset as a good leader for their working life in the future. Many activities in SCL such as group experiment, group discussion and games empower students to involve actively in discussion and it creates opportunity for every student to be a leader besides learning to deal with others. Students will also learn some useful skills including decision making and problem solving skills.

It is very inspiring that all the respondents realised about the advantages of SCL and continuous practice of SCL for the benefits of students will contribute to the success implementation of SCL in secondary schools. Most of the respondents (I3,I6,I8) sum up that through SCL, students will learn salient skills including communication skills and problem solving skills besides learning to ask questions or accomplish a task given independently. Respondents stated that they will implement SCL in classroom accordingly based on the diverse ability of students.

On the other hand, when asked about what had been done by school administrators or the teachers in implementing SCL in school, some of the respondents(I15,I16 and I18) highlighted that in-house training, meeting and briefing about SCL were carried out in order to help teachers implementing SCL in their daily classroom. This is in parallel with what had been mentioned by the schools' administrators earlier before where in-house training and courses had been given to teachers to convey appropriate information about SCL and also about ways to carry out SCL in the classrooms. One of the respondents mentioned that:

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My principal had been invited an officer from PPD to give an in-house training about SCL. We are taught about the ways to carry out SCL in our daily classroom practice. (I15_36)

Creating a student centred classroom is not always easy but when teachers are given adequate information and opportunities, they will be more ready in adapting SCL. Most of the respondent revealed that through courses and in-house training, teachers learnt about the strategies used in promoting SCL. They learnt on how to involve students actively in gaining knowledge through variety of activities including fieldwork, experimenting and activities that integrate with the use of technology.

Teachers deal with different students in different classroom and not all the students are motivated to learn in the same way. Therefore, it is fundamental for teachers to know about variety of strategies or different delivery techniques to ensure the success of SCL in their classroom practice. In fact, proper consideration about the differences in students will contribute to the success of SCL and thus making learning meaningful.

Some of the respondents acknowledged that they started SCL by arranging tables and chairs in the classroom as suggested in 21st Century Learning classroom. Respondents are ready to create a room for group activities or group discussion to be done effectively and they believed that classroom arrangement that allow students to walk around will improve the atmosphere of SCL classroom as students will be more motivated to learn. For example, one of the respondents stressed that:

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The arrangement of tables and chairs in the classroom must be following the 21st Century Learning style and then our schools also provide mini whiteboard for the students to ask questions or to write down their ideas. (I3_23)

The above excerpt suggested that Malaysia Secondary school classrooms are equipped with proper facilities that can be utilised fully for the implementation of SCL. Seating arrangement in the classroom will help in nurturing cooperation and collaboration among students. Make good use of the existing resources is actually a better measure to start SCL rather that investing new facilities in schools. Aside from well organised classroom arrangement, systematic utilising of diversity of teaching aids or relevant resources will be able to sustain students' attention and thus motivate students to engage actively in learning.

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When respondents are asked about their colleagues' opinion on SCL, they addressed that most of their colleagues are positive in implementing SCL because they believed that SCL has become more of a necessity and norms nowadays. One of the respondents claimed that:

Teachers show positive response towards implementation of SCL and they are willing to carry out SCL in their daily classroom. (I9_35)

Respondents reviewed that most of their colleagues in school can accept the concept of SCL and they tried to implement SCL in some of their daily classroom practice. According to the respondents, they can accept with open heart about implementation of SCL as they found that SCL allow them to have variety of activities in order to make their classroom interesting besides encouraging independent learning

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among students in schools. However, it was found that there is a consensus among the secondary schools' teachers where they addressed that SCL does not merely involve students but teachers or educators play an important part in enabling a successful SCL in the classroom.

4.3.3 Readiness to Adapt SCL From Students' Perspective

Regarding the responsibilities and roles of students in SCL, it is vital to draw attention about students' readiness in adapting SCL. Students positive perception and readiness towards SCL are the salient factors that will influence the success implementation of SCL. According to Pederson and Liu (2003), students will set their own target in SCL and they are utterly accountable for their own learning process while teachers only act as supervisor or facilitators. The great interdependence between teachers and students will be able to attribute to the success of SCL and thus make learning more meaningful in a daily classroom. A few interview questions had been designed to find out what students think about SCL and thus explore their readiness in adapting SCL. The responses provided by the respondents also lay out some idea to us about whether in daily classroom practice which were given to them are designed as SCL or not.

When respondents were interviewed, they had already experienced SCL especially in Science classroom. All the respondents mentioned that they did experiments in the Science classroom including Biology, Chemistry and Physics classroom. They understood that carrying out an investigation through experiment is an example of activities in SCL and most of the respondents expressed that they love to

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involve in doing experiments or some hands on activities rather than just sitting down listening to lectures or teaching by their teachers. One of the respondents stated that:

> *We are asked to do experiment in Physic, Biology and Chemistry classrooms. I like to do experiment where I have chance to use the apparatus in the laboratory and it sounds cool when the results of the experiment were the same as the theories in text books. (I21_09)*

Science experiments involve active learning of students where students will be able to work individually or work in groups to solve a problem or generating data and then comparing experiment results with some Science theories. Respondents mentioned that they will be required to answers a few questions from teachers after doing the experiments and they were able to understand certain theories better by doing experiments. Perhaps, when the experiments' results are surprising and convincing, students are in position of meaningful learning and building ownership of knowledge. Frank (1997), suggested that when students engaged in an experiment related to the homework given, they will be able to answer the questions of their homework correctly and better.

Besides experiments, respondents also mentioned that group discussion had been carried out in their Science classroom as well. They mentioned that a topic or question will be given to the students and then they are required to sit in group to find out the solution for the topic or problems given by their teachers. Respondents knew that group discussion is also an examples of activities of SCL as their teachers always highlighted that group discussion is important and allow two ways communication for each other. The reviews of the respondents include the following:

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Teachers encourage us to express our opinion in group discussion and encourage us to participate actively in group activities. (I23_14)

Teachers told us that we must involve actively in discussion especially in a SCL classroom. (I26_18)

These are evidence that SCL had been enrolled in Malaysia secondary school daily classroom practice. Classroom discussion can be utilised for all subjects and when it is systematically instructed, learning will be meaningful especially when all students participate actively in the group discussion (Hollander, 2002). Teachers somehow play an important role in making discussion meaningful by regulating the discussion systematically and properly. As a facilitator in a SCL classroom, teachers should feel free to engage themselves in the discussion between students to ensure that the discussion is on the right track according to the aims of the discussion. When the respondents are asked about the things they like and dislike in SCL activities, they gave different opinions based on their personal experiences in the daily classroom practice. Some of the respondents addressed that they prefer SCL while some of the respondents prefer the mixture of SCL and teachers-centred approach. One of the respondents stated that:

When all the students are talking at the same time, the class is noisy and I cannot concentrate in what I'm doing. (I21_18)

Respondents understood that collaborative and communicative skills can be obtained through group discussion but some of them prefer to work alone and solve a task independently. One of the respondents mentioned that she will feel annoy easily

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when only certain students in the class dominate the talking in a particular discussion while others are not given the chances to talk. However, the respondents addressed that if the group discussion is well managed and all the group members involved actively in meaningful discussion, it is a fun way of learning though.

When respondents are asked about what they like in SCL, they managed to list out a few advantages of SCL. Most of the respondents agreed that students-centred activities allow them to express their opinions, exchange information with friends and also allow them to govern their own learning process. They will not feel boring by just listening to the teachers' teaching and by engaging themselves actively in activities will prevent their mind from wandering away. The following is one of the excerpt:

> *I like students centred activities such as experimenting and field work because it is not boring and I can communicate with my friends on certain topics. (I24_24)*

Respondents shows positive perception on the implementation of SCL in their daily classroom practice. They agreed that by involving actively in learning, they will be an active knowledge seekers and they will be more motivated to search for information when they are given the opportunity to do so. This is aligned with the previous studies by Golightly and Muniz (2013) that mentioned that students will be more motivated and self-directed in learning when they are actively involved.

In addition, respondents admitted that they had learn to gain knowledge via diversity of methods in SCL besides the expanding learning space. Respondents said that they gain knowledge not only in the classroom but also in the library, laboratory

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and even at home. Most of the respondents mentioned that they like the way teachers use variety of methods in delivering knowledge and information to them. Below are the brief excerpts from the respondents:

> *I think it is fun when we learn through video, camera, experimenting, acting and field work. (I25_31)*

> *I always search for information through internet and sometimes my teacher will give us a task through Whatsapp or telegram. (I24_33)*

In SCL, the notion of classroom has evolved and expanded where learning is not limited in a classroom anymore. Learning process involve variety of materials and it can happen in everywhere in the school or outside the school. Besides, virtual classroom has gain attention of teachers and students in parallel with the development of technologies and communication. All these classroom capabilities had sparked the interests among students in secondary schools. Variety of electronic devices can twirl any places outside the classroom into informal learning places and students are given opportunity to learn wherever they are.

4.4 Challenges in Implementing SCL

Challenges in this context of study constitute the issues in implementing SCL in Malaysia Secondary Schools. According to the teachers and students who have responded in this study, it was found that there are some issues in implementing SCL in Malaysia secondary schools. Based on their experiences, issues in implementing

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SCL are mostly came from educators, learners, curriculum syllabus and also limited resources. This part of the study discusses about the issues examined both from the teachers and students' perspective. Some suggestion to ameliorate the issues will be discussed as well.

4.4.1 Challenges In Implementing SCL From Teachers' Perspective

Time factor is the main constraint consistently mentioned by the teachers and lack of time had been determined as the major challenges in implementing SCL. Most of the respondents disclosed that by adopting SCL, more time will be spent and hence risking successful completion of certain syllabus especially for Science subjects. Respondents cited that time constraint in adopting SCL in the daily classroom is attributable to the overcrowded syllabus of Science subjects. The respondents endorsed that:

> *By carrying out SCL, I will not be able to finish my syllabus. (I3_33)*

> *need to carry out extra classes during the weekend in order to finish my syllabus in Physic and lack of time is the major obstacles for me to carry out SCL in daily classroom. (I12_35)*

Almost all the respondents were concerned about stress of time in completing the syllabus if SCL were to be adopted in daily classroom practice. They emphasized that the time allocated per week for Science subject is insufficient especially for subjects like Biology, Chemistry or Physics and time constraint can be a large obstacle for them to deliver knowledge to their students. Respondents highlighted that adopting

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active learning in classroom will increase the time required to complete the overloaded syllabus of one subject as they need to spend more time in preparing and designing the students centered classroom. One of the respondent even mentioned that talk and chalk was a convenient and efficient way to impart knowledge to the students.

