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TEACHERS' CHALLENGES IN TEACHING AND LEARNING FOR HIGHER ORDER THINKING SKILLS (HOTS) IN PRIMARY SCHOOL

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ABSTRACT

Malaysian Education Blueprint 2013-2025 aspires to develop Malaysian students who are able to master higher order thinking skills (HOTS) including critical thinking, reasoning, creative thinking, and innovation. The achievement in this area is discouraging, that is, research findings indicated that majority of students were not able to transfer the knowledge they have learnt in the classroom using HOTS to the context outside of the classroom. Studies revealed that teacher was one of the main factors that influenced success or failure in teaching for HOTS. However, the literature on various aspects of teacher factor is still wanting especially in Malaysia. Further, Malaysia had implemented training programs to equip teachers with knowledge and skills to teach for HOTS. Nevertheless, aspects of teachers' knowledge of HOTS and competencies in and teaching for HOTS were not explored extensively throughout Malaysia. What is more to explore the challenges faced by teachers in executing HOTS curriculum. Thus, this study was conducted to explore the challenges faced by teachers in teaching and learning for HOTS in the classrooms. It employed qualitative research method to collect and analyze data from interviews conducted with nine teachers who taught Bahasa Melayu (Malay Language), Mathematics, and Science at one of the showcase's school of i-THINK program in Terengganu, Malaysia. The transcripts from interview were analyzed thematically to discover the emerging themes. The findings indicated that teachers faced several challenges in teaching and learning for HOTS. The challenges were in the aspects of teachers, teaching and learning preparations and processes, and in the aspects of pupils.

Contribution/ Originality: This study is one of very few studies which have investigated the challenges faced by primary school teachers in Malaysia in teaching for higher order thinking skills through a qualitative study.

1. INTRODUCTION

The Ministry of Education (MOE) has implemented various transformation plans and innovation in the field of curriculum, so that it is able to keep up with current societal changes, be them locally or globally (Mohamad and Nasruddin, 2008). In fact, the objective of Malaysian education is to develop the potential of individuals to be skillful in critical, creative and collaborative thinking (Noraini and Khairul, 2014). Nevertheless, Mohd Azhar *et al.* (2006) and Zulkarami (2011) argued that although one of the aims of national education is producing pupils with

better thinking skills, but the effort to produce pupils who are skillful in higher order thinking had only brought about limited success so far; and no clear sign can be observed indicating the existence of a culture of creativity, invention and innovation in schools at the national level.

1.1. Challenges in Teaching for HOTS

Thinking skills have been explicitly incorporated in the syllabus since 1989 to emphasize on teaching pupils to 'know how' instead of to 'know what'. In fact, the questions that required higher order thinking skills and questions of open-response have been raised at all levels of assessment, including Primary School Assessment (UPSR), Lower Secondary Assessment (PMR) and Malaysian Certificate of Education (SPM) (Supramani, 2006; Lembaga Peperiksaan Malaysia, 2013). HOTS programs were selected and have been implemented formally in schools in Malaysia since the last decade; and the explicit teaching for thinking skills has been implemented since then (Rajendran, 2002). Moreover, by 2016, 50%, 80% and 75% of questions asked in UPSR, Form3 Based Assessment and SPM core subject respectively were questions that measured higher order thinking skills. Further, 50% of the questions for SPM elective subjects were higher order thinking questions. This move required teachers to shift their focus to teaching for HOTS. Similar changes were made to the School-Based Assessment questions (Kementerian Pendidikan Malaysia, 2013a). However, teachers faced a great number of problems in the implementation of HOTS; and this effort had only brought limited success (Kementerian Pendidikan Malaysia, 2013).

Accordingly, the cultivation of thinking skills at primary school level is important in the context of the current development. Efforts to promote and develop thinking skills should begin at the primary school level because this level is considered as the best time to cultivate the basic foundation for further education (Ikhsan and Norlia, 2005; Mohamad and Nasruddin, 2008). However, the findings on the implementation of thinking skills in teaching and learning still indicated that teachers lacked knowledge in thinking skills and were unskilled in applying thinking skills (Zamri and Jamaludin, 2000; Zulkarami, 2011). Teachers also lacked practice in creative thinking skills, graphic management, asking high-level open questions and teaching for HOTS on the whole (Sukiman *et al*., 2013).

