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Teacher's Awareness Profiles and Stages of Concern Regarding the Application of Higher Order Thinking Skill (HOTS) in School Based Assessment (SBA)

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Abstract: The aim of this study was to review the teacher's awareness profile, stages of concern and the teacher's views towards the application of HOTS in SBA. There are seven stages of concern that have been studied namely: awareness, informational, personal, management, consequence, collaboration and refocusing. Concerns Based Adoption Model (CBAM) is a model used to obtain the profile and stages of concern among teachers in applying HOTS in SBA. A questionnaire has been adapted and modified in line with the objectives of the study. A total of 206 teachers who are pursuing a master degree have been randomly selected for this study. Results showed that the means for each stage of concern are as follows: awareness = 4.346; information = 4.846; personal = 5.07; management = 4.874; collaboration = 4.632 and refocusing = 4.702). This means all the teachers showed a high level of awareness for all the stages of concern. Teachers have a high level of awareness towards the application of HOTS in SBA. There are some aspects of concerns that can be improved such as awareness and informational. This can be proved through the analysis in the second stage, especially in the information domain which found that teachers lack the knowledge to apply HOTS. Most of the teachers interviewed thought HOTS application is the best way to produce students who are wise think to coincide with the wishes of the 21st century. The study findings have shown that the respondents have not yet reached the stage of very high concern. The respondent's concern at high level can be categorized as new users who are already thinking about the application of HOTS in SBA. However, information on HOTS in SBA is still limited and teachers are still searching on how to apply it in teaching and learning.

Key words: Concerns based adoption model, school based assessment, higher order thinking skills, teaching and learning, awareness and informational, categorized

INTRODUCTION

Education is a major contributor to social capital and economic development of the country. Education triggers creativity and innovation which provide our youth with knowledge and skills to compete in the job market and economic development. Malaysia's Education Development Plan (2013-2015) or the Blueprint is the education transformation plan towards education of the 21st century. The competition between a developing country like Malaysia and world advanced countries like the United States, England and Japan requires the production of world-class students who have critical skills such as higher order thinking skills. Hence, among the agenda of the Blueprint is to revise the curriculum which emphasizes on 21st century skills where the application of higher order thinking skills is encouraged besides developing holistically balanced students (MME., 2010). According to Hall and Hord (2011), curriculum change involves individuals to understand and gradually become more skilled and able to use the new curriculum. The concept of change in education is different from reform. Reform means modification of ideas to meet the needs and functions in certain areas without threatening or changing the existing systems; instead it provides added value in improving the performance of an institution.

The implementation of SBA is in tandem with the aim of the nation's philosophy of education towards increasing student's intellectual ability in HOTS. The integration of HOTS in learning intends to develop critical thinking in the students and that they can also produce commendable ideas. Thinking skills are inculcated in

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students through questions that need high level of thinking, activities that develop thinking and problem solving and new methods of teaching. With SBA, centralised examination system such as Primary School Assessment (UPSR) and Lower Secondary Examination (PMR) will not be the only assessment to measure student's learning achievement. Student's growth and development can be assessed fairly using performance standard (MME., 2012a) which is a process to obtain information how well students know, understand and are able to do or have mastered what they have been taught. In fact, the ministry has systematically increased the percentage for HOTS questions allocation in SBA and public examinations which will focus more on application, analysis and evaluation skills.

Thinking is a process whereby we use our brain either to make meaning and grasp something make judgments and decide or solve problems (Brookhart, 2010). Use of HOTS will encourage individuals to find truth and not make wrong assumptions and decisions, besides having the ability to process information and generate new ideas that are genuine in the learning and teaching, process. According to Puteh *et al.* (2012), emphasis on examination indirectly supresses and kills the seeds of creativity among students and balanced use of the brain can optimize student's potential development. According to Sternberg, it is vital that the education system exposes students to thinking so that they will be able to identify the knowledge they need for their future use. Hence, they can adopt and adapt to the knowledge easily and willingly.

Teacher's concern regarding curriculum change which focuses on the implementation of SBA clearly has influenced teachers to become innovative in their teaching. According to Puteh *et al.* (2012), their study examining curriculum innovation implementation showed that teachers as implementers did not understand what they have to do hence there was discrepancy between classroom practice and intended statement of SBA. Therefore, this study was conducted to evaluate awareness and practice of HOTS in SBA. In fact, this study also highlighted student's evaluation of HOTS in SBA and teacher's views regarding problems and challenges in applying HOTS in SBA.