Time pressure should not be the bottleneck in implementing SCL in Malaysian secondary schools as this stumbling block can be solved by handling active learning activities in a well-organized way. Teachers can actually tune the approach by preparing SCL activities earlier for a certain topic as the well-planned activities will guarantee a success in active learning classroom. If group presentation were to be carried out in a classroom, the topic involved should be given earlier to the students so that they have enough time to prepare and search for information needed for the presentation. Teachers should be able to make changes according to the need of situation and then continuously reflecting their teaching practice to create a meaningful learning classroom that will benefit the students.

Besides that, teachers should promote deep learning that encourages students to construct their own knowledge rather than rushing to complete a syllabus. More autonomy should be given to students in conducting their own learning style and thus make their learning meaningful. Focus on how students learn is more important than rushing to complete a syllabus (Blackie, Case & Jawitz, 2010). Teachers may think that active learning activities that involve students will take more time than just lecturing but however, teachers need to contemplate the aim of education whether to just pass the examination with flying colours or to develop the life-long learning skills among students. Luckie et. al (2012) also highlighted that education should be able to promote

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deep understanding on the discipline we teach. In SCL, teachers need to rationalize the content enfolded in the subject in order to make SCL a great success.

Some of the respondents were also in dilemma between encouraging deep understanding through students centered activities and preparing students for the pen-paper examination which is normally devoted for cognitive purpose but not on holistic development among students. Two of the respondents reported that:

> *In group presentation, students will only look for the information related to the topic given to their groups. (I3_43)*

> *Students centered activities such as group presentation will not prepare students to sit for examination confidently. (I18_56)*

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Examination system is seen to be one of the challenges in adopting SCL in Malaysia secondary schools. Placing students in tertiary education is based on the scores or grades of students in standardize examination such as Malaysia Certificate of Education that will be taken by all the fifth-form secondary schools students and teachers are worry that students centered activities such as presentation, field work and group discussion will not ensure good scores in the examinations. Respondents pointed out that through group activities such as presentation or discussion, students will only focus on certain subtopic without concerning about other topics given to other group members. Perhaps, students can actually learn about other subtopics by directing some questions to their friends in other groups. Meaningful knowledge transfer will take place when students involve actively in presenting and arguing opinions with each other. Willington (2006) stated that SCL encourage significant learning process and

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therefore disregarding SCL is similar to promoting information feeding rather than deep understanding that equip students with useful living skills in time to come.

On the other hand, some respondents are worried about the suitable classroom assessment method for a SCL classroom. One of the respondents raised that:

> *I'm not sure on the types of assessment that can be used to reveal the students' achievement in SCL classroom.(I19_72)*

Respondent understood that classroom assessment as one of the most important elements in education and the outcome may determine the success of SCL classroom. Therefore, it is vital to employ the most suitable assessment method and it must be carried out professionally. In SCL, there emerge some issues concerning the concept of student assessment as assessment often involve comparing one student to another and consequently emphasizing competition but not about individual achievement or improvement. Respondent worried that giving marks or grading a student will generally over-highlighted while motivating or advice about the importance of learning will be under-emphasized.

Within SCL approach, classroom assessment techniques will gradually replace the pen-paper examination system that normally used to access the students' capability in certain subjects. Without hesitation, pen-paper examination is an easy tool to determine the efficacy of teachers' teaching method by assessing to the students' progress. However, there are some downsides of pen-paper examination where it only tests the students' ability under set condition within limited time. SCL emphasizes on deep learning and growth where students involved actively in setting goals for their

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own learning besides monitoring their own learning progress, classroom assessment practices have possibilities to not only enable students in mastering core content knowledge but also expanding their self-regulatory habits (Andrade,2010). The best form of assessment is the one that aligned with learning goal. In a SCL classroom, students should be enlighten about the types of classroom assesment that will be used and about what is the criteria that will be employed. Variety of assessment methods can be employed by teachers in order to assess learning outcome, for examples take home assignment, open book test or even oral communication.

Furthermore, respondents also identified that large number of students in a class as a barrier to implement SCL successfully in Malaysia secondary school. Dealing with large number of students in a big classroom add up the obstacles to teachers to adopt SCL and it is a real challenge for teachers to make learning meaningful as there will be diversity of students with diversity of capabilities or behavior. Respondents made the following statements:

Not all the students will discuss actively in group activities. (I15_43)

It is difficult to conduct group activities in large classroom and the noise level is unbearable. (I17_51)

Some of the students are too passive and will not talk in front of a big classroom. (I20_44)

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Respondents revealed that large number of students in a classroom will limit the participation of students where normally the students with better academic performance will do the talking during students' activities while other students are only being passive or quiet in the classroom. According to the respondents, there will always be some problems in conducting activities in an outnumbered class including the noise and also it is not easy to conduct activities that meet every student's needs. Planning activities that suitable for students of different capabilities and different learning abilities constitute a great challenge for teachers in carrying out SCL in the classroom. Respondents agreed that large number of students in class will inhibit teachers from adopting SCL. They are not able to devote time to each student but spending more time in controlling their behaviour.

Respondents' opinion about large number of students in a class as a challenge to implement SCL is somehow in line with some previous studies. Hockings (2005) had stated that types of activities that can be done and active participation of students are restricted if there is large number of students in a classroom. Moreover, Muryan-Kyne (2016) also mentioned that small number of students in a classroom is more likely to create a conducive SCL environment that promote meaningful learning among the students. Nevertheless, managing a large number of students systematically will be possible if teachers plan activities wisely and make good use of their expertise. Activities such as think pair share is an alternative way that will encourage passive students to talk and prevent them from being lazy as well. Group activities can be done by including fewer members in each group and always ensure that students sit in round circle where everyone could have an opportunity to voice out their ideas on topic discussed. As suggested by Muryan-Kyne (2010) in her study, teachers' initiative and

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willingness in adopting SCL has greater impact in making SCL a success rather than the number of students in a large classroom.

The issue of confidence also has been discussed by some of the respondents and they claimed that lack of confident as one of the challenges in implementing SCL. Following are the excerpts of the respondents:

I'm worry that I will lose control over the class especially during group activities. (I18_54)

I don't have adequate skills to conduct SCL in Science subjects. (I19_62)

Respondents showed anxiety towards teaching science subjects in a SCL classroom. They remarked that they were uplifted and raised with a traditional teachers centered method throughout their teaching life and they were afraid of stepping out from the comfort zone. This finding is parallel with the previous studies by Bates and Townsend (2007) that mentioned that it is not easy to substitute the culture of teacher centered in education. Besides, Saddler (2012) also mentioned that most of the teachers who are lack of self-confident in their discipline manner will refuse to reform and they will avoid SCL in the classroom practice.

Teachers should not only be the individual that implement a curriculum based on instructions and guidelines but also play an important role as an educational researcher. Teachers need to be positive and involve actively in prospering their teaching profession. They are the key factor that help in evolving education and they are the main character in the making the reform a success. All the teachers should

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therefore be able to contemplate on the process of their learning and teaching through continuous engagement with information of the subject matter, innovation, research and social dimension.

4.4.2 Challenges In Implementing SCL From Students' Perspective

Students serve as the 'customers' in education society whereby they are the one who will receive education to help them grow mentally and physically. Therefore, it is pertinent to discuss challenges in implementing SCL from students' perspective if we are aiming for a viable SCL implementation. This part also serve as a unique perspective since Malaysian students are slowly adapting to a more independent, self-directed learning model as being devoted by SCL realm. A concerted effort by variety of stakeholders to assist school and students venturing into SCL serve as a catalyst for a successful implementation of SCL.

Being an active learner in the classroom had been identified as the main challenge for the students in adopting SCL. All the respondents from the group of students stressed that they do not know on how to be an active learner in the daily classroom practice and they claimed that they cannot be the active learner in all the subject matter. This was obvious from the statement made by two of the respondents:

> *I'm not able to talk and give opinions in all discussion carried out in school. (I23_43)*

> *I will not talk if I do not know my group members. (I24_40)*

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Respondents also mentioned that they are not able to talked unless there are provided sufficient time to prepare for the discussion and they feel more easy to just listen to teachers especially to subjects such as Biology and History. According to Chan Yuen Fook and Gurnam Kaur Sidhu (2014), active learning does not mean that only entailed actively in talking but also necessitated in active thinking and searching for information. If someone has been attentively involving in looking for information or listening to a group- discussion, he or she can still be identified as an active learner.

On the other hand, respondents also cited that projects or assignment which are common in a SCL classroom as a burden and challenge for them. This can be proofed by the following excerpt:

> *In SCL classroom, many projects or assignment will be given by the teachers and I will need to stay up late to complete the projects on time. (I22_44)*

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Respondents mentioned that they had to spend a lot of time and money to complete a projects or assignment given by the teachers and some of them are scared of open-ended directions given by their teachers. Respondents stated that they were not confident to complete a task by themselves besides being terrified of making mistakes or errors. Perhaps, students need to be exposed to more problem solving opportunity and when they utilized the problem solving skill routinely, they will be more effective and confident in all situations including deeper understanding in certain subject matter. Downing et al. (2009) iterated that students will develop their meta-cognitive skills through projects or assignments as it provides an environment for the students to arrange potential solutions to certain problems involved. Moreover, projects or

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assignments will also prepare an environment for the students to interact with each other and then develop meaningful problem solving skills (Marx et al., 1997).

Furthermore, respondents claimed that they do not have enough time to visit to school's library to look for information needed in a project or task given by their teachers. A respondent stated that:

> *I do not have time to visit the school's library to get information for my projects. (I23_46)*

Respondents mentioned that library is the powerhouse where variety of information is found but they do not have sufficient time to visit to library and there is no specific time allocated for them to go to library in SCL classroom. In their opinion, library is a place where they can get useful information or resources that certainly will bring them to the level of excellence in the project given by their teachers. Some respondents viewed that school library as the only source for required information without realizing that many information has been distinctively transformed from printed books into electronic forms. In this era of technology, students should be able to adapt to the modern technologies in order to get information in the fastest way through internet or other electronic media. The mark of success in SCL lies in the student's capability to search for new facts or information for themselves to supplement what they learn from their teachers in the classroom. Students who are information literate can be very competent and independent learners in SCL. Pennell (1999) stated that students who are able to engage themselves actively in searching information will be able to exhibit confidence in problem solving as they will be able to manage

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comfortably in whatever circumstances where there are various answers as well as without answers.

