

# The 21<sup>st</sup> Century Learning in Malaysian Primary School: Exploring Teachers' Understanding and Implementation of HOTS

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**Abstract**— In the schooling system, teachers are the forefront in every educational system elsewhere. Thus, teachers' competencies and how their instructional practice become significance in determining students' achievements. The purpose of the study is to explore how primary teachers tried to implement the practice of Higher Order Thinking Skills (HOTS) within the context of 21<sup>st</sup>-century learning based on the four elements that have been outlined in Taxonomy Bloom through structured interview sessions. A total of seven teachers were selected as respondents from primary schools. The findings of the study indicate that primary teachers are aware and realize the role of HOTS in bringing up our future generation in line with instilling 21<sup>st</sup> century into learning. This study can be develop to evaluate the implementation of HOTS in an appropriate teaching practice for different school cultures, different levels of education and even a school that is completed with all the facilities for the teaching and learning process.

**Keywords**— *higher order thinking skill; 21st-century learning; primary teachers*

## I. INTRODUCTION

In recent global educational system, much emphasis is given on the Higher Order Thinking Skills (HOTS). HOTS believed able to develop students' academic performance and prepared the future generations in the elements of lifelong learning, problem-solving and critical and analytical thinking. Thus, it is presumed that HOTS strategies able to produce new knowledge and skills. HOTS necessary for successful adjustment to a changing world are continuously acquired throughout life [1]. In analysing the HOTS' framework, HOTS consists of four levels and placed on top of the revised Bloom's Taxonomy of domain which are applying, analysing, evaluating and creating [2-4]. Through HOTS strategy, students are presumed to have in-dept understanding of a concept or idea and later apply the relevant knowledge to solve new problems in different situations [5].

In Malaysia, HOTS has been introduced by the Ministry of Education as part of the government's efforts within the current Malaysia Education Blueprint 2013 to 2025. HOTS has the purpose to develop students' to think critically and

creatively [6]. In the context of Malaysian schooling system, HOTS are officially defined as the ability to apply their knowledge, skills and values in reasoning, problem solving, decision making, innovating and creating a new invention [7]. Through the HOTS implementation at school level, it is projected to prepare the future generation with resilient attributes in facing their future challenges and issues within their employment and profession. The implementation of HOTS in Malaysia within the school-based evaluation system is part of the government's initiative to improve teaching and learning qualities with the purpose to enhance students' creativity and innovation. Through HOTS, it is believed that students will be able to think critically outside of normal academic settings as a result of mastering a range of important cognitive skills, including problem solving, reasoning, creative thinking, and moreover, the element of innovation.

With the implementation of HOTS in Malaysian schools, students are encouraged and supported with the inquiry-based learning and higher level of questioning which later resulted with students' achievement [4], [8]. Through HOTS approach, students are directly involved within their thinking process which in line with the 21st Century learning approach which emphasised on students' independent, project-based, and student centred learning process [9]. Thus, teachers nowadays are supported with various and recent teaching and learning strategies such as questioning, problem solving, project-based, simulations, discussion, role play based on the tasks of difficulties in learning [4]. The new system requires teachers to design an assessment or questioning method that requires exercises on the concept of higher ordered thinking. Thus, teachers were given responsibility to create opportunities that constantly deal with HOTS. This is a big challenge to the teachers since this HOTS approach is newly introduced in the curriculum and education system. Therefore, the main reason of this research is to identify the process on how primary school teachers are applying, analyzing, evaluating and creating HOTS concept in teaching. To ensure the pupils are well equipped with this Higher Order Thinking (HOTS) approach to enable them to answer questions. On the other hand, this paper also hopes can investigate the process

teachers are using in implementing the skills to pupils by the integration of higher order thinking skills. It can amend the execution of higher order thinking skills in instruction and learning. The study of how Malaysia teachers implement apply, analyze, evaluate and create in HOTS in the context of 21st century must be conducted to build a guideline that can be referenced for the future educators.

The objectives of this study are: 1)To explore the basic understanding of Higher Order Thinking Skill among Primary School Teachers in the context of 21st century learning, 2)To explore applying process in teaching Higher Order Thinking Skill being done by Primary School Teachers in the context of 21st century learning, 3)To explore the evaluating process in teaching Higher Order Thinking Skill being done by Primary School Teachers in the context of 21st century learning, 4)To explore the creating process in teaching Higher Order Thinking Skill being done by Primary School Teachers in the context of 21st century learning.

