The Promotion of Critical Thinking Skills in School-Based Assessment (SBA)

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Abstract

The new curriculum introduced in the Malaysian primary students; the Primary School Standard Curriculum (Kurikulum Standard Sekolah Rendah- KSSR) together with the school-based assessment (SBA) is a step taken by the Malaysian government to encourage thinking skills to students, specifically critical thinking skills. The study explores teachers' beliefs in the use of higher order thinking skills (HOTS – Kemahiran Berfikir Aras Tinggi, KBAT) questions to promote critical thinking skills among students. A group of six selected primary school teachers were interviewed in order to understand the phenomenon. Findings suggested that teachers believe KBAT questions are useful in promoting the critical thinking skills as students were found to be able to apply their knowledge, to analyse information, to make decisions as well as to solve problems. A few recommendations are also included for future studies.

Keywords: Critical thinking, SBA, teachers' beliefs, qualitative study.

INTRODUCTION

Thinking and critical thinking are two different terms. According to Alfaro-LeFevre, (2013), thinking refers to any mental activity whereas critical thinking is controlled and purposeful, and using well-reasoned strategies to get the needed results. Ennis (1993. p. 180) elaborated some characteristics of critical thinker (Ennis, 1993) such as 1) judge the credibility of sources; 2) identify conclusions, reasons, and assumptions; 3) judge the quality of an argument, including the acceptability of its reasons, assumptions, and evidence; 4) develop and defend a position on an issue; 5) ask appropriate clarifying questions; 6) plan experiments and judge experimental designs; 7) define terms in a way appropriate for the context; 8) be open-minded; 9) try to be well-informed; 10) draw conclusions when warranted, but with caution. Critical thinking can be taught and needs practice. But one may wonder why is it so important now to teach students to think critically?

Research found that critical thinking is a skill needed to function well in the 21st

century. It was also found that critical thinking helps students learn to think clearer, to ask questions in classroom and in community at large, and to become better students, indivisible, and members of society (Mabe, 2004). Critical thinking skills also help students to become better citizens in a Democratic Society. Nonetheless, critical thinking is beyond a predictive measure to academic performance. As it suggests open-mindedness, critical thinkers allow themselves to take risks and venture themselves in various options. Critical thinkers make evaluations on options before making decisions. In every situation, critical thinking plays an important role in day-to-day functioning.

Looking at the importance of critical thinking skills mentioned, Darling-Hammond and McCloskey (2008) suggested that, in developing curriculum guidelines, the authorities, government and schools, should focus on what they called 21st century skills, those are "the ability to find and organize information to solve problems, frame and conduct investigation, analyse and synthesize data, apply learning new situation, self-monitor and improve one's own learning and performance, communicate well in multiple forms, work in teams and learn independently". Therefore the switching of the KBSR (Primary School New Curriculum) to the new Primary School Standard Curriculum (Kurikulum Standard Sekolah Rendah) or KSSR in 2011 beginning with the year one pupil and its accompanying School-Based Assessment (SBA) with the emphasis no longer just on the importance of knowledge but also on developing higher order thinking skills (Malaysia Education Blueprint 2013-2015 p. E-4), seemed to be a move in the right direction for teaching critical thinking skills.

In school-based assessment (SBA), students are evaluated based on school standards. Teachers have to do internal assessments and evaluations for each student and they need to record students' performance in the SBA (or PBS) management system (SPPBS) periodically ("What is KSSR," 2012). Furthermore, teachers have to file pupils' work as proof that the learners have acquired the necessary knowledge and skills of which a performance band will be given to the children (Tan, 2012). Referring to the module named "Pentaksiran Kemahiran Berfikir Aras Tinggi' (2013) produced by Examination Syndicate of Ministry of Education, it suggested that assessment in SBA should be comprehended as a) the process of gaining an overall picture of students' learning performances, b) activity that involves in teaching and learning process, c) activity that is continuously done, and d) activity that aimed for good learning achievement. It was also found that although teachers support the education philosophy holistically, they however do not understand that SBA is a huge paradigm shift in assessment (Rosnani et. al., 2014).