When the respondents were interviewed, they had attended in at least one or two classes that involved SCL and all the respondents reported that they do not know what would be expected from them through SCL. The respondents expressed that:

I'm nervous and lost. (I24_47)

I'm not sure that what I learnt is important. (I23_44)

From the above excerpts, both respondents were in confusion and that is typically happened in SCL class especially for those who are not accustomed to SCL. This is largely contributed by the dependency of the respondents during the learning process. Learning on how to function as an independent learner in SCL classroom while trying get good result at the same time had seem to be very challenging for some of the respondents. In SCL, students need to decide on their own learning pathway without fully depending on their teachers. Hence, this will cause the students to feel nervous and lost in their learning classroom. Students need to be trained to be more self-independent in learning and able to make their own decision. They might not see the important of self-learning as they do not feel the ownership of learning. Teachers need to give them space and trust to learn on their own besides being facilitators by their side. Perhaps, teachers can inculcate the principles that everyone is different and allow students to act upon their environment.

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In this era of technology, most of the students in the secondary schools are tech savvy and manage to handle electronic devices well. However, poor internet coverage or absence of internet at home had been identified as a challenge for the respondents in a SCL classroom. Respondents addressed that insufficient internet connectivity at school or at home will make the implementation of SCL became feasible as they cannot access to extra information to complete the task given by their teachers. One of the respondents stated that:

> *I do not have internet at home and I always cannot complete my assignment properly. (I22_56)*

Respondents blamed that most of the assignment given by their teachers need to be completed by searching information online at home. They faced difficulties in completing the task when there is no internet connectivity at home as they will not have adequate information to get their project done and they feel that they are falling behind in SCL. There are some proposed solutions. First and foremost prerequisite to success in SCL is the well time management of students themselves. Before they went back to their house daily, they can always visit to the school library or even school computer room for printed resources and electronic resources that are needed for their assignment. Kelly (2002) in her study had stressed on the importance of students having consciousness of time and the activities that fill up one's time. It is known that effective time management can ensure that students complete more tasks in less time and to ensure the success of SCL.

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In the SCL learning classroom, teachers should allocate special time for students to visit to school library for information searching in order to complete one particular project given. This will help the students who do not have internet at home to complete their project. By doing so, information literacy will be developed among students where students will be able to identify, arrange and analyze information independently. Teachers can also act as facilitators to help students to look for credible information that is proofed by empirical studies or scientific research. According to Humes and Barbara (2002), teachers must evolve from information giver to a coach who find ways to ensure students not only using classroom resources but also materials from library or electronic devices. Becoming information literate will equip students for independent lifelong learning and make SCL a success. Lenox (1993) also mentioned that teachers need to help their students to be a brilliant users of information. Every students need to know on how to solve the questions given by their teachers by seeking information from various resources in order to do well in a SCL classroom.

4.5 Insight for PBL Teaching and Learning

In accordance with the finding, a problem-based learning (PBL) for a biology topic will be developed. By employing the empirical information in developing an educational module, it is pinning a hope that the educational module developed will correspond well with the local conditions besides resembling the current classroom practice. It was found that the awareness and readiness to implement SCL among school teachers, administrators and students appears to be in the middle of continuum. Respondents

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were positive about implementing SCL in their daily classroom practice but were hung back due to some perceived challenges.

Respondents including teachers and students were aware that SCL involve active participation of students and they also aware that SCL emphasize on students' activities in their daily classroom practice where students are accountable for their own learning process. PBL is one of the student-centred approach that involves students actively in solving problems and it is contrasting with the traditional teaching practice where teachers deliver concepts or facts of certain subjects without involve students actively. In PBL, students will be able to foster active learning and develop lifelong learning skills as PBL confront students with problems that will encourage the buildout of deep learning. According to Draghicescu (2014), PBL is appropriate especially for science learning including Biology, Physics and Chemistry as it involves real-life problems that stimulate curiosity or intrinsic motivation among students.

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According to one of the respondents in this research (I12), Biology is considered as a difficult subjects for many students as it consists of many theories and need a lot of understanding. Respondent was aware that SCL can be practiced in her daily Biology classroom but was worried that important concepts will not be able to be delivered to students as planned. Perhaps, by practicing PBL or using PBL module in Biology subject is an effective way to encourage students to think critically and at the same time improve their problem solving skills to assimilate important theories or concepts across numerous disciplines.

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Furthermore, from the research findings, it was found that SCL had caught the attention of respondents who are from the school administration group (I4, I5, I7, I11, I12,I19). They encouraged teachers to practice SCL and positive environment had been provided for the teachers to carry out SCL including having in-house training for the teachers. It was interesting to find that some of the respondents from the administration group knew about PBL and they came across the concept of PBL when they were still in universities. The following is one of the excerpt:

> *PBL is a learning strategy that involves problems where students learn to solve a problem by themselves. (I4_96)*

Respondent saw the potential of PBL and willing to support the implementation of PBL as it was envisaged that PBL will bring a lot of benefits to the students especially in developing problem solving skills. It was probably on the basis of PBL implementation, the enthusiasm and support from the management will eventually lead to school-wide implementation or establishment of PBL. However, it should be noted that PBL was still new to some of the respondents, a proper and systematic planning will serve as foundation for PBL to be effectively initiated, implemented and then sustaining momentum. PBL practice in secondary school classroom should be started with the articulation of objectives and educational benefits that we hope to bring including focusing on the scope, time frame, sources and even on how it can be accomplished.

Whilst top-management support may be given, there are always some other issues/ criteria that need to be looked into. The very first thing is pertain to mindsets and paradigm shift. People might be very sceptical if they do not know how PBL works

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regarding the convincing rationale of PBL. It will be uneasy to implement PBL or develop PBL module if teachers do not understand the extent of role change and the path from teacher to facilitator if often an uneasy one. Ertmer and Simon (2005) also mentioned that many teachers are lack of confidence to practice PBL despite knowing it's potential benefits. PBL design, facilitation and curriculum assessment must be exposed to all including teachers and students. Implementation of PBL and developing of PBL module must aim to achieve the objectives within budget, on schedule and the desired quality through systematic organization or implementation.

Implementing PBL and developing PBL module should not be in an accelerating manner as it can be initiated in a small yet manageable learning unit with the aim to avoid cultural shock among students in the daily learning classroom. A few insights were obtained from the findings of the research. First and foremost, secondary school students need some training so that they are well prepared for PBL. Students need to aware that PBL is a form of student-centered pedagogy where they learn about some new knowledge and develop a new skill through the experience of solving problems. Training that can be carried out in order to expose students to PBL can be in a form of simple workshop during out-of-class time to enable them to experience PBL scenario, learning process and also the assessment of PBL learning. Perhaps, PBL can be adapted in any subject area with a little creativity and incorporated into any learning situation (Dutch et all, 2001). PBL need to be introduced carefully and gradually to students where students are given chances to acquire successful learning skills at the beginning of PBL and then actively resist to the new learning approach.

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Besides that, a handy guidebook about implementation of PBL is crucial and must be prepared to help students see the importance of learning through PBL. Students nowadays need justification and rationale of doing any action or else they will not foresee the benefits and importance of PBL. A guidebook will be able to provide students with an overview about PBL structure, cycle and even time frame. A guidebook that explain what PBL is and how it works in terms of what students might experience is important and may enhance the success of implementing PBL in their daily classroom. It is very challenging to shift students' mindset from one of spoon feeding to a self-directed learning such as PBL. It was found that some of the students are locked into narrow perceptions where they only want to know how and not why. Therefore, a handy guidebook or orientation is needed in order to help students to get an idea about PBL and thus make them realize that expectation of education nowadays is different.

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Successful implementation of PBL or developing a PBL module do not come easily as there are no magic wands. Preparing teachers for PBL is crucial too as some challenges and issues might be arise when implementing PBL in the daily classroom. A wealth experiences of PBL are required in order to help teachers understand the nature and reality of PBL. However, there are some methods needed to prepare teachers for PBL and also to ensure success in PBL. According to Boud et al (1985), workshops that combine action methods and reflection manage to assist teachers prepare the role change by enabling them to recognise the relationship between their current teaching practice and also their belief about learning. Teachers need to aware about their ultimate goal of teaching. Moreover, a problem solving workshop must be given to teachers as it will be difficult if the teachers themselves have not develop problem solving skills

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completely. PBL workshop for teachers might help teachers to change their perception as teachers and learners. They will be more prepared or more tolerant to uncertainty and at the same time be more comfortable with the complexity of PBL. Without hesitation, commitment or determination are important, but self-knowledge and considerable understanding of PBL are important too in order to make PBL a success.

Some of the respondents mentioned that students might not involve actively in discussion during SCL and they also afraid that they will loss control over the class when SCL is carried out in their daily classroom. Perhaps, students play a dynamic role in PBL learning. In PBL classroom, the scenario presented will focus students on authentic problem and then outline the particular details that need to be addressed. In the first place, students will work alone or carry out some research and then working in a group respectively to collaborate about their finding or presentation, where everyone is responsible in addressing one of the question presented in the problem scenario. Generally, students will feel ownership of the problem or task given to them. During discussion within groups, students will gain more information and thus they will re-examine their ideas and then work to improve their information or ideas. PBL inspire students to test their idea against alternative opinions or views and then provide opportunity for reflection.

On the other hand, it is found that respondents including both teachers and students understood that in SCL, teachers only act as facilitator where most of the learning is carried out by the students themselves. However, one of the respondents (I24) mentioned that he feel lost and did not know what is expected from him even after he had attend two SCL classes. Facilitation is the hallmark of PBL At the beginning of PBL implementation, teachers should recruit a more structured and concrete

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facilitation. Teachers should coach and facilitate students in gaining confident to become an independent and self-directed learners. This measures serves to support students' learning besides sustaining their motivation in learning through PBL. As the PBL classes proceed, teachers may reduce the amount of coaching or facilitation to allow more authority for students to take charge of their own learning. Towards the end, students are expected to develop a kind of independency in their learning process. Teachers' role in PBL is different as PBL entails getting students to seek their own solution and explanation.