Initially, HOTS was implemented in all language subjects and also Science and Mathematics. Teachers are responsible for ensuring that the pupil has the opportunity to reach the highest possible band. These questions will be based on a test of the flowering taxonomy of skills, which must be applied, analyzed, evaluated and created. An assessment that incorporates creative skills and problem solving will be strengthened [6]. The application, within the National Education Plan, targets to create pupils with HOT skills that can participate with the best all over the world. Reports from the New Straits Times on the Malaysian Education Plan 2013-2025, which confirms this year, pupils across the country will develop their higher-order thinking skills (HOT), through classroom teaching, co-curricula activities and exams. Datuk Amin Senin as Deputy Director General of Education (Policy and Development) gave a speech about HOT skills. From his statement HOT skills refer to more than just the ability to read, write and count. He also added that these skills also needed to think and critically analyze a situation. In today's competitive universe, pupils need to do more than simply memorize or telling the facts, and perform HOT skills. Teachers should teach them how to study and aim, and apply what they think are resolutions to problems in their work atmosphere in the future. Revealed by Prime Minister Datuk Seri Najib Razak, the national education plan is the outcome of a year of widespread research and public engagement [7].

Based on the results of a study by reference [9], it can be said that teachers incorporated thinking skills into their teaching. However, according to their pupils' perceptions, it was almost normal, which implies that there is ample room for improvement. The approach used in the Malay classes is inferential. In other words, thinking skills are incorporated indirectly or implicitly. The assumption is that through the task taught in the classroom, pupils are encouraged to find and solve the answers themselves and to apply them to situations with teacher guidance. Pupils would eventually acquire higher-level thought processes. It is said that knowledge gained through higher-order thought processes is more readily transferable, so it is much more likely that pupils with a deep theoretical understanding of knowledge can relate that acquired knowledge to resolve new problems and at the

meanwhile pupil with a deep theoretical knowledge will be able to better access info to use it in new perspectives. This may be the utmost significant advantage of high-level thinking.

According to reference [10], pupils who were taught to develop creative ideas to solve problems were better suited to solve more complex problems than those that did not. Reference [10] also suggest that thinking skills improve academic performance. Superior thinking skills are an important factor in creative and critical thinking, and the pedagogy of creative thinking can help pupils get more advanced ideas, an ideal perspective, and imaginative knowledge. Once again, it focuses on developing pupils' skills to analyze effectively, evaluate when conclusions are drawn from existing information and content, and create (synthesize) something new. Pupils are able to create and merge these skills, then pupil was able to demonstrate higher-order thinking skills in his work.

According to reference [11] who conducted a study on HOTS emphasised that teaching for the promotion of higher-order thinking skills: a case of critical thinking claimed that deliberate teaching for the promotion of thought-order skills superior improves pupils' critical thinking. Through the use of critical thinking tools, they found that pupils showed a statistically significant improvement in the components of critical thinking skills and readiness for critical thinking in subscales. They suggested that if teachers persist and deliberate with higher-order thought strategies, such as facing real-world problems in the classroom, fostering open discussions in the classroom and encouraging research-oriented experiments, there is a good chance that the resulting development of critical thinking skills among pupil.

It has also been shown that the assessment of higher-order thinking skills helps disadvantaged pupils. The HOTS (Higher Order Thinking Skills) program planned by Reference [12] precisely for pupils with educational disadvantages is constructed with four types of thinking skills: (1) metacognition or thinking skill; (2) make inferences; (3) transfer or generalization of ideas through contexts; and (4) summarize the information. The study is a pure thinking skills approach to help disadvantaged pupils at levels 4-8 in the United States. It joins the use of Socratic dialogue, drama and technology and has been used in about 2,600 schools in 48 countries. He produced pupil earnings in standardized tests, metacognition measures, composition, problem solving, and grade point average. Reference [13] suggest that higher-order thinking skills are teachable and learnable, and all pupils have the right to learn and apply this thought to solve problems. This has shown that higher-order thinking skills are important and cost-effective for a pupil to solve problems in their own learning process, thus enabling a pupil's competitive thinking system, developing their intellect and helping pupils avoid errors in learning [13].