Therefore, to realize the aspiration of Education Blueprint 2013-2025 and to improve teaching and learning processes to ensure that pupils can develop HOTS required in-depth analysis of the current practices in teaching and learning. In fact, teachers faced multifaceted challenges during teaching and learning sessions. They needed to explain, analyze and adjust what were outlined in curriculum produced by the Ministry of Education; including the importance of objectives and the implementation of curriculum standards and themes related to teaching thinking. What is more, primary school teachers were burdened with non-teaching tasks that took up 40% of their time (Abdull *et al*., 2006). The first step to rectify problems in teaching for HOTS is to identify and understand the real and biggest challenges faced by teachers because any solution would be not effective without understanding this phenomenon at the real setting.

Therefore, this study was conducted to explore challenges faced by primary school teachers in order to have a comprehensive understanding of the challenges so that it may provide an illustration of the broader issues in teaching for HOTS especially in Malaysian primary schools. Specifically, this study attempted to discover the actual challenges faced by teachers in structuring teaching for thinking, teaching of thinking and teaching about thinking in the classroom; and how teachers interpret every challenge in teaching and learning for HOTS. The insight gained from this study is significant for teacher educators, curriculum developers, and those involved in planning and implementing improvement and innovations in education. Further, this study contributes to the much needed literature on the status and development of teaching thinking in Malaysia.

2. METHODOLOGY

The study was conducted using qualitative methods. Semi-structured interviews were employed to gather rich data. Accordingly, open-ended questions were formulated based on the criteria developed by Newmann (1992) adapted from Fischer *et al.* (2011) in order to gather relevant data pertaining to challenges faced by teachers in teaching for HOTS. The interview protocol, including information provided and also the selection and arrangement of the questions, varied according to the perception of the interviewers based on what they felt was necessary or appropriate at the time and when the interview was conducted, as proposed by Robson (2002).

The informants were teachers who taught Bahasa Melayu (Malay Language), Mathematics and Science. A total of 9 informants were interviewed to obtain the data up to the point of saturation. In addition, the data collection was not limited to the process of recording. Instead, the researchers actively listened and organized the data so as to make them meaningful and significant to this study as proposed by Fox (1998).

The data were analyzed using a specific procedure thematically, which was typology method that provided a series of step-by-step analysis of data containing open coding, axial coding, selected coding, and generation of conditional matrix (Strauss and Corbin, 1990; Othman, 2006).

3. FINDINGS

The analysis of the findings revealed three major challenges faced by teachers in teaching of HOTS in classroom embodied in three aspects; teachers, teaching and learning, and pupils. Therefore, the main challenge faced by all the informants was reflected from the perspective of the individual teachers that includes their perceptions on HOTS and teaching for HOTS; competencies in and teaching for HOTS; and content and pedagogical knowledge of HOTS.

3.1. Aspects of Teachers

3.1.1. Teachers' Perception

In the context of perception, teachers interpreted the challenges in teaching for HOTS with various flavors that characterized teaching and learning in classroom. They assumed that, infusing HOTS elements in teaching and learning in primary schools can interfere with the teaching and learning processes. GB_1T_4 said "... lessons are delayed because more time is required to ensure that all pupils master the skills... teaching and learning are not conducted according to annual planning ..." because they had to repeat some lessons or descriptions. This view was supported by GB_2T_5. He said, "...we need to explain that repeatedly... even, in certain situations, I have to repeat my lesson ...". This is because examination was still viewed as the benchmark to measure pupils' achievement. GM_1T_4 maintained that "... the examination is still important even if the school based assessment is practiced...".

In fact, this was also troublesome for old teachers, especially teachers who were in the comfort zone with conventional teaching and learning methods as implied by GM_3T_6, "...it interrupts my teaching as I can't keep up with the current changes in education with more emphasis on using IT in learning… I am a seasoned teacher who is not familiar with the use of IT…" However, the perception of young visionary teachers was contradictory like GS_1T_4 conveyed that "...it excites me to change the common practices...(p)...to change the culture and work practices...strive and committed...and willing to challenge...I never put off until tomorrow what I can do today…". This showed that young teachers were more open-minded and farsighted.