Conceptualization of HOTS and SBA: The Malaysia Ministry of Education defines higher-order thinking skills (HOTS) as the ability to apply knowledge, skills and values to make reasoning and reflection. It seeks to solve problems, make decisions, innovate and strive to create something (MME., 2012b). Higher order thinking skills are integrated in the teaching aims to provide students with skills to think critically and to produce new ideas. Thinking skills applied to students through high level questions, activities that encourage thinking and problem solving as well as teaching methods. There are different kinds of thinking skills according to the views and schools of thought. In general, higher order thinking skills refer to the 4 domains; application, analyse, evaluate and create (Brookhart, 2010).

Higher-order thinking skills encourage students to learn how to acquire knowledge throughout their lives (implementing curiosity and lifelong learning) to enable them to connect various disciplines and create new knowledge. Each student must master a variety of cognitive skills including reasoning and critical thinking, creativity and innovation. This aspect has been of less concern, resulting in students unable to apply knowledge and critical thinking outside the academic context (Brookhart, 2010). According to the MME. (2010) in an effort to promote HOTS, the Ministry of Education has embedded innovations in the curriculum when introducing School Based Assessment (SBA). Implementation of SBA aims to improve the lower secondary examination (PMR) system which was planned to be abolished by 2014.

Problem statement: Changes in the curriculum through SBA trains students to think critically and apply knowledge learned in various contexts. The new format requires students to be assessed based on output that are wider in context and longer in duration as envisioned in the education policy (MME., 2010). However, there exists anxiety among teachers as they do not understand the application of HOTS in SBA. This causes a difference between what is practiced in the classroom and what is proposed in SBA. In addition, many teachers question the implementation of SBA due to weaknesses in the access system and mechanism for recording performance which at the same time has increased the workload of a teacher (Pute *et al.*, 2012). Thus, this study was conducted to evaluate the level of teacher's awareness in applying HOTS through SBA. According to Hall and Hord (2011), CBAM is a model that explores teacher's awareness with regards to changes that happen in education. In exploring HOTS implementation in SBA, CBAM examines the level of development in individuals after undergoing change in education. There are seven levels of awareness or concerns tested using Hall and Hord (2011) model. Awareness is defined as feelings, thoughts and reactions by an individual towards a change which affects their lives. Individuals involved in the process of change will

face different levels and intensity of concern which differs between individuals (Hall and Hord, 2011). This study examined 7 stages of concern which can be described as:

- Concern stage 1: awareness of HOTS application in SBA
- Concern stage 2: information about HOTS application in SBA
- Concern stage 3: personal towards HOTS application in SBA
- Concern stage 4: management of HOTS application in SBA
- Concern stage 5: consequence of HOTS application in SBA
- Concern stage 6: collaboration in HOTS application in SBA and
- Concern stage 7: refocusing of HOTS application in SBA

Research questions:

- What are the teacher's awareness profile for the 6 stages of concern namely awareness, informational, personal, management, consequence, collaboration and refocusing
- What are the teacher's level of awareness towards the 6 stages of concern namely awareness, informational, personal, management, consequence, collaboration and refocusing
- What the teachers view about application HOTS in SBA

MATERIALS AND METHODS

This study applies mixed-method which is quantitative and qualitative approach. Survey research design used in this study. A total of 206 teachers who are pursuing their master's degree at Universiti Utara Malaysia were selected as the respondents. They were invited to attend a workshop related to SBA which was conducted by Head of Sector for Academic Test Construction. The aim of the workshop was to highlight the application of HOTS in SBA. The teachers were asked to complete a set of questionnaire to examine the teachers' awareness profile. Quantitative data analysis using descriptive statistic was used to obtain the percentage and mean. According to the Field (2011), the percentage is obtained by standardizing the total population to 100%. Mean is the average value used to represent a set of values that is observed and applied for ratio and interval scale. The instrument's coefficient value for reliability is as follows: awareness 0.82, informational 0.74, personal 0.81, management 0.77, consequence 0.69, collaboration 0.63 and refocusing 0.72. To obtain the teacher's profile the seven stages of concern were divided into three categories that are low (0-45%), average (46-60%) and high (61-91%). Meanwhile, the mean interpretation scale for CBAM is as follows: 1.00-2.40 very low, 2.81-4.20 average, 4.21-5.60 high, 5.61-7.00 very high. Meanwhile, a total of 20 teachers were randomly selected to participate in interviews.