Problems are one of the key elements of PBL. A PBL classroom starts with a problem scenario that serves as a central point of learning. The problems can come from a great variety of sources including textbooks, newspapers or movies while a good problem scenario is outlined to consider students' previous experience and able to involve students actively in learning. Grasha (1996) also mentioned that PBL is successful if the problems scenario designed are of high quality. In general, problems are designed according to specification derived from experiential knowledge and some theoretical principles. A good problems scenario will be able to inculcate learning competencies among students and then drive them to the learning goal. The research findings imply that a highly structured problem scenario may be established at the beginning of PBL implementation in order to familiarize students with handling problems and thus allow them to develop problems solving skills progressively. Then, as time passes, a less structured problem scenario (i.e: the problem scenario is more comprehensive and complex) may be implemented to strengthen students learning skills and inculcate learning autonomy.

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Time constraint had been identified by the respondents as one of the major challenge in carrying out SCL. Through PBL, learning is driven by the context of the problem scenario and it is not only bound to the established curriculum. In a PBL environment, students will need to identify on what and how much they have to learn in order to accomplish a specific task. In consequence, learned concepts and acquired information are connected directly to the context of learning situation. (besides that, one problem scenario can aimed to achieve different learning outcomes). PBL module can be used to teach an individual lesson, units or even the entire curriculum of a subject (Evan Glazer, 2010). Moreover, according to Chin and Chia(2006), teacher may think that they will cover less content, but actually offset by gains in extra knowledge, motivation to seek information and the acquisition of creative and critical problem solving skills.

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Besides that, some respondents reviewed that in SCL, students only will find info related to the topic given and this had been identified as one of the challenges in implementing SCL in their daily classroom practice. In fact, PBL will…..(selesai msalah ini). Before implementing PBL or using a PBL module, it is vital for teachers to identify the learning outcomes of a lesson. The problem scenarios that used in PBL must be geared toward achieving specific learning outcomes and teachers need to spot the type of problems that will help students to best communicate the information as students go through the process of solving the given problem. Besides, teachers can set some ground rules for the students on how the research of information can be carried out including resources that can be used and also about the contribution that need to be done by each students in the PBL classroom.

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During PBL, students will be put into groups and then given with minimum information on a problem scenario they are tasked to. Each of the students will then start to search for information regarding the problem scenario and then carry out discussion with other group members about the most appropriate approach to solve the problem given to them. During discussion, they will generate ideas and ask more question in order to find out the best solution for the problem given to them. Thus, students will be able to explore the problem from various disciplines and perspective. Besides, even though different problem scenario will be given to different group respectively, but they are actually aims for similar learning objectives.

From the research findings, facilities and learning spaces are distinguished as challenges for teachers to carry out SCL in their daily classroom practice. However, the existing facilities and learning space in Malaysia Secondary schools were still consider practicable for the implementation of PBL. PBL highlights collaboration and group work where teachers can always plan or rearrange the classrooms setting to inspire group discussion among the students. Despite the limited resources for SCL as claimed by some of the respondents in this research, teachers can actually help to spot the key resources for their students while implementing PBL in the classroom. Students themselves need to learn to pick out and utilize the available resources on their own but PBL will be more successful when teachers indicate some good resources to get students started in independent learning.

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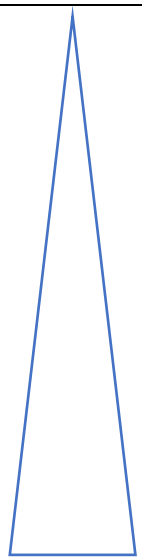
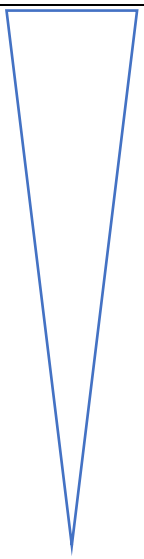
Stage of Implementation	Aspect of Continuum		
	PBL Problem Scenario	Training, PBL Guide and support	Facilitation
Early			
Middle			
Late			
	Difficulty of Problem Scenario is increased towards the late stage of implementation	Training, PBL Guide and support for both teachers and students along the stage of implementation	Amount of facilitation is decreased towards the late stage of implementation

Figure 4.1. Visualisation and summary of the aforementioned insights into a continuum of PBL implementation

4.6 Summary

The interviews with the samples had provided valuable information on the current status of SCL implementation in a Malaysian secondary school. The findings portrayed that the respondents were aware of SCL as an approach to encourage students to involve actively in learning and thus promoting a meaningful learning process. They were indeed aware about the new paradigm shift from teacher-centeredness to students-centeredness in the context of Malaysian secondary school. The samples also addressed the role of teachers as facilitators in SCL and in general, respondents demonstrated an interest in producing students with strong 21st century learning skills. However, the

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findings also indicate that the implementation of SCL in the selected secondary school is still in its infancy and a gradual stage-by-stage implementation of SCL in secondary school can be an alternative measure to ensure successful implementation of SCL.

While challenges are prevailing in every learning classroom, they can be countered by a few strategies as propose by the insights for PBL module development.

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CHAPTER 5

CONCLUSION AND SUGGESTION

5.1 Introduction

In this chapter, the summary of the study, conclusion of the answers for research questions and the implication of the study will be discussed. It will be highlighting the school's administrators, teachers and students' awareness and readiness in implementing SCL based on their perception and some implication of the study will be laid out. This is then follow by discussion on limitation of the research and this chapter finally ends with recommendation for future studies.

5.2 Summary of the Study

Education plays a paramount role in shaping the lives of individual and to the development of a nation. The best way to improve the personality of people, to provide mental and physical skills and to transform human's living status is through education.

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SCL is captivating a great deal of research attention internationally, driven by the growing concerns of educators of an ultimate teaching and learning methods including Malaysia. The main concept of this study is sparked by the focus of student-centred learning in the National Education Blueprint.

This research aims at answering the following questions:

i) What is the state of school's administrators, teachers and students' awareness and readiness in SCL implementation?
ii) What are the teachers and students' perspectives on issues in SCL implementation?
iii) How can the findings on awareness, readiness and issues in SCL implementation serve as insights to developing a PBL module?

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This is a case study research where the setting of study was at a national type of secondary schools in Hilir Perak, Malaysia. Case study was deemed as a suitable and yet appropriate research design as this research is aimed to explore a phenomenon in a specific geographical boundary. In particular, a qualitative and exploratory study was carried out to understand the awareness and readiness to implement SCL from the perspective of school's administrators, teachers and students. Besides that, teachers' and students' perspective on issues in SCL implementation was studied.

This study reports data analysis from 27 interviews collected from Principal, Head of Department, teachers and students of Malaysia secondary schools from Hilir Perak. 3 Principals, 3 Head of Science Department and 6 Head of Panel from 3 different secondary schools had been interviewed. Besides that, 8 teachers who are teaching

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Science and Biology from 8 different schools and 7 students from a secondary school were interviewed to garner important information for this research. In depth, semi-structure interview had been applied to garner information for this study. Interviews were employed to acquire comprehensive information from the research samples. The interview protocol was prepared prior to the interview sessions in order to provide guidance to researchers during the interview process even though the actual interview session may not comply with the protocol.

Inductive qualitative data analysis (Azungah,T. 2018) was used to analyse the interview data in this study. All the interviews were transcribed and the samples were required to verify the transcribed interviews. Three major themes had emerged from the data collected based on the analysis and interpretation process. Awareness about SCL, readiness to adopt SCL and issues and challenges in implementing SCL were the main themes indicated from the interviews. Findings show that teachers and students are aware of SCL as they managed to provide explanation and talk about the principles behind SCL. SCL has been defined most by teachers and students as a learning approach that involves students actively in the learning process which is in contrast with the conventional learning style where students are less given opportunity to convey their opinions or ideas. They realised that SCL involves the changes of roles and responsibilities between teachers and students in the daily learning classrooms.

Awareness of participants on SCL is generally inclined towards readiness and optimisms in implementing SCL in schools. As the data suggest, the readiness to carry out SCL in the perspective of schools' administrators and teachers appears to be in the middle of a continuum. The samples were positive and optimist about the implementation of SCL in daily classroom practice but they were hesitant due to the

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perceived issues and challenges. All these information gained through the interview serves an insight for PBL teaching and learning. It can be concluded that implementing PBL or developing PBL module should not be in an accelerating manner as it can be initiated in a small yet manageable learning unit with the aim to avoid cultural shock among students in the daily learning classroom who are used to teacher-centred learning.

5.3 Summary of the Research's Findings

Respondents comprised of teachers were well equipped with the knowledge about 21st century learning and they managed to picture SCL as one of the learning methods that focus mainly on students. Respondents were able to explain the characteristics of SCL classroom by stating various examples of SCL activities. Most of the teachers interviewed share the similar opinion that SCL provide freedom for students in searching and constructing their knowledge in daily classroom practice. In addition, students who are also part of the respondents managed to talk about the principles behind SCL and they perceived that SCL involves changes in the roles and responsibilities between teachers and students in the daily learning classrooms.

Most of the secondary school's administrators who are also part of the respondents in this study revealed that they are ready to adapt to SCL but they understood that the first few years of SCL implementation might be stressful for teachers as they need to plan some suitable activities that involve students actively to make learning meaningful. According to the school administartors, they are ready to

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provide helps in order to maintain the positive attitude among teachers towards SCL and they are also willing to provide advice to reduce the unavoidable stress among teachers.

Majority of the teachers interviewed seemed to share similar beliefs that SCL will bring advantages to the students in schools. Respondents managed to explain briefly about the advantages in adapting SCL in which the similar points of view are mostly related to the increasing motivation to learn, active involvement of students to search for information and also increasing self confidence among the students through group activities. It is very inspiring that all the respondents realised about the advantages of SCL and continuous practice of SCL for the benefits of students will contribute to the success implementation of SCL in secondary schools.

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On top of that, students who involved in interview showed positive perception on the implementation of SCL in their daily classroom practice. They agreed that by involving actively in learning, they will be an active knowledge seekers and they will be more motivated to search for information when they are given the opportunity to do so. This is aligned with the previous studies by Golightly and Muniz (2013) that mentioned that students will be more motivated and self-directed in learning when they are actively involved. Students' positive perception and readiness towards SCL are the salient factors that will influence the success implementation of SCL in daily classroom practice.