They also expressed with greatest concern of how to teach the necessary skills while the allocation of time was limited. GB_3T_6 asserted, "... I feel stressful because there are a lot of things students have to learn...that bothers me...I kept thinking on how to complete all the syllabus and skills, it feels as if there are a lot of things and skills that need to be taught at once...". This perception was parallel to GM_2T_5 when he said, "... it makes me stressed out...I always think of how to master something that is more complicated...then how to transfer the knowledge and skills to the pupils...". Another similar perception came from GS_3T_6 who expressed his concerns, "...teachers become

stressed out...it can affect teacher's emotions... especially when teachers need to modify and improve teaching tools, teaching and learning process...". With these, teachers also felt the increasing workload.

However, on the ground of lifelong learning, teachers were still trying to continue their struggle to educate the children. GS_2T_5 informed, "... I carry out my duties and responsibilities as entrusted...I always try to get more information and refer a lot to the experts...". This perception exists because the thoughts and attitudes of teachers were still not in line with the current developments of education system.

Nevertheless, all teachers were, in fact, aware of and they acknowledged the importance of teaching for HOTS to help improve pupils' academic achievement, even to help students to attain success in their daily lives. Majority of the teachers communicated that, "...It is important to help improve pupils' achievement ..." (GS_1T_4); "...To succeed in all activities they undertake in and outside of school..." (GS_1T_4); "...Both for their successful careers in the future..." (GB_1T_4); "...The skills to succeed in the future..." (GB_2T_5); "...It is important to develop the potential of pupils' thinking..." (GM_3T_6); "...the need for pupils to structure their thoughts..." (GS_3T_6).

3.1.2. Teachers' Knowledge

The biggest challenge faced by teachers in the context of teaching and learning for HOTS was their own understanding and knowledge of HOTS. The findings revealed that teachers had some misconceptions about certain key components of HOTS, what is more to master these key components. Most of the teachers merely listed the subskills of HOTS. GB_2T_5 and GS_2T_5 understood HOTS as "...creative thinking skills and critical..."; while GB_3T_6 maintained HOTS as "...creative thinking skills, critical thinking, reasoning, decision making...". In addition, GS_1T_4 defined HOTS as "...critical thinking skills, creativity, logical thinking skills, information, skills to compare and differentiate, characterize, welding skills and so on...". These were the indications of the teachers understanding of HOTS which was very minimal.

The misconception also occurred in terms of questioning techniques and concepts of Socratic questions. All teachers showed uncertainty and ignorance about the question types and Socratic questioning. They used body language to answer our questions on Socrates by frowning and shrugging (GB_1T_4); shaking his head and raising both shoulders (GB_3T_6); shaking his head and frowning (GM_1T_4); rubbing his chin thoughtfully with a quizzical gaze (GS_2T_5). In addition, they also explained the knowledge and understanding by saying "...Socrates is questioning techniques using open-ended questions..." (GM_2T_5 and GS_3T_6); "...Open-ended response questions..." (GS_1T_4); "...Questioning that begins with simple questions, then more and more difficult..." (GB_2T_5).

In conclusion, these showed that the greatest challenge faced by teachers was teachers themselves did not have adequate understanding of HOTS. When teachers themselves did not have the correct understanding, how can they teach this knowledge and skills to their pupils. It is not logical to teach something that we do not understand. The consequences of not having correct understanding and knowledge of HOTS lead to inability to master the skills of higher order thinking and inability to design and implement effective instructions during teaching and learning sessions. Therefore, the objectives of teaching for developing HOTS in students would be difficult.

3.1.3. Teachers' Skills

The challenges from the aspect of teachers' skill involved teachers' competencies in HOTS and their skills in designing teaching and learning for HOTS; in considering all elements in a holistic manner; and innovating creative ideas. Analysis of the data showed that teachers still grappled with the understanding of HOTS and its key components. Thus, in the context of skills of teaching for HOTS, teachers faced the challenge of how to plan and deliver lessons that were effective in achieving both objective of subject matter and HOTS. Further, they faced challenges in completing the syllabus; and identifying, selecting and determining the most effective approach for teaching and learning for HOTS. On the issue of the syllabus, teachers needed to complete it before UPSR or the final examination. This indicated that the teaching and learning were still very much exam-oriented as opposed to