Problem of Statement

The former Malaysian Director of Education, Tan Sri Murad Mod Noor believed that the main obstacle in achieving the level of creativity and innovation among Malaysian students is because of the education system with too many standardized examinations (Utusan Malaysia, 29 September, 2005 as

cited in Che Noraini, Adlina & Nurhidayah, 2013). Malaysian education system has been found to be too exam-oriented with very packed syllabus and giving limited space for teachers to be innovative (Rosnani & Suhailah, 2003). Thus, SBA was introduced to give more autonomy and freedom for teachers to carry out formative and summative assessment on students. It is also an attempt to overcome the exam-oriented system and a very heavy syllabus of Malaysian education system which have given limited space for teachers to be innovative (Rosnani & Suhaila, 2003). For that reason, since SBA has been exercised for 6 years, it is informative to explore how it helps in encouraging critical thinking skills among students in primary school.

Research Objective

The main objective of the study is to investigate how SBA helps in promoting critical thinking skills among students, specifically, this study wants

1. To explore the nature of questions for assessment used by teachers in SBA.
2. To investigate the critical thinking skills adapted by students from teachers' perception.

RESEARCH METHOD

The study employs case study qualitative research design where in depth research will be done in exploring how SBA helps in cultivating critical thinking skill in students. This research design is used to study a case in its natural context and the aim of it is not to infer findings form a sample to a population, but to produce patterns and linkages of theoretical importance (Bryman, 1989 as cited in Muir, 2010). Case study differs from ethnography as it has the component of proposition and not everything is collected (Yin, 2014), and in the study, the proposition being explored is the critical thinking skills of students in SBA.

A primary school in Gombak district was selected in the study. Six primary school teachers who have experience in conducting SBA were interviewed to find out their views on SBA; their methods of assessment and their perceptions on how the assessment could enhance critical thinking skills in students. An interview protocol was designed for the interview. The approach suggested that the interviewer has an outline of topics or issue to be covered but is free to vary the wordings and order of the questions to some extent (Nik Suryani, 2008). Semi-structured interview for in depth information were done for 30 to 45 minutes. Probing was also done again and again to make sure the saturation level met. Data were transcribed and analysed according to configured and emerging themes. Along with interviews, assessment tools or instruments as physical artifact were also analysed to clearly identify its usefulness in promoting critical thinking skills. The documents were used to assess Year 4 (10 years old) students.

FINDINGS

A few themes emerged from the document analysis as well as the interview. The reporting of the findings is based on DCR technique, Describe, Compare and Relate, where the author described the findings, compare and relate to relevant past literature.

Document analysis: Higher order thinking skills (HOTS) questions.

The documents of assessment tools were analysed and it was found questions inserted in the documents were asking students *to analyse, to interpret, to solve problems, to make inferences as well as to ask students to reason*. This is evident as shown in Figure 1 where pictures of situations were given to students, and students need to analyse the situation, interpret it, and only when they can understand the situation, they are capable to answer the question. Those questions are for English language subject, which also demand students to write in full sentence. This requires the ability to use language as well.

Figure 1 insert here

Students need to figure out, who was the first speaker in the picture that needs analysis. They also were entailed to interpret the situation, what was needed; do they need to give statement or question in the situation? Lastly, when students were able to immerse themselves in the position, then they are able to solve the problem by stating the answers.

Figure 2 shows assessment for Mathematic subject. Each of the questions requires students to analyse the requirement of the question, there were more than one mathematical formula needed to solve the problems. Students were also entailed to decide what mathematical calculation is appropriate for those questions before they can solve the mathematical problem.

Figure 2 insert here

The questions also require students to understand the tables and figures given. The process of understanding the questions requires more than just thinking, but critical thinking since students need to analyse and evaluate the questions.