According to a study by reference [14] on the new program to promote critical thinking in higher education, pupils show that critical thinking is important for shaping the way pupils think and learn. The effectiveness of the study was examined using a critical thinking tool that assessed five

critical thinking skills. Therefore, this study provides a framework for the creation of teaching methods capable of providing effective and direct instructions for the development of critical thinking skills of university pupils. Studies have revealed that pupils' motivation rises when teachers make them responsible for higher-order thinking. This appears to be the case because of teaching pupils, the tasks of higher-order thinking force them to think around certain things and to make an evaluation that involves rational work and critical thinking. Memorization, although beneficial in some cases, does not increase the pupil self-sufficiency and, to a huge level, does not contribute to mastery, although it can be argued that knowing the basic facts is essential to provide basic elements for understanding. Finally, one must take into account the fact that "knowing things" for instant remembrance is a quite unimportant skill. In most of the things we do, it is not the facts that are important, but how we apply the knowledge.

## II. METHOD

### A. Sample

In this study, the qualitative research was chosen as the significant design through structured interview questions. A total of seven teachers who are involved in teaching primary levels were purposely selected as the respondents. Seven teachers who were purposely selected and involved in this study were primary teachers who had experienced both assessment phase; the exam oriented assessment and school based assessment. Additionally, the seven selected primary teachers had attended several courses and workshops on teaching higher order thinking skills for the primary school teachers. Thus, we assumed that the seven selected teachers had obtained wide experiences in implementing and assessing HOTS within the primary school context. These relevancy criteria of choosing the sample will assist researcher in comparing and analysing both assessment systems.

### B. Interviewing

Series of interviews with seven primary teachers were carried out to obtain the trustworthy information related to their instructional practices on Higher Ordered Thinking skills. The main reason of selecting the interviewing process in this study is to understand the extract meanings, perceptions and standpoints of the interviewees [15]. The interviewing session usually starts with a social conversation to make the atmosphere relaxing and trusting [16].

Before the interviewing process commence, the interview's protocol was prepared which consisted on questions and queries related to the HOTS implementation at primary schools settings. The initial process of preparing the interview's questions is typically based on two major sources; the research questions and lists of literature reviews. Within the interview's protocol, five questions were prepared: (a) Based on your understanding, how you described HOTS? (b) How HOTS was implemented within your teaching routines?. After the research questions were prepared, the interview's protocol was employed with two primary teachers as part of ensuring its relevancy and trustworthiness. Through the pilot testing, any flaw, limitation or weakness within the interview

questions can be distinguished and minimise. Thus, necessary revisions can be done prior to the executions of the final interview sessions [17].

### C. Data analysis

After completed the interviewing process, each and every interview recording will be transferred into a transcript, then categorized into major components, allotting to the research questions. This will prepare the analysis more informatics rather than having many repetitive raw data. Next, the encoding process was applied to analyse the interviews data. During this procedure, the phrases that carried the answer to the research questions were identified and highlighted. These phrases later were encoded into meaningful units that suit best the phrases. Then, similar units were collected under a universal category. The categories seem to be similar were combined into a single category. On the other hand, new categories were also created in case of needed to represent the results better. The categories were reviewed and gathered under more general categories. This step was repeated till the categories were found to be able to answer my research question.

### D. Research Ethics

In securing the research's ethics, informed consent was obtained from every participant who was involved in the interview sessions. Informed consent is described as being "at the heart of ethical research" [18]. Before the interviews, the purpose of the research was explained to the participants, and it was clearly stated that the participants had the right to discontinue their participation at any time. The participants were reassured that no-one would be implicated or identified during the research and that all information would be dealt with anonymously and confidentially.

## III. RESULT AND DISCUSSION

In this study, seven primary teachers were interviewed to obtain their perceptions and experiences in implementing the HOTS process within their instructional and teaching routines. Through interviews, all seven teachers had shared their experiences while implementing the HOTS strategies aligned with the 21st Century learning skills at primary schools settings. In describing the HOTS implementation at primary schools, a few themes emerged obtained from the interviewing process with seven primary teachers who are the purposely selected samples for this study.