RESULTS AND DISCUSSION

Demographic data analysis indicates that the number of teachers in primary schools stood at 115 people (55.8%) while teachers in secondary schools were 91 people (44.2%). In terms of location, the ratio shows the number of teachers in rural areas were the most with a total of 136 (66.02%) followed by teachers in urban areas with a total of 70 (33.98%).

Teacher's awareness profile analysis: The teacher's awareness profile for the 6 stages of concern with regards to the application HOTS in SBA is shown in three domains that are high level, namely: are not concerned about the application of HOTS in SBA with 66.5% (n = 137), 64.6% of the teachers (n = 133) are not interested to know about the application HOTS in SBA, 56.7% (n = 117) do not know about HOTS in SBA. For teacher's awareness profile of concern in terms of information about application of HOTS in SBA, 76.7% of the teachers (n = 158) want to know the requirements for applying HOT in SBA and they also want to know whether the application of HOTS is better than conventional. Both of these items are at a high level. However, 47.1% teachers (n = 97) are at moderate level of concern about knowledge regarding applications of HOTS in SBA.

The findings for concern in term of personal showed a large number of teachers that is 79.2% (n = 163) has a high level of concern for the item: teachers want to know how the teaching should be changed, a total of 73.8% (n = 152) want to get more information about what is needed to apply HOTS in SBA and 72.8% of the teachers (n = 50) want to know the consequences of applying HOTS in SBA with regards to their professional position.

Meanwhile, for the level of concern in terms of teacher management revealed that a total of 68.5% (n = 141) of the teachers showed concern at a high level for the 2 items: as much time as necessary in order to streamline the application of HOTS in SBA and

Table 1: Mean for teachers concern

Concern stages	N	Mean	SD	Interpretation of mean
Awareness	206	4.346	1.4006	High
Information	206	4.846	1.1244	High
Personal	206	5.070	1.1470	High
Management	206	4.862	1.5172	High
Consequence	206	4.874	1.0862	High
Collaboration	206	4.632	1.1814	High
Refocusing	206	4.702	1.1390	High

approximately 68% of the teachers (n = 140) are concerned about insufficient time to manage teaching and learning every day.

The finding for teacher's concern in terms of consequences displayed a total of 77.7% teachers (n = 160) have high concern about the ability to assess the impact on student's learning, followed by 73.3% teachers (n = 151) with high concern agree to inform students about their role in implementing HOTS in SBA. The findings for concern in terms of teacher collaboration showed a large number of teachers that is 73.2% (n = 151) have a high level of concern to acquaint school or other schools with application of HOTS in SBA followed by a total of 71.4% (n = 147) who want to know what is being done by other school regarding application of HOTS in SBA. A total of 65.1% (n = 134) teachers want to align their own efforts with the efforts of others to maximize the impact of the application of HOTS in SBA. While as many as 36.9% of teachers (n = 76) showed a moderate concern for providing assistance to other schools concerning the use of HOTS in SBA.

Furthermore, the finding of teacher's concerns in terms of improvement showed 70.9% (n = 146) of teachers have a high level of concern in modifying the way they apply HOTS in SBA-based on student's experience. Approximately 68% (n = 140) would improve the teaching approach to HOTS in SBA. Meanwhile, 62.7% teachers (n = 129) want to know how to exploit, enhance or replace HOTS in SBA. A small number of teachers that is 42.7% (n = 88) showed moderate concern over the possibility of other approaches that may be better than the application of HOTS in SBA.

The level of teacher's concern based on seven stages: Table 1 shows the level of concern based on mean interpretation as follows; awareness (mean = 4.346), information (mean = 4.846), personal (mean = 5.07), management (mean = 4.862), consequence (mean = 4.874), collaboration (mean = 4.632) and refocusing (mean = 4.702). Overall analysis of the mean value of the 6 stages of concern showed a high level. The highest concern between the mean values begins with personal, consequence, management, information, refocusing, collaboration and awareness. Based on the comparison of means, the awareness domain has shown low levels (mean = 4.346) compared to the other stages of concern.