Figure 3 shows assessment for Science subject. For the requirements of the questions, they showed that students need to make hypothesis, to give reason and to analyse the variable, whether independent or dependent variables.

Figure 3 insert here

Students were alleged to consider closely the questions; they were required to direct their attention to understanding the experiment done by looking at the chart given. These activities demand for critical thinking skills of doing analysis, making interpretation, reasoning as well as making inferences.

Interview Data: Application of knowledge, analysing information, making decision and problem solving.

Apart from document analysis, the interview data revealed that teachers believed that students are able to *apply their knowledge*, whether in the other subjects, as well as in their daily lives. When students were asked on topic content, they were capable to relate to what they have experience and apply the knowledge to the new situations. Teachers admitted that students were able to answer the questions given after a few times of training. For example, one of the teacher interviewed

mentioned that when students were given mathematical problem to solve, where the question has real life situation, students were able to relate more and apply the problem solving technique in the real life circumstances.

Moreover, teachers were also found to affirm that students were capable to *analyse information*, especially in the subject content. When students were asked to interpret and make conclusion as requested in the assessment previously, they were found to be fitted to answer those questions, for example in English class, when they were asked interpret the situations of a story read given, students managed to deduce and make inference from the situation given. Not only in English subjects, many of the subjects taught required students to analyse the problem before reaching for conclusion or solution.

The ability to *make decision* was also found from the teachers' interviews. According to teachers, students were having adequate skill to decide, for example, the formula to be used in the mathematical problems. On top of that, students were also found to be competent in *problem solving*. In group discussions, for example, students have to make a lot of decision; what content to be included as answers, what and how to write in the paper given, who among them needs to present the answers to the rest to the class, and who can be the secretary who writes the answers for the members. In the same situation, both, problem solving as well as decision making skills are needed. Accordingly, teachers believed, most students, depending on their level of intelligence, were able to perform those skills and abilities.

DISCUSSION

The discussions present the analysis of the findings with the relevant literature and theories. The responses of the teachers in the earlier section were based on their experience of conducting school-based assessments in their classrooms.

From the assessment tools, it was found that those questions are assessing the higher order thinking skills as suggested in the Bloom taxonomy showed in Figure 4.

Figure 4 insert here.

Bloom taxonomy proposed that knowledge and comprehension, at the two bottom of the pyramid are lower order thinking skills, whereas application, analysis, synthesis and evaluation are considered higher order thinking skills. Thus this signifies that the assessment tools included in the SBA is assessing the higher order thinking skills.

From the interview, it was found that the assessment demands students to analyse, to interpret as well as making conclusion. These activities are considered as thinking critically as it was suggested that the ability to interpret and making conclusions are assumed to come under analysing. This is aligned with Moon (2008) who proposed that critical thinking is the analysis and interpretation based on facts and evidence, and to be able to come to a conclusion. This is consistent with Paul and Elder (2012) who revealed that critical thinking is "the art of analysing and evaluating with the view to

improve it". Facione (2000) also elaborated his third dimension of critical thinking which is analyticity. According to him, those people who are analytical, they tend to be alert to potential difficulties, and always seek for solutions.

Alongside, teachers also believed that students were able to apply their knowledge, which is a critical thinking skill, considering that thinking is a process of finding and making connections in view of that the world is made up of complexes, such as people and ideas, the ability to relate and apply is necessary to secure survival in the world (Lipman 2003). Likewise, Costa and Kallick (2003) suggest that applying past knowledge to new situation is on the Habit of Mind that influences the success or failure in the mastery of knowledge.

Students were also found to be competent at making decisions. The ability to make decision is also a kind of critical thinking skills when the thinker is using thoughtful and effective thinking for a particular context Halpern (2014). This skill is necessary and learning as well as in day-to-day life seeing that there are a lot of problems, issues and dilemmas in the society that required students to choose and decide because bad decision making will lead to bad consequences, such as involved in drug or alcohol (Halpern, 2014).