achieve the goal of KSSR, which is assessment-oriented. Consequently, teachers thought that it was a great challenge to balance between the importance of examinations and assessments that require pupils to master all the skills. GB_2T_5 frowned and said with a sigh, "...teaching becomes less attractive because pupils need to master a topic widely and master many skills at a time...otherwise, the syllabus will not be completed as planned...". In fact, he also said "...I had to ignore the skills that have not yet been fully mastered by pupils simply to complete a syllabus...". GM_2T_5 also disclosed that same perception, that is, "...teaching is often disrupted and cannot be fully conducted...err...the syllabus cannot be completed... if the syllabus can be completed, not all pupils can master the skills that are being taught...". Therefore, teachers needed to master the knowledge and skills in the field of comprehensive planning, especially in integrating thinking skills in all subjects.

Lesson planning must focus on certain aspects. GS_1T_4 said "...I need more focus to plan the lessons in selecting and defining approaches, techniques and activities that correspond with the skills...". GS_3T_6 also said that "...teachers must plan and prepare early, if not...the objectives and goals of teaching thinking skills and curriculum are difficult to achieve...". In fact, this plan must be systematic. GS_3T_6 also expressed that "...planning requires a longer time particularly in choosing appropriate strategies of induction set up to cover teaching and learning, everything must be arranged in an orderly manner...".

Meanwhile, teachers also faced challenges in making judgments that involved all elements in HOTS. In this context, teachers were required to think analytically. GB_3T_6 said "...I must be critical in designing the teaching and learning by taking into account all the skills involved...". This is because teachers had to mix and match each element in the teaching and learning as GM_1T_4 said "...all the elements of teaching and learning should be taken into account to adjust and match the topics and skills combined with...and equivalent with the objectives...". This was supported by GS_2T_5 when she said that, "...it must be planned carefully and thoroughly to avoid missing out any important skills...". In fact, she said "...thoroughly including structured in terms of a comprehensive selection of all the skills involved in teaching and learning, values, attitudes and all components for effective teaching and learning... also strategies and techniques to be used by teachers".

In addition, innovation was also a challenge for teachers who taught HOTS. This innovation was interpreted based on teachers' perceptions. GB_3T_6 said that "...innovation is the need to re-adjust the design of the plan so that it can cover all...all need to be changed, including activities, instructional media, the skills involved and instructional design...teachers need to know how to manipulate every element in HOTS...". Similarly, the thought of GS_2T_5, "...more needs to be modified in terms of teaching and learning and also the activities..." and GB_3T_6 voiced out to "...innovate the tools and activities necessary to achieve learning objectives of both subject matter and HOTS...". However, GS_3T_6 believed "...it depends on teachers to select, modify and apply the provided tools for teaching and learning sessions in the classroom...". Teachers grappled to innovate new ideas in teaching for HOTS and they viewed that innovating creative teaching activities and thinking tools to be used in teaching and learning session was very challenging. Majority would work with the thinking tools which were provided in the Standard Document of Curriculum of the Ministry of Education. However, young teachers used their own creativity in designing activities and thinking tools to be used in teaching and learning.

3.2. Teaching and Learning Aspects

Another challenge faced by teachers in teaching for HOTS was in the aspects of teaching and learning. Analysis of the data revealed six important themes which were named as planning domain; achievement of the objectives or learning outcomes; time; interruption of teaching and learning processes; contents; and the classroom environment.

3.2.1. Planning Domain

Teachers planned their teaching and learning of HOTS carefully with regard to curriculum content, the length of time spent on teaching and learning, and the pupil's abilities. (GB_3T_6) maintained, "...I modified the plan so that it can cover all domains of learning within the time frame stipulated by Standard Document of Curriculum of the MOE...to ensure the syllabus can be completed; the objectives are achieved and addressed; even teaching and learning of thinking skills are still exam-oriented."

Conversely, failure to design gives a negative impact. "...If the syllabus has not been completed, this means the domains within the relevant thinking skills have not been taught and learned...so, it is difficult to master the skills and concepts that have continuity..." (GM_2T_5). This problem was often experienced by teachers who teach poor pupils. "...I can rarely finish my syllabus with pupils of low cognitive ability. I'm more concerned about their understanding, though not deeply... instead of pupils who have high level of cognitive ability, I make sure they understand the depth and at the same time finish the syllabus..." (GS_2T_5). Thus, he believed "...the design of all domains of thinking skills must be planned in detail and systematically...because failing to plan is planning to fail…". Hence, the curriculum is a starting point for teachers to act wisely and creatively in designing teaching and learning of HOTS in classroom.