Over and above that, according to the teachers and students who have responded in this study, it was found that there are some issues in implementing SCL in Malaysia secondary schools. Based on their experiences, issues in implementing SCL are mostly

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came from educators, learners, curriculum syllabus and also limited resources. Respondents from this study were optimistic about implementing SCL in the daily classroom but were hesitant due to some perceived challenges. In accordance with the findings, a PBL approach should be implemented in secondary school's daily classroom practice. Primarily, the continuum for PBL scenario, PBL facilitation including PBL training, support and guide should be systematically mapped out to assure a success in PBL implementation in daily classroom practice.

5.4 Implications of the Study

Implication is one of the important subsection in a dissertation. It indicates the significances of the research study and how the research's findings may be vital for some educational practice or policies and thus ensuing subsequent educational research (Richard and Linda, 2007). In this study, there are three main implications that can be drawn from the findings. The three main implication are: curriculum design, teaching and learning approach and professional developments.

5.4.1 Implication for Curriculum Design

The findings of the research shows that most of the school's administrators and teachers were well equipped with the information about SCL and they were able to explain about the characteristic of SCL classroom. All the school's administrators and teachers revealed that they understood SCL as a learning process where students involved

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actively in variety of learning activities and students are given opportunity to construct their own knowledge according to their own research or findings. They were aware about the new paradigm shift from teacher-centred learning to SCL in the context of Malaysia Secondary schools. Participants of this study also addressed the role of teachers as facilitator in SCL will motivate students to involve actively in learning and thus inspire students to explore new knowledge or information. This research's finding implied that in curriculum design, SCL must include the idea where students have choice in what they study and how they study. However, many might think that to what extent can this be carried out in the Malaysia secondary school's context? Some might also worry about students hijacking the curriculum and then worsen our educational standards. Choice in the curriculum is not without its difficulties and perhaps teachers play an important role in guiding students toward meaningful learning.

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In implementing SCL in Malaysia secondary school classroom, curriculum is challenging and must be able to connect to real world's issue in order to hold up more in-depth engagement of students. Besides, students need to be exposed to content that is relevant to whom they are and whom they want to be so that to gain skills for their career in the future and to achieve their future aspirations. One of the students-centred approach to curriculum design which is PBL will allow for some choices within subjects that students may study. In PBL, students will have the opportunity to mutually set their own learning objectives or learning outcomes based on their prior knowledge. According to Boud and Feletti (1997), the use of problems or issues in PBL will inspire students to develop their own learning goals and thereby filling in the gaps in their knowledge or understanding. PBL is useful in addressing active learning aspect in SCL classroom. PBL that is coupled with high standards and rigorous student-centred

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content will be able to stretches students cognitively to think about big ideas from various or multiple perspectives. Other approaches to curriculum design that also support active learning among students include systems-based approach, resource-based approach and also personal relevance approach (Toohey, 2000).

5.4.2 Implication for Teaching and Learning Methods

A group of students who are also part of the participants in this research managed to provide brief explanation and talk about the principles behind SCL. They realised that SCL involves the changes of roles and responsibilities between teachers and students in the daily learning classrooms. Students were aware that SCL emphasizes on activities that involve students actively such as experimenting, group discussion and also group presentation. They share the same ideas with teachers about the classroom arrangement, activities and also the use of technology in SCL classroom.

These findings implied the needs of a few important strategies in implementing SCL in secondary school daily classroom practice. The main strategy is to ensure active involvement of students in acquiring information or knowledges and might include varieties of activities. It is very important to make the students more sensible of what they are doing and also why they are doing it. Besides knowing the content of a subject matter well, teachers should always plan suitable activities that enable students to learn and grow. Teachers are responsible in making daily lesson come alive by introducing certain topics of particular chapters and then having students explore it through activities such as problem solving, collaborative group discussion or hands-

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on-task where students are given opportunity to think, explore and then communicate with their friends in daily classroom practice.

In addition, focusing on interaction such as group discussion or tutorials in classroom is another strategy that need to be highlighted. Positive teacher-students or students-students relationship indirectly encourage students to involve actively in learning and boost their enthusiasm to learn. On top of that, teaching and learning in PBL is largely focus on transferable skills (Washer, 2007). Main transferable skills in PBL such as problem solving, analytical reasoning, leadership and adaptability should be taught in daily classroom practice and students should be made aware of how the skills they learnt will be important in their future life. Teachers and students need to engage themselves proactively with transferable skills training rather than just taking the purely remedial approach. Transferable skills are differ in terms of how tangible they are and how they should be best be delivered in the school curriculum. Teachers should be more attentive on how the transferable skills are introduced in daily classroom practice as not all the skills can be fully addressed in all the subject matters. An appropriate and proper spiralling should be included with chances to have some attempts at learning skills in various subject and most importantly the time interval to reflect in between. Moreover, teachers need to be aware that students are not homogenous and their educational or social background need to be considered in terms of aptitudes for different skills.

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5.4.3 Implication for Professional Development

On the other hand, the finding of this study provide evidence that SCL might be a valid priority that needs attention from all. From the findings, it can disclosed that school administrators are ready to implement SCL in school and teachers are always encouraged to practice SCL in schools. Respondents revealed that an effective administrators group in school will be able to promote a positive climate in order to implement SCL successfully in school. They also realised that teachers need to be provided with professional learning programmes and also continuous professional development or courses to obtain the best practice of SCL among teachers. Teachers training institution including UPSI, Faculty of Education in each university, Institute of Teacher Education College need to maximize the integration of PBL into the teacher training courses as this will help to enhance and thus escalate the pre-service teachers' knowledge in the following ways such as: establish professional knowledge in education, construct professional communities, enhance critical or reflective abilities and then cultivate positive mind set in learning. A well and systematically planned teachers training course will enable the pre-service teachers to develop a deeper understanding of the principles of instruction course through PBL and then learn to implement PBL in the teaching later. On the other hand, the in service teachers need to attend courses about SCL from time to time in order to enable teachers to practice the best approach in their daily classroom practice to promote meaningful learning among students.

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Teachers who are going to practice SCL in their daily classroom need to acquire necessary and proper skills during their training to ensure successful implementation of SCL in school. It is also suggested that teachers are taught using more SCL approaches when there are in the teacher training institution so that they will be able to experience or witness the application of SCL approaches in practice. Hence, they will reach the 'apply' level of learning and this will make them more confident to apply SCL In their daily classroom practice.

In addition, teachers who are also respondents in this study reviewed that most of their colleagues in school can accept the concept of SCL and they had tried to implement SCL in some of their daily classroom practice. According to the respondents, they can accept with open heart about implementation of SCL as they found that SCL allow them to have variety of activities in order to make their classroom interesting besides encouraging independent learning among students in schools. However, a skilled teachers is important as they will be the one who are going to communicate the SCL approach to their students in class. Teachers play an important role in guiding students and ensure the learning process is align with the expected outcomes. Teachers need to arrange some strategies in order to make SCL a success.

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5.5 Suggestion for Future Research

Within the confines of resources and times, this research only involves perception of students from only one secondary school. Although this is a qualitative-oriented study that focusing on a specific set of participants and do not aim for generalization, the

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study could be expanded using quantitative survey methods to reach to wider participants. Combination of both qualitative and quantitative methods in data collection will enhance the robustness and reliability of the claimed. Data triangulation will help to increase confidence in research data and thus creating innovative ways of understanding a phenomenon or providing a clearer understanding of the problem (Thurmond, 2001). Triangulated techniques are found useful for cross-checking and often used to provide confirmation or completeness of a research (Guba & Lincoln 1989; Patton 1990).

Trustworthiness, reliability and consistency of feedbacks that attained during the interview session is another concern in this research. Despite all measures taken by the researcher to obtain reliable data, the participants in this study might not answer the question sincerely as they might be reserved in giving a sincere answer. All these will have impact on the reliability and accuracy of the findings in this research. On the other hand, researcher bias is another limitation of this study that need to be taken into account. It was found that conversational nature of a qualitative research tends to cause researchers to neglect some comments that are not the formal part in the interview and then exclude certain comments made by participants of the studies (Yin, 2016). In addition, Ravitch and Carl (2016) also mentioned that bias can also happened where researcher views that participant are impaired or lacking in knowledge and skill. However, researcher had remind all the participants in this study that they were experts in their own field and they can answer the interview freely.

Besides that, this study only involve teachers who are teaching Science subjects in STEM classes, which limits generalizability to teachers in other subjects area. Further research may involve more teachers from different subject areas. The findings

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could be compared between teachers from different subject option to ascertain how they perceived SCL and PBL from different backgrounds.

According to the research findings, it was revealed that most of the students had already experienced SCL especially in Science classroom. All the respondents from the students group mentioned that they did experiments in the Science classroom including Biology, Chemistry and Physics classroom. They understood that carrying out an investigation through experiment is an example of activities in SCL and most of the respondents expressed that they love to involve in doing experiments or some hands-on activities rather than just sitting down listening to lectures or teaching by their teachers. Based on this finding, it is identified that perceptions and experiences of students in SCL is an important field to explore in the future research. One of the basic fundamental of SCL is that students must be the centre of learning in the classroom practice where students are responsible for searching information while teachers only act as facilitators. Accordingly, future research on students' perception and experiences in SCL could contribute to a better understanding of SCL context in Malaysia secondary schools.

Moreover, for the population and sampling method, a bigger number of participants can be comprised for different categories of participants including students and top management from more daily schools and also boarding schools. More teachers with different years of experience or teachers who were graduated from different teaching programme can be selected as participant through purposeful sampling and thick description of the participant's experiences. According to Bloomberg and Volpe (2019), purposeful sampling and thick description of participant's experience will be

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able to allow readers of this study to determine whether the similar result can be correlated to their communities or setting.

5.6 Summary

This study explored on awareness, readiness and issues in SCL implementation in their classrooms. According to the result of the study, teachers have shown good understandings on the principles behind SCL However, it was found that due to the challenges and difficulties caused by various factors have hindered them from implementing SCL in their daily classroom practice. Lastly, it was suggested that, in order to implement a successful SCL in the Malaysian teaching and learning scenario, the problems that are hindering the SCL implementation should be solved. Looking ahead, further expansion of SCL across region may hinge on policy makers, school leaders as well as community member to work together to diminish barrier and then enhance support to SCL learning practice in classroom.