Problem solving skill was also perceived by teachers as critical thinking skills, which echoes with Halpern (2014) who defines critical thinking as a kind of thinking that involves problem solving. She found problem solving to be a 'hot' topic recently since the world is facing a lot of thus it is crucial to equip students with problem solving skills.

Nevertheless, some issues were inferred from the interview. Teacher admitted that the assessment tools provided in the SBA are not sufficient enough to prepare students to have the skills in critical thinking, but focus should also be targeted to the teaching and learning process in the classrooms, the approaches and techniques used by teachers are essential to be explored to understand further on how students acquire critical thinking skills.

CONCLUSION

The study explores how School-Based Assessment (SBA) introduced in the new curriculum for primary students. KSSR helps in promoting critical thinking skills among students. Through document analysis, it was found that the questions included in the assessments were higher order thinking skills questions. Additionally, interviews revealed that teachers believed students are able to think critically from the practices given to answer assessments in the SBA. Finally, for future research, it is recommended to look into teaching and learning processes to better understand how students are equipped with the critical thinking skills.

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FIGURES

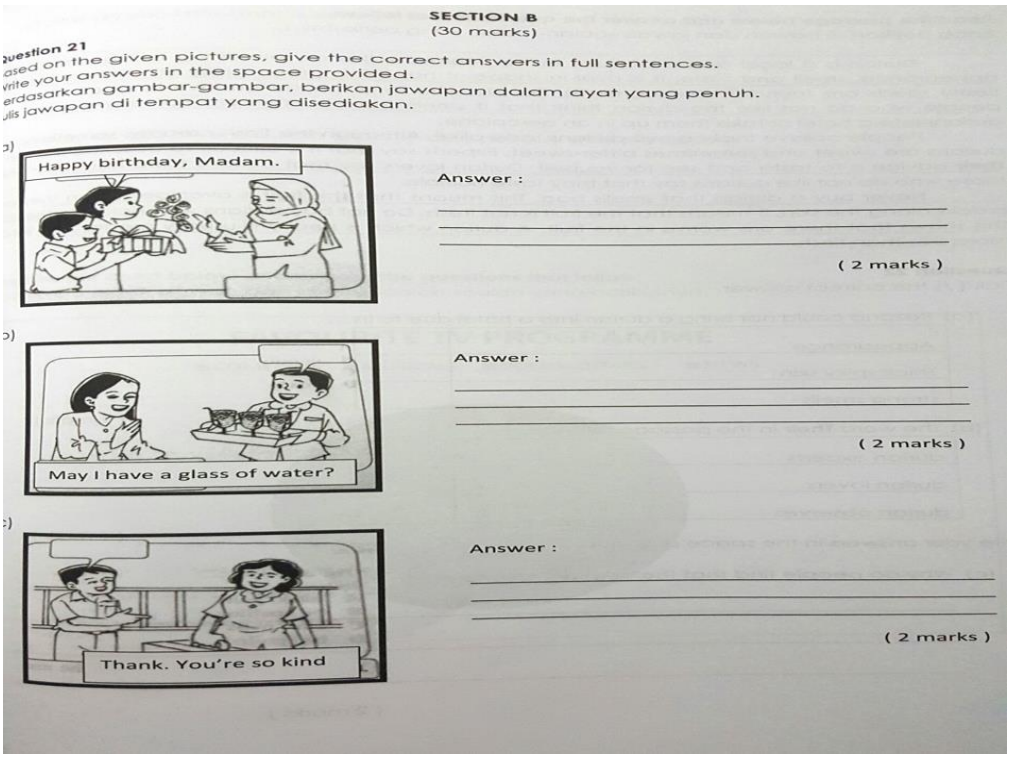


Figure 1: English language assessment

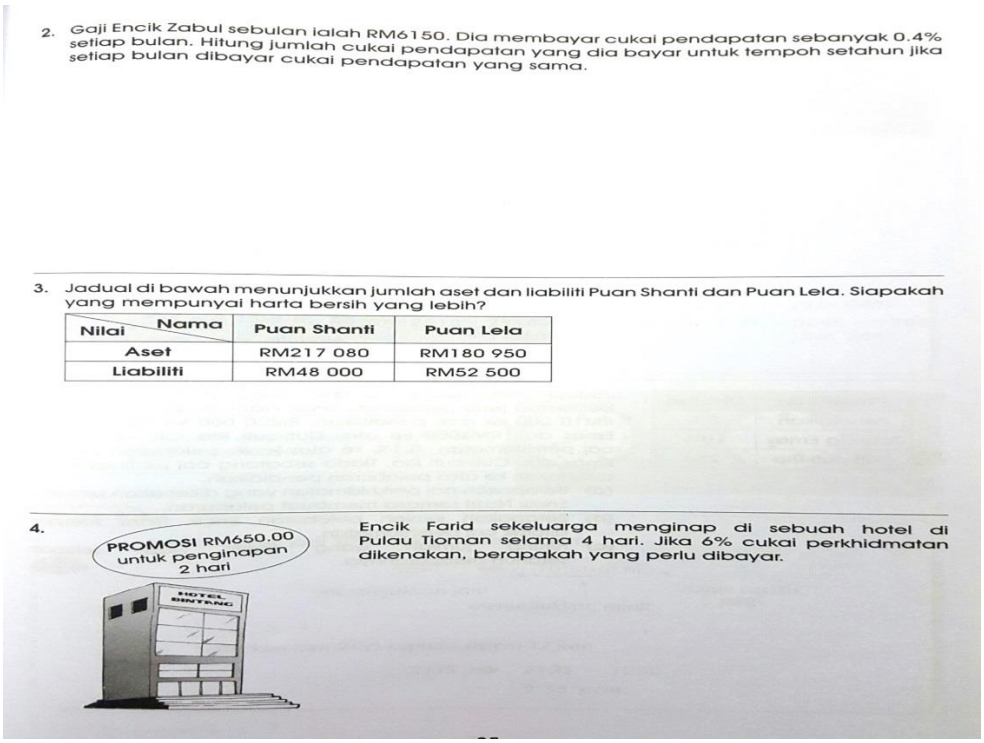
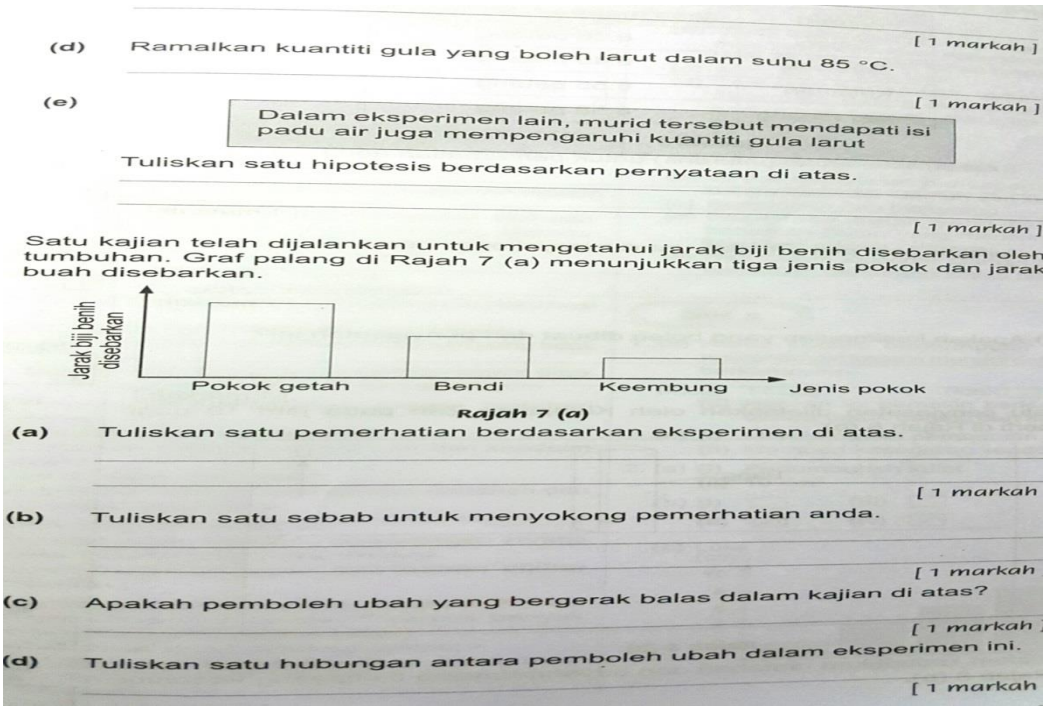