3.2.2. Achievement of Objectives or Outcomes

Next, the achievement of the objectives or learning outcomes is an important element in teaching and learning as an indicator of the level of pupils' mastery, but it was difficult to achieve. "...The objectives and goals of teaching and learning are difficult to achieve..." (GS_3T_6). Then, "...the objectives, which are not achieved, affect pupils' mastery..." (GB_1T_4). Therefore, the lack of objectives or outcomes achieved in teaching and learning can cause various problems to the teachers, pupils or teaching and learning process on the whole. Among the problems raised include: GM_1T_4 "...the objective and outcomes of teaching and learning HOTS can be a challenge for me to achieve...(p)... it also disrupts the smoothness of the teaching and learning process because I must finish the syllabus... I need more time to cover all the contents and at the same time ensure that the objectives of thinking skills are achieved...". In fact, GS_2T_5 said there were "...difficulties in integrating thinking skills or bypassing any content or perceived skills that pupils have mastered, which can interfere with the learning outcomes...". This does not mean that the learning outcomes of teaching thinking were unattainable, but it required teachers to manage their teaching and learning practices wisely in the classroom. (GB_1T_4) asserted that, "...when using convenient strategies and methods of teaching and learning with thinking tools, the teaching and learning of HOTS will achieve the desire targets...".

3.2.3. Time

Time really was a great challenge to the teachers in teaching and learning of HOTS. This is because all teachers felt that they did not have enough time to teach HOTS. GB_2T_5 said "...there is not enough time to make sure they understand and master all the skills that should be learned...". Furthermore, "...it takes a longer time to plan more accurately and conveniently..." (GB_3T_6). This is because the teaching and learning are still exam-oriented. GB_3T_6 said he "...devotes more time to finish the syllabus and concentrate on pupils who will sit for UPSR... hence, the provision of teaching thinking skills is very limited...". In fact, the ability of the pupil becomes the causal factors of inadequate time for teaching and learning of HOTS. GM_2T_5 informed "...to teach pupils who are weak..." while scratching his chin forward, he said "...I need to teach many things, which require more time...". Meanwhile, GM_1T_4 said "...the pupils have not reached a high level of thinking... and time constraints lead to teaching and learning need to be continued tomorrow to ensure the objectives are achieved and pupils mastered learning...". This clearly shows that time was an important factor affecting the effectiveness of teaching and learning of HOTS in classroom. However, GS_1T_4 informed that teaching thinking skills was not directly integrated in the

teaching curriculum due to time constraints, "...I incorporate elements of thinking skills in teaching and learning indirectly when teaching science through a variety of teaching approaches...". Similarly, GS_3T_6, said, "...I teach science process skills concurrently with teaching thinking skills because I did not have time to teach them separately...".

3.2.4. Interruption of Teaching and Learning Processes

From the interviews, it can be inferred that teachers felt that teaching for HOTS can interrupt the process of teaching and learning in classroom, "...teaching is distracted and is not enjoyable... teaching is delayed to finish a topic, …teaching and learning are not in accordance with the annual plan..." (GB_1T_4). This was compounded by the inability of some teachers to focus on both content and HOTS. "...Tenseness of the teachers could disrupt the implementation of teaching and learning processes in classrooms... because of the inability of teachers to focus..." (GB_3T_6); GM_3T_6 believed "...the inability of teachers to juggle both objectives causes teaching to be less perfect and less effective...". However, some teachers interpreted this as a positive challenge. "...It depends on the ingenuity and creativity of teachers..." (GS_2T_5). GB_2T_5 had the same response "...it depends on the abilities and creativity of teachers in dealing with pupils during the teaching and learning...". Whereas, GM_2T_5 also noted "...I need to be aware of and act wisely in teaching thinking skills to integrate thinking skills in the curriculum directly or indirectly...". In this context, the smooth running of the processes of teaching and learning for higher-order thinking depended on the mastery of the teachers in driving creativity.