### A. Teachers' prior knowledge on HOTS

In the first research objective, we tried to obtain primary teachers' definitions and prior knowledge on HOTS. From interview sessions, seven teachers mentioned their standpoints related to HOTS which summarized into five themes; (a) conceptual element, (b) related skills, (c) skills for problem solving, (d) a thoughtful systematic process of thinking and (e) professional development.

### 1) Higher Order Thinking Skill as a Concept:

From interviews, primary teachers described HOTS as a conceptual element that referring to the ability to apply knowledge, skills and values in making reasoning and reflection to solve problems, make decisions, innovate and create something.

- "HOTS are a concept of education reform that based on learning taxonomies which include critical, logical, reflective and creative thinking and so on..." (R7/8/F)

Similar to the previous point of view, another teacher made an opinion that HOTS requires pupils to do something with the facts that could help them to understand the skills and make them easier to answer questions. As mentioned by Teacher B,

- "In my opinion, higher order thinking skills is thinking on a level that higher than memorizing facts. It requires pupils to do something with the facts... understand them, refer to them, connect them to other facts and concepts, categorize them, manipulate and so on..." (R6/22/M).

According to another teacher, the concept of HOTS is important to find better understanding to make pupils acquire knowledge.

- "Pupils can make decisions, solve problems, innovate and create new ideas in this HOTS concept." (R1/8/F)

### 2) Higher Order Thinking and the Skills Related:

According to the seven teachers, they mentioned that HOTS related very much on skills to make reasoning and reflection to solve problems, make decisions, innovate and create something. As mentioned by Teacher C,

- "HOTS in the 21st century mean enhancing pupils thinking skills based on the analytical method before they could answer any questions. Learning that require more cognitive processing skills." (R4/14/F)

The above statement was also supported by Teacher D,

- " HOTS in the 21st century is the set of skills that pupils need to succeed in learning, work, and life in this century in order to facilitate them with all the knowledge they need to obtain during the schooling years." (R7/8/F)

Another teacher also highlighted that HOTS is a 21<sup>st</sup>-century skills as it's known as a complex judgmental skill. As he says,

- "..... It's something involves complex judgmental skills that encourages to think critically ....normally involves problem-solving questions. In my opinion, it is more difficult to learn or to teach, but more valuable..." (R3/10/M)

### 3) Higher Order Thinking towards Problem Solving:

When the teachers talk about HOTS, most of them stated that the main purpose of HOTS is related to problem solving skills.

- "As for me, this skill is important to teachers so it will help teachers to find better solutions for any problems. Teachers will be able to consider any problems in a thoughtful way and also able to recognize problems." (6/22/M)

Another teacher also gave almost the same response on defining the term;

- "Pupil should have critical thinking because it's a process of problem solving so for that when answer a problem pupil must give a logic answer or reason for it." (R2/5/F).

However, another teacher opined that questioning method plays an important role in developing pupils thinking skills towards problem solving;

- "... The questioning method allows the pupils to think out of the box and it helps them to generate many ideas as they can and lastly teachers can help them to make a conclusion and at the same time helps the pupils to understand the questions easily..." (R4/14/F)

### 4) Higher Order Thinking is a Thoughtfully Systematic Process:

The introduction of HOTS in primary school was seen as a systematic process because it takes into account the process that pupils should gradually achieve. Through HOTS, new learning strategies was introduced and saw shifting from memorization to understanding, enhancing the level of knowledge, awareness (more analysis, evaluation and creation), aligning solutions and discoveries and also required for scientific investigation. Based on the interview, Teacher A described HOTS as;

- "Higher Order Thinking Skill is the carefully systematic process. It is a process in which the ability conceptualizes. It is also to be applied and analyzed. The information will be evaluated, generated and observed." (R5/5/F)

Another teacher also agreed about HOTS as a thoughtful process, but he looks it more than that. He explained that,

- "Teachers need to carry out assessment systematically based on the HOTS category from applying to creating skills. As a teacher, our focus on 21st-century learning skills has helped all of the teachers to pause and reflect what we really do with the valuable time we have with young people." (R6/22/M)