Figure 2: Mathematic assessment



(d) Ramalkan kuantiti gula yang boleh larut dalam suhu 85 °C. [1 markah]

(e) Dalam eksperimen lain, murid tersebut mendapati isi padu air juga mempengaruhi kuantiti gula larut [1 markah]

Tuliskan satu hipotesis berdasarkan pernyataan di atas. [1 markah]

Satu kajian telah dijalankan untuk mengetahui jarak biji benih disebarkan oleh tumbuhan. Graf palang di Rajah 7 (a) menunjukkan tiga jenis pokok dan jarak buah disebarkan.

Rajah 7 (a)

(a) Tuliskan satu pemerhatian berdasarkan eksperimen di atas. [1 markah]

(b) Tuliskan satu sebab untuk menyokong pemerhatian anda. [1 markah]

(c) Apakah pemboleh ubah yang bergerak balas dalam kajian di atas? [1 markah]

(d) Tuliskan satu hubungan antara pemboleh ubah dalam eksperimen ini. [1 markah]

Figure 3: Science Assessment

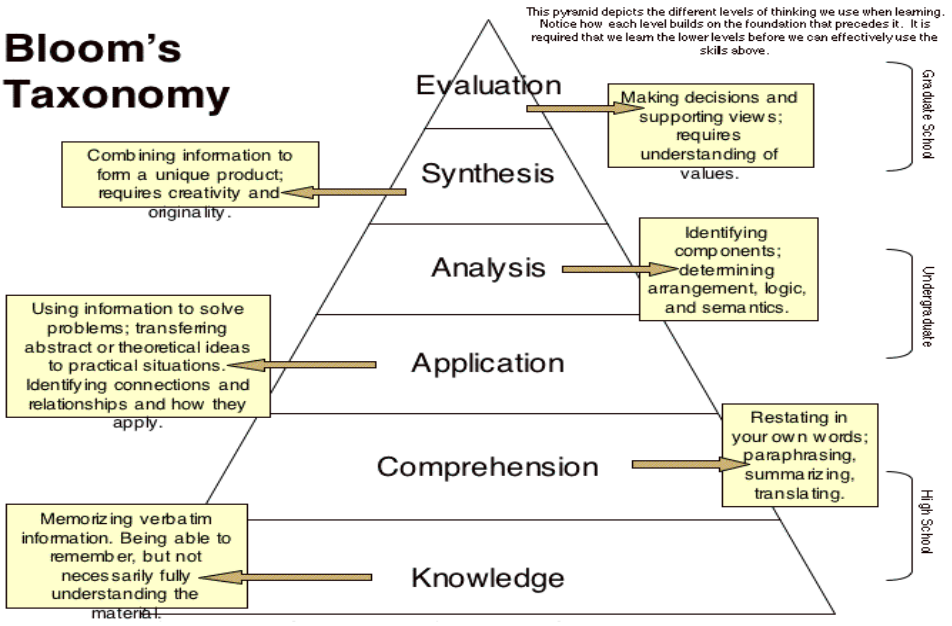


Figure 4 Bloom taxonomy
Source: Louisiana Amer, (2006).