3.2.5. Contents

In this context, the challenge was due to heavy content, that is, a topic loaded with content and skills. "...A broad topic and a lot of skills that need to be finished over the allotted time... that requires careful planning ..." (GS_1T_4) and "...causes objectives of content to not be achieved and affect pupils' mastery..." (GB_1T_4). GS_3T_6 also said the same thing, "...a lot of topics that need to be completed within a limited time and the topic is broad...". Thus, the teachers expressed their need to be ready to modify existing plans to ensure that these challenges did not interfere with the achievement of the objectives of teaching and learning for HOTS. "...Mix and match the contents with pupils' ability in finding the perfect situation or context to practice problem solving... because when they feel troubled and burdened, they do not want to get involved in learning activities... thus, affecting the achievement..." (GB_2T_5). GS_2T_5 said, "… I modify instructional materials that serve as a learning tools and thinking tools ... to focus on teaching and learning science curriculum...". This required teachers to digest the contents of a subject as thinking skills have been infused in the curriculum. GB_3T_6 posited that "...verbs of thinking skills are specified in Standard Document of Curriculum and textbook...". He continued by saying, "...teachers just have to be smart to manage resources for teaching and learning...".

3.2.6. Classroom Environment

Classroom environment is an important medium for teaching and learning, which provides a boost to the minds of pupils to respond to their learning. Hence, teachers thought that creating classroom environment conducive to learning and enhancing students' HOTS was challenging. They were obligated to provide a safe learning environment, nurture intellectual classroom ambience, and structure the classroom in the direction for thinking. Therefore, GB_1T_4 said that "...I have tried to create an appropriate classroom atmosphere for asking questions... to influence and stimulate the pupils' minds so that they can think outside the box...". Meanwhile, GS_1T_4 said, "...I need to organize the classroom so that teaching and learning can develop pupils' thinking... and more creative practices to enable pupils to think well...". This is because teachers thought that a learning environment that was not enjoyable can hinder the development of pupils' thinking. "...teaching and learning environment that bores pupils will delay their mastery especially complex skills..." (GB_2T_5, GM_1T_4, GM_3T_6). The GB_3T_6 said "...create

conditions of classroom conducive to learning and control it to ensure active involvement of the pupils…". In addition, GS_2T_5 said appropriate and environment conducive to teaching and learning may aid teaching and learning of HOTS, "...it is necessary to provide appropriate environment of teaching and learning to help facilitate its process... where the scope and domain of teaching need to be broken down in smaller units to maintain the existing objectives and learning outcomes ...(p)... but this needs more time...".

In conclusion, these findings indicated that teachers needed more knowledge, skills and competency in pedagogy to enable them to deal with these challenges. This is because teachers' efficiency in mastering knowledge of HOTS and its pedagogical skills are the professional strengths needed to structure and improve higher-order thinking knowledge and skills; and this will be the characteristics of the 21st century teachers.

3.3. Pupils' Aspects

Third, teachers faced with the challenge of how to manage and control the various characteristics and attitudes of pupils in the classroom. The diversity of pupil's cognitive level generated the diversity of intelligence in learning aspects which would affect pupils' learning ability, mastery, and their focus.

3.3.1. Pupils' Learning Ability

The ability of pupils in learning of thinking, learning about thinking, and learning for thinking were the greatest challenge for teachers especially among poor pupils, not only in terms of cognitive, but also psychomotor and affective. The pupils relied heavily on teachers in all aspects. "...Teaching weak pupils... (scratching chin) ...I need to guide and teach them all things as they are very dependent on me..." (GM_2T_5). He also said, "...this situation occurred because I need more time to ensure that they understand a skill especially a complex one...". Teachers were constantly struggling to ensure that pupils were able to think of how to solve problem in their daily life. "...in learning mathematics, for example 'money'...I teach them so that they can manage their daily expenses well..." (GM_2T_5). Similarly, GM_1T_4 said, "...I will make sure that even if they are weak cognitively, they will master their basic mathematical concepts and basic operations...such as problem solving of addition, subtraction, multiplication and division...". In addition, to ensure that pupils could achieve the set learning objectives, teachers said that they simplified a lot of things either in terms of subject content skills or thinking skills. "...There are many concepts that needed to be simplified... for example, 'the concept of force'..." (GS_3T_6). He added that it was necessary to ensure that they have learned all syllabuses and skills before examinations. "...there are a lot of things that I simplified to ensure that they can understand and master certain skills and concepts taught.". Otherwise, "...for pupils who have low cognitive level..., there is no time to learn the skills... and teaching and learning are not carried out thoroughly due to limitations in terms of their cognitive ability, but I achieve my desired target with the help of various tools..." (GS_3T_6).