### 5) Higher Order Thinking Skills for Professional Development:

Through the introduction of HOTS, teachers' professional developments of teachers were maximized using variety of different ways. Based on the opinions of selected primary teachers, Teacher B and C explained on the role of teachers who must employ various strategies in teaching;

- "Teachers must be able to use different strategies to assess their pupils' learning. By doing this, we

teachers can upgrade ourselves towards new and current to better education.” (R6/22/M)

- “Because it is possible if all the teaching materials are provided only thing is teachers and pupils must have the manner of thinking critically. Some educators think it is difficult because they mentally ready to take this challenge because this thinking skill should be integrated into our lesson and it is challenging to be done in the classroom. So....Both people must have the knowledge....and it should be done in the time allocated for teaching.” (R7/8/F).

TABLE I. PRIOR KNOWLEDGE OF TEACHERS ON HOTS

HOTS-Basic Knowledge				
Concept	Skills	Problem Solving	Systematic Process	Professional Development
Education Reform	Analytical Method	Solutions	Process	Teacher's Readiness
Thinking Higher	Knowledge	Critical Thinking	Proper Plan	Strategies
Understanding	Judgmental Skill	Facilitator	Assessment	Pupil's Involvement
Teacher-Facilitator	In-cooperate Skills	Questioning Method	Stage of Thinking	

### B. Applying HOTS Process in classroom settings.

This section deals with the part of the second objective of this study, which is to explore applying the process in HOTS in Primary School Teachers. From interview sessions, five themes considered were: (1) Applying as the starting point of learning in HOTS (2) Applying the concept in HOTS (3) Applying as problem solving in HOTS (4) Applying skills into Practical Work in HOTS (5) Applying examples into learning HOTS.

#### 1) Applying as the Starting Point of Learning in HOTS:

In analysing the process, teachers were asked questions how they are implementing the skills into their teaching to enhance pupils' thinking level in applying the skill so that make them capable to achieve the level. The first respondent known as Teacher A, gives her opinion on that point based on her teaching experience, teaching students to apply the knowledge that they had learned which considered very essential. She later explained;

- "... As the beginning level of HOTS, I will say that applying skill is a starting point to encourage or to say to promote higher-order thinking among the pupils where they will grasp the knowledge they learn to next level..."(R1/8/F)

The above statement was supported by next two teachers, who also have more than ten years experience in teaching. As they further mentioned;

- "Applying skill is when we teach the pupils to carry out or use a procedure in a given situation or attempt problems by applying acquired knowledge, facts, techniques, and rules in different ways." (R4/14/F)

- "...The level of application is where the pupil goes beyond the basic understanding to start applying what they have learned..." (R6/22/M)

Another teacher states her opinion, what she wants her pupils to achieve by implementing higher order thinking skills in teaching.

- “Thinking is the first step of learning so as the pupils think in higher order thinking they will come across the various questions and it will give them an exposure to learning new things with interest...” (R2/5/F)

#### 2) Applying the concept in HOTS:

In this phase, students were supported to use the concepts they have previously learned to ensure whether that they able to apply the concept in more complex ways. As mentioned by Teacher B,

- “Teaching pupils from the concrete to the abstract and returning to the concrete can be very useful because by teaching the concepts first, the use of concrete materials can be used to reinforce learning.”(R7/8/F)

Similar to that point of view, another teacher also stated that students will be familiar with the concept when using this technique and ability to make the slow learners understand better.

- “.. When pupils apply an abstract idea to a specific situation to solve a problem or relate it to previous experience, they show their level of competence at this level and increase their learning when the concepts of the course are presented and then the opportunities given to practice by applying them”.(R2/5/F)

Adding content to the previous view, another teacher gives examples of questions that he uses in class to develop pupils applying skill by introducing the concept to pupil before asking questions.

- “These questions will help teachers develop assessments that enable pupils to solve problems in situations by applying the acquired knowledge, such as;” How would you make use of \_\_\_? How does \_\_\_ apply to \_\_\_? Can you group by characteristics such as...” (R6/22/M)

#### 3) Problem Solving in HOTS:

In this phase, teachers are required to have high competencies on how to ask question, and to think critically. When the teachers talk about applying skill, most of them stated that it is a skill to solve a problem. It was also confirmed by Teacher D who mentioned that she also uses the same method to trigger pupils' thinking level.