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Appendix A

KEMENTERIAN PENDIDIKAN MALAYSIA
MINISTRY OF EDUCATION MALAYSIA
BAHAGIAN PERANCANGAN DAN PENYELIDIKAN DASAR PENDIDIKAN
EDUCATIONAL PLANNING AND RESEARCH DIVISION
ARAS 1-4, BLOK E8
KOMPLEKS KERAJAAN PARCEL E
PUSAT PENTADBIRAN KERAJAAN PERSEKUTUAN
62604 PUTRAJAYA

Telefon : 03-8884 6500
Faks : 03-8884 6439
Laman Web : www.moe.gov.my

KEMENTERIAN PENDIDIKAN MALAYSIA

Ruj. Kami : KPM 600-3/2/3JLD 11 (14)
Tarikh : 22 Disember 2016

Agnes Tan Shek Li
K.P. 811230085054

15, Jalan Datoh
36100 Bagan Datoh
Perak

Tuan,

KELULUSAN UNTUK MENJALANKAN KAJIAN DI SEKOLAH, INSTITUT PENDIDIKAN GURU, JABATAN PENDIDIKAN NEGERI DAN BAHAGIAN DI BAWAH KEMENTERIAN PENDIDIKAN MALAYSIA

Perkara di atas adalah dirujuk.

2. Sukacita dimaklumkan bahawa permohonan tuan untuk menjalankan kajian seperti di bawah telah diluluskan.

" ***Issues and Challenges of Student-Centred Learning and Designing a Problem Based Learning Module*** "

3. Kelulusan ini adalah berdasarkan kepada kertas cadangan penyelidikan dan instrumen kajian yang dikemukakan oleh tuan kepada Bahagian ini. Walau bagaimanapun kelulusan ini bergantung kepada kebenaran Jabatan Pendidikan Negeri dan Pengetua / Guru Besar yang berkenaan.

4. Surat kelulusan ini sah digunakan bermula dari **1 Jun 2017** hingga **1 Disember 2017.**

5. Tuan juga mesti menyerahkan senaskhah laporan akhir kajian dalam bentuk *hardcopy* bersama salinan *softcopy* berformat Pdf di dalam CD kepada Bahagian ini. Tuan diingatkan supaya mendapat kebenaran terlebih dahulu daripada Bahagian ini sekiranya sebahagian atau sepenuhnya dapatan kajian tersebut hendak dibentangkan di mana-mana forum, seminar atau diumumkan kepada media massa.

Sekian untuk makluman dan tindakan tuan selanjutnya. Terima kasih.

"BERKHIDMAT UNTUK NEGARA"

Saya yang menurut perintah,

(DR. ROSLI BIN ISMAIL)
Ketua Sektor
Sektor Penyelidikan dan Penilaian
b.p. Pengarah
Bahagian Perancangan dan Penyelidikan Dasar Pendidikan
Kementerian Pendidikan Malaysia

QUALITY SYSTEM SIRIM STANDARDS
CERTIFIED TO ISO 9001:2008
CERT. NO. AR 3166

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JABATAN PENDIDIKAN NEGERI PERAK
JALAN TUN ABDUL RAZAK
30640 IPOH, PERAK DARUL RIDZUAN

Tel : +605 501 5000
Faks : +605 527 7273
Laman Web : http://jpnperak.moe.gov.my

"MALAYSIA : RAKYAT DIDAHULUKAN PENCAPAIAN DIUTAMAKAN"

Ruj. Tuan :
Ruj. Kami : J. Pel. Pk (AM)5114/4 Jld.24 (41)
Tarikh : 01 Mac 2017

AGNES TAN SHEK LI,
15, Jalan Datoh,
36100 Bagan Datuk,
Perak Darul Ridzuan.

Tuan,

KELULUSAN UNTUK MENJALANKAN KAJIAN DI SEKOLAH - SEKOLAH DI NEGERI PERAK DI BAWAH JABATAN PENDIDIKAN NEGERI PERAK

Sukacitanya perkara di atas di rujuk dan surat tuan bertarikh 20 Februari 2017 serta surat dari Bahagaian Perancangan Dan Penyelidikan Dasar Pendidikan, *Kementerian Pendidikan Malaysia*, Rujukan : KPMSP.600-3/2/3 Jld 33 (14), bertarikh 22 *Disember 2016 adalah berkaitan.*

2. Sehubungan dengan itu, dimaklumkan bahawa Jabatan Pendidikan Negeri Perak **tiada halangan** untuk membenarkan pihak tuan menjalankan kajian **"Issues and Challenges of Student-Centred Learning and Designing a Problem Based Learning"** seperti dinyatakan dalam surat tuan dengan syarat-syarat berikut :-

2.1 Pihak tuan perlu mendapatkan kebenaran terlebih dahulu daripada Pegawai Pendidikan Daerah dan Pengetua sekolah untuk menggunakan sampel kajian;

2.2 Kajian yang dijalankan hendaklah tidak mengganggu proses pengajaran dan pembelajaran yang telah ditetapkan oleh pihak sekolah;

2.3 Pihak tuan bertanggungjawab menjaga keselamatan dan kebajikan guru-guru yang terlibat dalam kajian ini;

2.4 Pihak tuan hendaklah bertanggungjawab *menanggung semua kos kajian;*

2.5 Guru-guru/ murid tidak boleh dipaksa terlibat dengan kajian ini;

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2.6 Pihak tuan dipohon agar mengemukan **satu (1) salinan laporan kajian dalam tempoh 30 hari** ke jabatan ini selepas kajian tersebut dilaksanakan; dan

2.7 Tiada sebarang implikasi kewangan terhadap Jabatan Pendidikan Negeri Perak, Pejabat Pendidikan Daerah dan pihak sekolah.

3. Sukacita juga dingatkan sekiranya sebahagian atau sepenuhnya dapatan kajian tersebut hendak dibentangkan di mana-mana forum atau seminar atau diumumkan kepada media massa, pihak tuan perlulah **mendapatkan kebenaran terlebih dahulu** daripada Bahagian Perancangan dan Penyelidikan Dasar Pendidikan Kementerian Pendidikan Malaysia dan satu salinan kepada Jabatan Pendidikan Negeri Perak.

4. Kebenaran permohonan ini adalah untuk tujuan yang dipohon dan melibatkan sekolah dalam daerah yang dinyatakan sahaja dan luput selepas tarikh 1 Disember 2017.

Sekian terima kasih.

"BERKHIDMAT UNTUK NEGARA"

Saya yang menurut perintah,

(HAJI MOHD ROSLI BIN AHMAD, AMP., PPT.)
Timbalan Pengarah Pendidikan Negeri Perak
b.p Pengarah Pendidikan Negeri Perak

05-45068 ptbupsi

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PEJABAT PENDIDIKAN DAERAH HILIR PERAK
JALAN MAHARAJALELA,
36000 TELUK INTAN,
PERAK DARUL RIDZUAN

Telefon: 05-6221970 Faks: 05-6214904 Portal: www.pdhilirperak.edu.my

"PERUBAHAN DAN PENAMBAHBAIKAN BERTERUSAN MENJANA KECEMERLANGAN PENDIDIKAN"

Ruj Kami PPD.H.Pk 15/01/11/Jld.6( )
Tarikh 4 April 2017

AGNES TAN SHEK LI,
15, Jalan Bagan Datoh,
36100 Bagan Datuk,
Perak Darul Ridzuan.

Tuan,

KEBENARAN MENJALANKAN KAJIAN PENYELIDIKAN SARJANA DI SEKOLAH MENENGAH DAERAH HILIR PERAK

Dengan hormatnya, surat tuan bertarikh 28 Mac 2017, dan surat Jabatan Pendidikan Perak J.Pel.Pk(AM)5114/4/Jld.24(41) bertarikh 1 Mac 2017 serta surat Kementerian Pendidikan Malaysia KPMSP.600-3/2/3 Jld.33(14) bertarikh 22 Disember 2016 berkaitan perkara tersebut di atas adalah dirujuk untuk perhatian dan tindakan tuan.

2. Sukacita dimaklumkan bahawa Pejabat Pendidikan Daerah Hilir Perak **tiada halangan** untuk membenarkan pihak tuan menjalankan penyelidikan bertajuk **"Issues And Challenges Of Student Centred learning And Designing A Problem Based Learning Module"** di sekolah-sekolah menengah Daerah Hilir Perak, seperti dinyatakan dalam surat tuan dengan syarat-syarat berikut :-

2.1 Pihak tuan perlu berunding dengan Pengetua sekolah-sekolah berkenaan dan mendapatkan kebenarannya terlebih dahulu untuk menggunakan sampel kajian;

2.2 Penyelidikan/Kajian yang dijalankan hendaklah tidak mengganggu atau menjejaskan waktu pengajaran dan pembelajaran di sekolah;

2.3 Pihak tuan bertanggungjawab atas keselamatan dan kebajikan pelajar-pelajar/guru-guru yang terlibat dalam kajian ini;

2.4 Pelajar-pelajar/Guru-guru tidak boleh dipaksa atau diwajibkan terlibat dalam kajian ini;

2.5 Pihak tuan hendaklah bertanggungjawab menanggung semua kos kajian;

2.6 Tiada implikasi kewangan kepada Kementerian Pendidikan Malaysia, Jabatan Pendidikan Perak, Pejabat Pendidikan Daerah Hilir Perak, sekolah, guru dan

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PEJABAT PENDIDIKAN DAERAH HILIR PERAK
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36000 TELUK INTAN,
PERAK DARUL RIDZUAN

Telefon: 05-6221970 Faks: 05-6214904 Portal: www. pdhilirperak.edu.my

"PERUBAHAN DAN PENAMBAHBAIKAN BERTERUSAN MENJANA KECEMERLANGAN PENDIDIKAN"

2.7 Pihak tuan dipohon agar mengemukakan **salinan laporan kajian dalam tempoh 30 hari** ke pejabat ini selepas kajian tersebut dilaksanakan.

3. Pejabat Pendidikan Daerah Hilir Perak berhak menarik balik Surat Kelulusan/ Kebenaran ini sekiranya pihak tuan gagal mematuhi syarat-syarat dan peraturan yang ditetapkan atau bercanggah dengan dasar yang sedia ada. Kelulusan ini hanyalah untuk tujuan yang dipohon sahaja dan luput selepas tarikh 1 Disember 2017.