3.3.2. Pupils' Mastery

Closely related to pupils' learning ability is pupils' mastery of basic skills. Pupils with different levels of cognitive ability have different levels of proficiency. This has an impact on teaching and learning for HOTS because "...the teaching and learning designed cannot be properly implemented because pupils who have not yet mastered basic skills need special attention and teachers need to explain it repeatedly...." (GB_2T_5). Further, "...the objectives cannot be achieved as planned and it affects pupils' mastery..." (GB_1T_4). In fact, this happens because there were pupils who had not mastered all the skills of reading, thinking, writing and reasoning well. "...There are pupils who undergo literacy and numeracy screening (LINUS) ...it is very difficult to teach them skills that involve more complex thought process... (GB_1T_4; GM_1T_4) and "...it depends on the ability of pupils to master a skill..." (GM_2T_5).

3.3.3. Pupils' Focus

Generally, creative teachers will produce creative pupils and teachers' focus generates focus in pupils' learning. This is the notion that teachers always think positively in teaching HOTS. "…pupils informed their difficulty in learning complex skills..., so, I should always be ready with the possible difficulties that pupils are facing...when it happens in teaching and learning, I need to change the focus to be more appropriate and befitting; and this is a challenge for me..." (GS_3T_6). Further, GM_2T_5 also said "...it is hard to maintain the direction of teaching and learning...especially in structuring process of pupils' thinking so that they do not lose their focus...". Consequently, teachers said that they should have the ability to go beyond pupils' thinking which was not easy. "... to teach HOTS, I must achieve a high level of thinking, and this is challenging, ...to be able to go beyond pupils' thinking and to deal with the pupils' questions... clearly perceived by pupils..." (GS_1T_4).

As a matter of fact, a high dependence of pupils on the teachers' focus leads to the inability of teachers to become pupils' disability. "...the inability of teachers to focus on the planning and implementation of teaching and learning as well as the structure of thinking... have an impact on pupils, they lose focus on learning and disrupt their thinking process..." (GB_3T_6). Thus, teachers' roles were "...to maintain their focus towards achievement of learning outcomes (GB_2T_5), finish the syllabus, and to ensure that pupils can improve their thinking..." (GM_1T_4).

3.3.4. Pupils' Nature and Style of Learning

The next challenge in the aspect of pupil was their nature and style of learning. This includes pupils' attitude and styles of learning; and their dependence on teachers. Accordingly, teachers become a role model to them. However, GM_1T_4 claimed that "...too many pupils rely on teachers in the classroom and in the aspects of their learning...". He added, so much so that "...teachers are parents in school...". In fact, GS_1T_4 said, "…it is difficult to change the culture of spoon feeding...". Therefore, teachers have to be creative and responsive in designing, controlling and modifying the teaching and learning process according to the immediate needs of pupils. GM_3T_6 said that it was a challenge for teachers "… to ensure that pupils are under control and are actively involved in teaching and learning of HOTS activities...activities must be in accordance with the category of pupil's cognitive ability because complex activities are not suitable for pupils with low cognitive ability ...(p)... they will lose focus and become passive...". In fact, GS_3T_6 said "...pupils become responsive when the learning activities are based on their interests and beyond their habits...". He further said, "...pupils have varied interests, so it is quite difficult to choose and modify to ensure that all pupils are interested in teaching and learning of HOTS activities...".

In conclusion, these teachers faced the challenges of pupils who had different learning abilities; were not able to think for themselves and become extremely dependent on their teachers; who were not able to make the initiative; who had not yet mastered the critical and literacy skills; and were unable to focus and unable to make the correlation between the subjects learned and the context that they lived in. However, they were able to think well when supported and guided by the teachers. "...my pupils can undertake their thinking tasks when they understand clearly what and how to think..." (GS_1T_4). Therefore, teachers need to understand pupils' development, their learning abilities and needs. Further, teachers should know various learning theories to design teaching methods that are suitable for students with different learning styles so that they could stay focused during teaching and learning session. This is very important so that teachers could produce pupils with the characteristics of 21st century.