- "I usually give various types of questions that trigger beyond thinking skills in the subject area so that the pupils won't depend on particularly one method of answering questions." (R1/8/F)

According to Teacher D, problem solving in applying skill is important to find better solutions as;

- “Teachers will be able to consider any problems in a thoughtful way. They can find workable needs for those problems, then they can gather information to solve the problems and they can clarify and interpret the data they gathered to make a conclusion.” (P4/14/F)

#### 4) *Applying the Practical:*

In this session, students will observe, manipulate their real objects, or witness a demonstration of a teacher. Using different pedagogical approaches, teachers can use the same practical task to achieve different learning outcomes. Teacher A later explained;

- “Applying the skill to me is something that we do practically. As a teacher, I can give my pupils examples based on theory, but pupils need to apply those skills to practical work so that they will understand.”(R7/8/F)

When it comes to practical works, it will make the pupils become active and helps them to generate more ideas as what the next teacher said;

- “..I usually teach my pupils by giving skills and help them to identify what are the activities they can replace, uses a scalable and sustainable model for them to generate ideas especially when comes to problem-solving questions.”(R4/14/F)

Another teacher later opined that for some practical tasks, learning is about objects and is observable;

- “Pupils are expected to remember what they have observed. Other tasks concern the creation of links between observations and scientific ideas. In general, pupils believe that the latter is more difficult since they involve thinking, seeing and doing. The design of the tasks must “overwhelm” the pupils’ efforts to make these connections. Here the applying skill playing a very important role.” (R2/5/F)

The view also supported by another teacher;

- “Practical work to develop pupils’ scientific knowledge is likely to be more effective when the learning objectives are clear, and relatively few in a given task, and will occur when the activity project highlights the main objectives and maintains “noise”. At a minimum, a strategy is used to stimulate early what the pupil thinking, so that the practical task answers a question in which the pupil is already thinking.” (R6/22/M)

#### 5) *Applying Examples into Learning HOTS:*

In applying the HOTS approach, it is important to provide relevant learning examples to help pupils understand the lesson more effectively. In this sense, Teacher E pointed that giving examples in applying skill is the learning process;

- “One way to improve teaching and learning is to improve the examples we use in teaching and learning so that they communicate difficult concepts more effectively. They help us to transfer information and

ideas from one person to another and from one context to another more effectively and help pupils to come out with more ideas.” (R1/8/F).

Based on the opinion from another teacher, Teacher C viewed that instilling examples in teaching help the low proficiency pupils to understand more easily. As he says;

- “At one point my pupils are struggling to understand and I’m working to explain it. Someone will ask a question, perhaps with an example or an expression to make me think of an example that answers the question and helps to explain it to them ...and something I noticed that tend to be transitory in spite of the features of the content that pupils they find it hard to understand they tend to be the same.” (R3/10/M)

### C. *Evaluation Skill*

In the evaluation phase, students make judgments about the value of ideas, items, materials, and to a greater extent. At these level, where pupils are expected to bring in all they have learned to make informed and sound evaluations of material. Evaluation is essentially the process to justify a selection. It helps pupils to think about why they did something and if it’s right. This segment deals with the issues relating to the process teachers carry out when comes to the implementation of the skills to primary level pupils. It has been subdivided into four themes which are (1) Evaluating Skill as Critical Thinking (2) Judgments the Concept to Evaluate (3) Assessment Strategies in Enhancing Evaluating Skill (4) Question and Answer Relationship in Evaluating Skill

#### 1) *Evaluating Skills:*

Critical thinking is an essential element that has been incorporated into learning and teaching approaches. In this phase, teachers must acquire this ability before teaching it in class. It is essential to improve pupil’s performance in critical thinking tests. Nowadays, the educational system has increasingly emphasizes critical thinking skills among the pupils they need throughout their lives, so teachers are now required to improve the way pupils think over the traditional teaching strategies they have ever used. As such, teachers must be competent in this skill and use them effectively in learning and teaching.