The teachers views about application hots in SBA: This is result from interview which is 20 teachers responded in the interview. Most of the teachers interviewed thought HOTS application is the way to produce students who are wise think to coincide with the wishes of 21st century.

Furthermore, most of teachers also agreed that SBA is a holistic academic assessment system. The application of HOTS can help students to be more knowledgeable, skilled and have good manners through the education process which describes the real performance of an individual. Following is the extract taken from the interviews with 5 teachers; R2, R3, R9, R13 and R14. Question 1: What is your view about the application of HOTS in SBA? Probe: Give explanation:

> R2: "it is fair because SBA is a holistic academic assessment system. The application of HOTS can help students to be more knowledgeable, skilled and have good manners through the education process which describes the real performance of an individual

> R3: "it is proper because the idea of applying HOTS in SBA is to produce human capitals that are active and innovativeto fulfil the challenges of the 21st century so that the nation can compete globally"

> R9: "suitable because applying HOTS in SBA makes students focus towards HOTS such as apply, analyse, evaluate and create. Students are able to solve problems, make decisions, become innovative and create from various elements and resources around them. It can also expose students to new change in learning and encourage students to view the old method or approach in a new light"

> R13: "commendable because it can make students think and give logical and positive answers; come up with opinions based on own ideas, thinking and knowledge"

> R14: "suitable for students who have the ability to think critically with a good foresight to produce better responses and reactions"

Then, all the teachers who interviewed agreed that one way to improve application HOTS in SBA is to diversify learning activities based on problem solving. While teachers also felt that the text book should be improved by providing questions that test higher-order thinking skills of students. Question 2: What are needed to improve the application of HOTS in SBA? Probe: Give at least 2 relevant suggestions. Below are the extracts taken from the interview with 5 teachers R15, R17, R18, R19 and R20:

R15: "students should be exposed to suitable examples that relate to their everyday lives

"The school especially the core subject panitia can organize competitions among students by providing various activities which can inculcate student's thinking with various ways of solving problems

R17: "lessen the syllabus in the text book"

"Provide sufficient allocation to prepare teaching materials"

R18: "teachers have to train students to answer questions using HOTS for all subjects"

"Teachers are always active and apply HOTS during learning and teaching"

R19: "coordination between the curriculum specification and the syllabus so that HOTS can be practised"

"Text books should be improved where HOTS application can be familiar in SBA"

R21: "provide lots of HOTS-question modules"

"Text books should be improved so as to be familiarised with HOTS"

The study findings have shown that the respondents have not yet, reached the stage of very high concern. The respondent's concern at high level can be categorized as new users who are already thinking about the application of HOTS in SBA. However, information on HOTS in SBA is still limited and teachers are still searching on how to apply it in teaching and learning. If the intensity of the awareness reaches a very high level then this will give a good indication that teacher's level of concern and awareness are progressing (Hall and Hord, 2006). These findings are consistent with a study conducted by Chandler (2007) that the receivers of changes are individuals that have been exposed to changes in education. CBAM model has not only able to see the level of concern but also able to explore the level of change and configure the changes for individuals who are involved. In the process of implementing the teaching of HOTS in the classroom, many constraints are identified. Among the factors that hinder the teaching HOTS is teacher's lack of exposure, knowledge and skills in applying HOTS in the classroom.

CONCLUSION

Teachers have a high level of concern about the application of HOTS in SBA. There are some aspects of concerns that can be improved such as awareness and information. This can be proved through the analysis of the second stage concerns namely information on the application HOTS in SBA where it was found that teachers lack the knowledge to apply HOTS. But teachers have high curiosity related to applications of HOTS in SBA. Majority of the teachers want to know the existing resources if they accept and apply HOTS in SBA. Furthermore, these findings explain that the teachers are very concerned about creating a relationship or collaboration between schools. The goal is to let teachers know what is done by other schools related to applications of HOTS in SBA and exchange ideas and suggestions. Teachers also want to implement the modifications to apply HOTS in SBA by focusing on the experience of students.

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