4. Sukacita juga diingatkan sekiranya sebahagian atau sepenuhnya dapatan kajian tersebut hendak dibentangkan di mana-mana forum atau seminar atau diumumkan kepada media massa, pihak tuan perlulah **mendapatkan kebenaran terlebih dahulu** daripada Bahagian Perancangan dan Penyelidikan Dasar Pendidikan, Kementerian Pendidikan Malaysia.

Kerjasama dan perhatian tuan dalam hal ini didahului dengan ucapan terima kasih.

Sekian dimaklumkan.

"BERKHIDMAT UNTUK NEGARA"

05-45068 ptbupsi

Saya yang menurut perintah,

(MOHD SAHID B. ALIAS)
Timbalan Pegawai Pendidikan Daerah Hilir Perak
b.p Pegawai Pendidikan Daerah Hilir Perak

s.k 1. Pengetua
SMK Hutan Melintang,

2. Pengetua
SMK St Anthony Teluk Intan

3. Pengetua
SMK Tun Abdul Razak Selekoh

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Appendix B

/

UNIVERSITI PENDIDIKAN SULTAN IDRIS
SULTAN IDRIS EDUCATION UNIVERSITY

INTRODUCTORY REMARKS

Dear Respected Experts,

Thank you so much on your willingness to involve in the verification process of my interview protocol. This is one of the instruments that will be utilized to garner data for my post-graduate research project. This research is carried out in the quest to answer the four important questions which will be carried out in three phases. The following are the research questions:

1. What are the current issues and challenges to implement student-centred learning in Malaysia secondary schools?
2. What are the readiness of school administrator, teachers and students to adapt student-centred learning?
3. What are the important elements in developing PBL module?
4. What are validity and reliability of PBL module?

The interview is aims to answer the first two research questions.

Your cooperation is highly appreciated

NAME: AGNES TAN SHEK LI (M20141000189)
SUPERVISOR: DR MOHAMAD TERMIZI BORHAN

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Interview Protocol

Before starting off our interview session, I would like to inform that I will be using a voice recorder to record our conversation. For your information, only researchers on the project will be privy to the tapes which will be eventually destroyed after they are transcribed. In addition, it would be great if you can sign a form devised to meet our human subject requirements. Essentially, this document states that: (1) all information will be held confidential, (2) your participation is voluntary and you may stop at any time if you feel uncomfortable, and (3) we do not intend to inflict any harm. Thank you for your agreeing to participate.

This interview session is expected to take less than 1 hour to complete.

The objective of this interview is to collect information about the practice of student-centred methods of teaching Biology in your schools.

Introduction

This research project as a whole focuses on the current issues and challenges to implement students-centred learning in Malaysia secondary schools and also with interest in understanding the readiness of school administrator, teachers and students to adapt students-centred learning. This study does not aim to evaluate your techniques or experiences.

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Interview Questions for Principal / Senior Assistant / Science teacher

1. Name of the schools _____
2. Years of service on the position _____
3. Field of specialization _____
4. Educational qualification _____
5. Sex _____

able in general about the respondents info briefly

6. What do you understand about the concept of student-centred learning?

7. Do you practice student-centred learning environment in your school? If yes, how? If no, why?

school / lesson?

What do you mean?

8. How is your organisation promoting the practice of student-centred learning in school?

9. How do the teachers react to the practice of students-centred learning?

you

10. How do students accept the practice of students-centred learning?

asked about type student-centered learning that implemented

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11. What are the barriers to implement student-centred learning in secondary school's ~~Science~~ ~~classroom~~? se-classroom at the secondary school level?

12. How does MOE support the implementation of student-centred learning in the secondary school? Is the support given enough?

It seems that this question that can be answered in q.13.

13. Will MOE's support help to improve the implementation of student-centred learning?

OVERALL COMMENTS FROM THE EXPERT:

some questions need to be reviewed as some of the questions might be asked to the same science educator/teacher

NAME: SITI SHAMSIAH SAN

OFFICIAL STAMP:

DATE: 23/11/2016

05-45068 ptbupsi

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/

UNIVERSITI PENDIDIKAN SULTAN IDRIS
SULTAN IDRIS EDUCATION UNIVERSITY

INTRODUCTORY REMARKS

Dear Respected Experts,

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2. What are the readiness of school administrator, teachers and students to adapt student-centred learning?
3. What are the important elements in developing PBL module?
4. What are validity and reliability of PBL module?

The interview is aims to answer the first two research questions.

Your cooperation is highly appreciated

NAME: AGNES TAN SHEK LI (M20141000189)
SUPERVISOR: DR MOHAMAD TERMIZI BORHAN

05-45068 tbupsi
05-4506832 pustaka.upsi.edu.my Perpustakaan Tuanku Bainun Kampus Sultan Abdul Jalil Shah PustakaTBainun ptbupsi

05-4506832 pustaka.upsi.edu.my Perpustakaan Tuanku Bainun Kampus Sultan Abdul Jalil Shah PustakaTBainun ptbupsi

Interview Protocol

Before starting off our interview session, I would like to inform that I will be using a voic recorder to record our conversation. For your information, only researchers on th project will be privy to the tapes which will be eventually destroyed after they ar transcribed. In addition, it would be great if you can sign a form devised to meet ou human subject requirements. Essentially, this document states that: (1) all informatio will be held confidential, (2) your participation is voluntary and you may stop at any tim if you feel uncomfortable, and (3) we do not intend to inflict any harm. Thank you fo your agreeing to participate.

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05-4506832 pustaka.upsi.edu.my Perpustakaan Tuanku Bainun Kampus Sultan Abdul Jalil Shah PustakaTBainun ptbupsi

05-4506832 pustaka.upsi.edu.my Perpustakaan Tuanku Bainun Kampus Sultan Abdul Jalil Shah PustakaTBainun ptbupsi

11. What are the barriers to implement student-centred learning in secondary school's Science's classroom?

↖ This Question is not-relevant to principal.

12. How does MOE support the implementation of student-centred learning in secondary school? Is the support given enough?

13. Will MOE's support help to improve the implementation of student-centred learning?

How could the answer for question?

OVERALL COMMENTS FROM THE EXPERT:

1- Need to restructure the flow of the questions - from general questions → more focus.

2. Some questions are irrelevant for participant for instance on MOE support

NAME: OFFICIAL STAMP: DATE:

MAHYUDDIN BIN ARSAT, PhD
Penyelia Kanan
Jabatan Pendidikan Teknikal & Kejuruteraan
Fakulti Pendidikan
UTM Johor Bahru

30/10/2016

05-45068 ptbupsi

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/

UNIVERSITI PENDIDIKAN SULTAN IDRIS
SULTAN IDRIS EDUCATION UNIVERSITY

INTRODUCTORY REMARKS

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1. What are the current issues and challenges to implement student-centred learning in Malaysia secondary schools?
2. What are the readiness of school administrator, teachers and students to adapt student-centred learning?
3. What are the important elements in developing PBL module?
4. What are validity and reliability of PBL module?

The interview is aims to answer the first two research questions.

Your cooperation is highly appreciated

05-45068 ıtbupsi

NAME: AGNES TAN SHEK LI (M20144000189)
SUPERVISOR: DR MOHAMAD TERMIZI BORHAN

05-4506832 pustaka.upsi.edu.my Perpustakaan Tuanku Bainun Kampus Sultan Abdul Jalil Shah PustakaTBainun ptbupsi

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Interview Protocol

Before starting off our interview session, I would like to inform that I will be using a voic recorder to record our conversation. For your information, only researchers on th project will be privy to the tapes which will be eventually destroyed after they ar transcribed. In addition, it would be great if you can sign a form devised to meet ou human subject requirements. Essentially, this document states that: (1) all informatio will be held confidential, (2) your participation is voluntary and you may stop at any tim if you feel uncomfortable, and (3) we do not intend to inflict any harm. Thank you fo your agreeing to participate.

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The objective of this interview is to collect information about the practice of student-centred methods of teaching Biology in your schools.

Introduction

This research project as a whole focuses on the current issues and challenges t implement students-centred learning in Malaysia secondary schools and also wil interest in understanding the readiness of school administrator, teachers and studen to adapt students-centred learning. This study does not aim to evaluate your technique or experiences.

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1. Name of the schools _____
2. Years of service on the position _____
3. Field of specialization _____
4. Educational qualification _____
5. Sex _____

6. What do you understand about the concept of student-centred learning?

as principal / senior assistant / science teacher

7. Do you practice student-centred learning environment in your school? If yes, how? If no, why?

8. How is your organisation promoting the practice of student-centred learning in school?

principal / senior assistant /

9. How do the teachers react to the practice of students-centred learning?

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10. How do students accept the practice of students-centred learning?

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11. What are the barriers to implement student-centred learning in secondary school's Science's classroom?

12. How does MOE support the implementation of student-centred learning in secondary school? Is the support given enough?

13. Will MOE's support help to improve the implementation of student-centred learning?

OVERALL COMMENTS FROM THE EXPERT:

Overall questions are good. Maybe certain question just intended to certain participants (interviewee), though it need to clearly clarify.

NAME:

OFFICIAL STAMP:

DR. MUHD IBRAHIM BIN MUHAMAD DAMANHURI
Penyarah Kanan
Jabatan Kimia
Fakulti Sains dan Matematik
Universiti Pendidikan Sultan Idris

DATE: 23/10/2016.

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Appendix C

Introductory Protocol

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Dear respondent! The objective of this interview is to collect information about the practice of

Student-centred methods of teaching biology in your schools. Please be objective and complete in your answers.

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Introduction

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INTERVIEW QUESTIONS FOR STUDENTS

General questions about the interview participants.

1. Name of the school : _____
2. Form : _____
3. Favourite subject : _____
4. Gender : _____

Questions:

1. Have you heard about 21st century learning?

   Pernahkah anda mendengar tentang pembelajaran abad ke-21?

   If you do, can you briefly explain about 21st century learning and how you get to know about 21st century learning?

   Jika ya, bolehkah anda menerangkan secara ringkas tentang pembelajaran abad ke-21 dan bagaimanakah anda dapat mengetahui tentang pembelajaran abad ke-21?

2. Which classroom experience can be related to 21st century learning?

   Mana satukah pengalaman dalam bilik darjah yang berkaitan dengan pembelajaran abad ke-21?

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3. Have you heard about student – centred learning? What do you understand about the concept of student-centred learning?

   Pernahkan anda dengar tentang pembelajaran berpusatkan pelajar? Apakah yang anda faham tentang pembejaran berpusatkan pelajar?