- “First of all, practice it in classrooms. The process of development is through attending courses and workshops on critical thinking skills. In addition to these, I will encourage my pupils to participate in games and competitions that promote critical thinking skills.” (R4/14/F)

Other than previous view, Teacher B and E opined that;

- “Critical thinking is the carefully systematic process. It is a process in which the ability conceptualizes. It is also to be applied and analyzed. The information will be evaluated, generated and observed by teachers.” (R3/10/M)
- “Before teaching critical thinking skills, before most teachers should attend workshops, panel meetings to

discuss how to develop your critical thinking. You must have many reading magazines and other e-books to have a deep knowledge.” (R2/5/F)

**2) Judgment the Concept to Evaluate:**

From this subcategory, teachers were all asked the type of medium they use to implement the evaluating skill. Thus, as responded by a majority of them by making judgmental process with the ideas the responses as follow:

- “Making critical judgement and coming into reasoned conclusions on the basis of evidence that is in front of us and that’s the wider knowledge we can bring into questions so that pupils will be able to evaluate and make judgement on which answer to choose with evidence or with concrete reason.”(R2/5/F)

Furthermore another teacher known as Teacher F;

- “I usually teach my pupil inferring method which it makes it useful when evidence or facts arise. This is important as it helps pupils develop the ability to make logical conclusions when they examine presented information, evidence or facts.” (R6/22/M)

**3) Assessment Strategies in Enhancing Evaluating Skill:**

In this phase, students were taught with higher order thinking skills, what it implies its benefits and strategies. This allows pupils to know and understand their strengths and challenges of higher order thinking and to be better prepared to face these challenges. Teacher F stated her view on this point as;

- “One of the strategies that I use to enhance evaluating skill is that by giving kind of assessment like assignments, projects that carried out in the schools. It also encourages pupils to work independently by self-exploration.” (R1/8/F)

Similar to previous view Teacher B opined that observation is also one of the ways to evaluate pupils' performance.

- "In School Based Assessment system pupils are assessed not only by exam basis but including observation of pupils' performance in the classroom and participation in the project work in a more flexible manner. Another benefit is advocating pupils all round development which gives a more comprehensive picture of an individual." (R3/10/M)

**4) Question and Answer Relationship in Evaluating Skill:**

This strategy teaches pupils to distinguish the types of questions being asked and how to find answers to these questions. QAR allows pupils to construct an understanding of the text using literal and high-level thinking skills. As for this strategy used in teaching and learning, Teacher B stated that;

- “In my teaching, I teach my pupils how to determine if the answer is in the book or if they need to tap into their experiences and opinions to respond. Before asking pupils to answer, I will spend some time teaching key identifiers to determine where the answer will come from, thus increasing pupils' understanding

of how the questions are written and where the answer is.” (R7/8/F)

Another teacher stated that;

- “Usually, in my English lesson, I will select a short passage and identify a series of questions for each type of question, and I will write the questions and answers in which these questions will be used during my short lessons that focus on each type of question. I will make the process of thought visible to the pupils, as I will guide them through the decision process on how to identify the correct type of question. In addition, I will model several examples of the same kind of questions and answers as pupils participate slowly to help determine the type of question and possible answers.”(R4/14/F)

TABLE II. EVALUATING ON HOTS

Evaluating Process in HOTS			
Critical Thinking	Judgmental Process	Assessment Strategies	Explain and Answer
Practices	Reasoned Conclusions	Observation	Experience
Systematic Process	Inferring Method	Providing Methods	Opinions
Attend Workshops	Work Independently		Feedbacks
Find Solutions			Identify Questions

**D. Creating Process**

As mentioned in Bloom’s Revised Taxonomy, creating process is where pupils should be able to build a complex body part to practice from various components whereby they need to put the pieces together to form a whole, with accent on creating a new meaning or social organization. This segment deals with the issues relating to the process teachers carry out when comes to the implementation of the skills to primary level pupils. It has been subdivided into four themes which are (1) Creating Skill Used to Develop Pupils Thinking (2) Brainstorming in Creating Skill (3) Creating is about Building Something New and Different (4) Enhance Skills in Creating Ideas.

**1) Creating Skill Used to Develop Pupils Thinking:**

The creation of skills teaches our pupils how making sense of the world based on personal experience and observation and to make critical and informed decisions in the same way. As such, pupils gain confidence and the ability to learn from mistakes as they build productive and successful lives. Giving project regarding particular subject will develop pupils thinking skill. Another teacher shared her view on this.