4. DISCUSSION AND CONCLUSION

This study was conducted to explore the challenges faced by primary school teachers in teaching for HOTS to achieve the aspiration of Malaysian Education Blueprint 2013-2025. The analysis of the data revealed that the challenges can be classified into three aspects, namely teachers' aspect, teaching and learning aspect and pupils' aspect. The challenges with respect to teachers' aspect were their perceptions towards teaching for HOTS, their

content and pedagogical knowledge of HOTS and their skills of HOTS and competency in teaching for HOTS. All of the teachers had positive perceptions on HOTS and they were aware of the importance of HOTS for pupils to be successful in school and life. However, in terms of teaching for achieving the objectives of HOTS, old teachers viewed it as troublesome, time consuming, and they had to choose between achieving the objectives of the subject matter or HOTS. They were not willing to change their methods of teaching since they felt that they were already in a comfort zone. Nevertheless, young teachers viewed teaching for HOTS positively and would strive to acquire the knowledge and skills in teaching for HOTS.

With respect to teacher knowledge of HOTS, majority of teachers only had very basic knowledge of HOTS and they had misconceptions on some key components of HOTS. It can be concluded that teachers need to be given extensive training about HOTS. The biggest challenge for these teachers were to teach something that they did not fully understood; and to transfer skills that they did not fully master to pupils. Teachers who did not understood HOTS would not have the competencies in HOTS which in turn would affect their skills in teaching for HOTS. Therefore, this study found that teachers faced the biggest challenge in innovating new ideas for teaching for HOTS. Majority of the teachers would work with the methods of teaching and the thinking tools suggested by Ministry of Education which were available in Standard Document of Curriculum and textbook. But they still could not innovate their own ways and tools.

The challenges that teachers faced in the aspect of teaching and learning were in the planning domain, achievement of objectives and outcomes, time, smooth running of teaching and learning process, contents and classroom environment. Teachers thought it was challenging for them to plan lessons that could achieve both objectives of the subject matter and HOTS. They complained about having to plan lessons to complete the syllabus and at the same time to achieve HOTS objectives. With the inclusion of HOTS as necessary objectives of lessons, teachers faced the challenge of time. To juggle both objectives was challenging in a given time frame. Since time was one of the biggest factors that could hinder teaching for HOTS, they maintained that sometimes they had to compromise between achieving objectives of HOTS and completing the syllabus. They blamed lack of time and heavy curriculum content for not being able to plan lessons that can achieve HOTS objectives as well as content objectives. Teaching for HOTS, according to the teachers, intervened with the smooth running of teaching and learning sessions. What is more to create a classroom environment conducive to learning HOTS was challenging for the teachers.

This study also found that pupils' learning ability, mastery of basic or prior skills, focus, nature and learning style were major challenges for the teachers. Most of the teachers reported that some students, especially students with low cognitive ability, were too dependent on their teachers. Teachers had to spoon feed and guide their students all the way. This was especially difficult with students who were not able to achieve proficiency in basic skills. It was challenging for teachers to restructure lessons to ensure that all students could achieve both content knowledge and HOTS. The uniqueness of every student was challenging enough for teachers to focus on the subject matter and HOTS because teachers viewed HOTS and subject matter as two separate objectives not as using HOTS to achieve objectives of subject matter.

Concisely, this study found that teachers' challenges in teaching and learning were embodied in the core requirement of knowledge of teachers by MOE (Abdul *et al.*, 2015) the general pedagogical knowledge, and pedagogical content knowledge. Therefore, teachers need to master various fields; become skilled and competent in teaching and learning; understand the development of pupils, teaching psychology, and counseling skills; to face the challenges in teaching and learning of HOTS, so that every challenge is interpreted positively and constructively. This challenge is part of what teachers are required to deal with to gain the characteristics of 21st century teachers as outlined by MOE (Nor Hayati and Kamarolzaman, 2015).

In the nutshell, to face these challenges successfully, it is important for teachers to master various fields of knowledge to make themselves flexible and relevant, while it allows them to absorb all current changes. Thus,

continuous learning can ensure that teachers will always be ready to keep up with the changes, challenges and to have high teaching efficacy.

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