4. Is student-centred learning (SCL) practiced in your school especially in Science classroom?

   Adakah pembelajaran berpusatkan pelajar dilaksanakan di sekolah anda terutamanya di dalam kelas Sains?

   If yes? how the student-centred learning carried out by your teachers?

   Jika ya, bagaimanakah pembelajaran berpusatkan pelajar ini dilaksanakan oleh cikgu anda?

   If no? how is the science class carried out by your teachers?

   Jika tidak? Bagaimanakah kelas sains dijalankan oleh cikgu anda?

5. Based on your experience in SCL, can you describe about the things that you like and dislike?

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Berdasarkan pengalaman anda dalam pembelajaran berpusatkan pelajar, bolehkan anda mengambarkan tentang apa yang digemari dan apa yang tidak digemari?

6. Do you able to adapt yourself in SCL?
   Adakah anda dapat menyesuaikan diri dalam pembelajaran berpusatkan pelajar?
7. Were you able to develop a better learning skills through SCL? For examples, you are able to search for extra information for certain topic, you are able to solve problems confidently or more motivated in learning?
   Adakah anda mampu untuk membangunkan kemahiran pembelajaran yang lebih baik melalui pembelajaran berpusatkan pelajar ini? Sebagai contoh, anda berkemampuan untuk mencari maklumat lain untuk seuatu topik, boleh menyelesaikan sesuatu masalah dengan lebih berkeyakinan ataupun lebih bermotivasi untuk belajar?
8. Do you prefer SCL or the traditional teacher-centred learning practice?
   Adakah anda lebih gemar pembelajaran berpusatkan pelajar atau cara tradisional yang lebih berpusatkan guru?
9. How do you and your friends perceive about SCL?
   Bagaimanakah anda dan rakan anda berpendapat tentang pembelajaran berpusatkan pelajar ini?

a) Do you and your friends ask questions in class?
   Adakah anda dan kawan anda bertanya soalan dalam kelas?

b) Do you and your friends answer questions?
   Adakah anda dan kawan anda menjawab soalan?

10. What constraints and problems do you and your friends face in practicing SCL activities? Do you face problems while doing group work or presentation?
    Apakah dugaan dan masalah anda dan rakan anda alami dalam melaksanakan aktiviti yang berpusatkan pelajar? Adakah anda menghadapi sebarang masalah semasa melakukan kerja kumpulan ataupun persembahan?
11. Have you heard about PBL? If you do, can you describe the characteristics of PBL?
    Pernahkan anda dengar tentang pembelajaran berasaskan masalah? Jika ya, apakah yang anda faham tentang ciri-ciri pembelajaran berasaskan masalah?
12. Can you give some advantages of PBL?

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Bolehkan anda memberikan contoh kebaikan Pembelajaran berasaskan masalah?

OVERALL COMMENTS FROM THE EXPERT:

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INTERVIEW FOR SCHOOL ADMINISTRATORS

General questions about the interview participants.

1. Name of the school : _____
2. Number of years in service : _____
3. Number of years served as head of department : _____
4. Field of Specialization : _____
5. Educational Qualification : _____
6. Gender : _____

Questions :

7. Can you describe about 21st century learning?
   Bolehkan anda mengambarkan tentang pembelajaran abad ke-21?
8. How does this new paradigm impact school practice of teaching and learning?
   Bagaimanakan paradigm baru ini mempengaruhi amalan pengajaran dan pembelajaran di sekolah?
9. What are the benefits of 21st century learning?
   Apakah kebaikan pembelajaran abad ke-21?
10. Have you heard about student – centred learning? What do you understand about the concept of student centred learning?
    Pernahkan anda dengar tentang pembelajaran berpusatkan pelajar? Apakah yang anda faham tentang pembejaran berpusatkan pelajar?
11. As the head of department do you encourage your teachers to carry out lessons which focus on student – centred learning in your school ?
    Sebagai ketua bidang Sains, adakah anda menggalakkan guru-guru Sains untuk menjalankan aktiviti yang berpusatkan Pembelajaran berpusatkan pelajar?
    If yes ? how do you encourage them ?
    Jika ya, bagaimanakan anda mengalakkan mereka?
    If no ? (a) why ? (b) Would you like to try it out? (c) if so, when?
    Jika tidak? Mengapa? Adakah anda akan mencuba untuk berbuat demikian? bila?
12. What are the benefits of student centred learning to our students?
    Apakah kebaikan pembelajaran berpusatkan pelajar terhadap pelajar kita?

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13. Student centred learning can be carried out in many ways in the classroom. Can you explain how SCL is being implemented in your schools?
Pembelajaran berpusatkan pelajar boleh dilakukan dalam pelbagai cara. Bolehkan anda menerangkan bagaimanakan pembelajaran berpusatkan pelajar dilaksanakan di sekolah anda?

14. To what extend SCL is being implemented in science based classroom in this school?
Sejauh manakah pembelajaran berpusatkan pelajar dilaksanakan di dalam kelas berasaskan Sains?

15. How do the teachers react/respond towards the practice of student – centred learning in your organisation ?
Bagaimanakah guru-guru bertindak terhadap pembelajaran berpusatkan pelajar di sekolah anda?

16. How do the students respond to the practice of student – centred learning ?
Bagaimanakah pelajar sekolah respon terhadapan pembelajaran berpusatkan pelajar?

17. Is there any problem faced by your science teachers in carrying out student – centred learning in the science classroom at the secondary level ?
Apakah masalah yang dialami oleh guru Sains di sekolah anda yang mengadakan pembelajaran berpusatkan pelajar di dalam kelas Sains?

18. How does the MOE support the implementation of student centred learning in secondary schools in terms of financial, facilities and policies?
Bagaimanakah Kementerian Pendididkan Malaysia menyokong pelaksanaan pembelajaran berpusatkan pelajar di sekolah menengah dari segi kewangan, kemudahan dan polisi?

a) Do you think the support is enough ?
Anda rasa adakah sokongan tersebut mencukupi?

b) What other kinds of support from MOE do you aspect to get to make student – centred learning a success in your school ?
Apakah sokongan lain dari KPM yang diharapkan dapat menjayakan pembelajaran berpusatkan pelajardi sekolah anda?

19. Have you heard about PBL? If you do, can you describe the characteristics of PBL?

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Pernahkan anda dengar tentang pembelajaran berasaskan masalah? Jika ya, apakah yang anda faham tentang ciri-ciri pembelajaran berasaskan masalah?

20. Can you give some advantages of PBL?

Bolehkan anda memberikan contoh kebaikan Pembelajaran berasaskan masalah?

OVERALL COMMENTS FROM THE EXPERT:

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INTERVIEW QUESTIONS FOR HEAD OF PANEL AND TEACHERS

General questions about the interview participants.

1. Name of the school : _____
2. Number of years in service : _____
3. Field of Specialization : _____
5. Educational Qualification : _____
6. Gender : _____

Questions :

7. Can you describe about 21st century learning?
   Bolehkan anda mengambarkan tentang pembelajaran abad ke-21?
8. How do you translate the concept of 21st century learning into your teaching practice?
   Bgaimanakah anda menterjemahkan konsep pembelajaran abad ke 21 ke dalam amalan pengajaran anda?
9. Have you heard about student – centred learning? What do you understand about the concept of student centred learning.
   Pernahkan anda dengar tentang pembelajaran berpusatkan pelajar? Apakah yang anda faham tentang pembejaran berpusatkan pelajar?
10. As a teacher how do you carry out lessons which focus on student – centred learning in your school ?
    Sebagai seorang guru, bagaimanakah anda menjalankan aktiviti yang berpusatkan pelajar di sekolah anda?
    If yes ? how do you carry out your lessons ?
    Jika ya, bagaimanakah anda menjalankan aktiviti pembelajaran di kelas?
    If no ? (a) why ? (b) Would you like to try it out? (c) if so, when?
    Jika tidak? Mengapa? Adakah anda akan mencuba untuk berbuat demikian? bila?
11. How do you promote the practice of student – centred learning in your school?
    Bagaimanakah anda menggalakkan pembelajaran berpusatkan pelajar di sekolah?
12. What are the benefits of SCL for students?
    Apakah kebaikan pembelajaran berpusatkan pelajar terhadap pelajar kita?

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13. What type of students that we can produce from SCL?
    Apakah jenis pelajar yang boleh kita hasilkan dari pembelajaran berpusatkan pelajar?
14. How is your organisation promoting the practice of student centred learning in your school?
    Bagaimanakah organisasi sekolah mengalakkan pembelajaran berpusatkan pelajar di sekolah?
15. How do you and other colleagues react/ respond towards the practice of SCL?
    Bagaimanakah anda dan guru-guru yang lain respon terhadap pelaksanaan pembelajaran berpusatkan pelajar di sekolah anda?
16. What are the types of student – centred learning activities have you carried out in your lessons?
    Apakah jenis pembelajaran berpusatkan pelajar yang anda jalankan dalam kelas anda?
17. How do your students respond to the practice of student – centred learning ?
    Bagaimanakah pelajar anda respon terhadap pelaksanaan pembelajaran berpusatkan pelajar?
18. What are the problems that you and colleagues face in carrying out student centred learning in your school as a science teacher ?
    Apakah masalah yang dihadapi anda dan guru Sains yang lain di sekolah anda yang mengadakan pembelajaran berpusatkan pelajar di dalam kelas Sains?
19. How does the MOE support the implementation of student centred learning in secondary schools in terms of financial, facilities and policies?
    Bagaimanakah Kementerian Pendididkan Malaysia menyokong pelaksanaan pembelajaran berpusatkan pelajar di sekolah menengah dari segi kewangan, kemudahan dan polisi?
    a. Do you think the support is enough?
       Anda rasa adakah sokongan tersebut mencukupi?
    b. What other kinds of support from MOE do you aspect to get to make student – centred learning a success in your school ?
       Apakah sokongan lain dari KPM yang diharapkan dapat menjayakan p embelajaran berpusatkan pelajardi sekolah anda?

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20. Have you heard about PBL? If you do, can you describe the characteristics of PBL?

    Pernahkan anda dengar tentang pembelajaran berasaskan masalah? Jika ya, apakah yang anda faham tentang ciri-ciri pembelajaran berasaskan masalah?

21. Can you give some advantages of PBL?

    Bolehkan anda memberikan contoh kebaikan Pembelajaran berasaskan masalah?

OVERALL COMMENTS FROM THE EXPERT:

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