- “If you have 25 pupils in class, why should everyone read the same chapter in the book or answers the same math questions over and over again? Making sure that each pupil does one or more study on projects instead of regular homework during the school year will help most, if not all, pupils to develop a different skill.” (R2/5/F)

Another teacher opined that to create an open environment for pupils helps them to develop thinking skills.

- "Normally, pupils are used to sitting in class and listening to teachers, but in my class, I make it clear on the first day of class that their class will be different. I Let my pupils know that there will be less passive classes and more opportunities for them to talk and write about what they learn and come up with new ideas. For example, by inserting a sign in the classroom that reminds pupils every day that they should be active pupils, it supports the fact that the way is being opened to independent thinking." (R6/22/M)

Next, another teacher also gives a view that by encouraging pupils to role play and discussion will allow them to develop and create thinking skill. Another teacher opined on that as;

- "Pupils should be allowed to make their own decisions on important issues as much as possible. In this regard, class discussions should be encouraged to allow pupils to discuss important topics. Teachers can facilitate discussions by asking some pupils to pretend they are so that pupils reflect more deeply on concepts and encourage them to create new knowledge." (R4/14/F)

**2) Brainstorming in Creating Skill:**

Conceptualizing is of paramount importance in developing higher order thinking skills, as it aids pupils to define the overall purpose of the design. Many respondents raised up about brainstorming activities. As mentioned by a teacher;

- "...Especially for my upper level pupils, I usually conduct activities by including brainstorming activities because the co-operative and collaborative learning generate pupil's idea and triggers their better thinking skill to come out with something new." (R2/5/F)

Another teacher also added similar view on this, she says :

- "When pupils are divided into groups and are allowed to exchange ideas and reflect on solutions to a particular problem, they are open to a deeper level of thought in which one pupil generates an idea, the other also faces the challenge of thinking and come out with better ideas." (R1/8/F)

**3) Creating is about Building Something New and Different:**

In the practice of higher-order thinking skills (HOTS), students will be given some tools that they need to understand, infer, connect, categorize, apply, analyze, evaluate, and create ideas from information. They know how to find solutions to new and existing problems. While analysing the views of the teachers, most of them given almost the same view that teachers have to encourage pupils to set goals in building their own ideas. Their views are mentioned as below;

- "This competence requires pupils to summarize the texts, count the material with their own words,

generate information about the text and predict events or solutions related to the questions."(R7/8/F)

- "I will allow my pupils to build their own ideas without putting a barrier because I noticed that when we give a chance to pupils to create their own ideas at the end they will try to come out with a new solution that sometimes beyond our expectations..." (R4/14/F)

**4) Enhance Skills in Creating Ideas:**

In this phase, teacher has at their disposal a range of teaching techniques and methods to be selected that result in higher levels of pupil thinking. Some of these techniques could be problem solving methods, collaborative learning and therefore long. Below are the teachers' responses;

- "... 2-I skill that I teach my pupils to develop creating skill is that I will guide my pupils to imagine and then invent or design what they are thinking. As a teacher, I will guide them to put the elements together to form a coherent whole, reorganize into a new pattern or structure."(R4/14/F)

Besides 2-I skill to enhance creating ideas, one of the respondents shared his view of generating pools of ideas from pupils is also important in developing this skill. As said by a teacher,

- "During lessons, we have to generate a pool of ideas from pupils that could be tentative solutions to a problem and pupils will be exposed to HOTS creating skills as well." (R6/22/M)

In conclusion, higher-order thinking skills classes should focus on activities that cover key areas and should be systematically planned and taught to pupils by integrating brainstorming activities, using cooperative learning and other suggested strategies to teach HOTS that the desired results sought by teachers are achieved gradually, and pupils who can creatively develop new knowledge and valid solutions to answer questions will begin to emerge in an ever-increasing way.

TABLE III. CREATING PROCESS ON HOTS

Creating Process in HOTS			
<i>Develops Pupils Thinking</i>	<i>Brainstorming</i>	<i>Building Something New</i>	<i>Enhancing Skills</i>
Project Based	Collaborative Learning	Set Goals	2-I Skills
Open Environment	Exchange Ideas	Give Chance	Pools of Ideas
Role-Play	Gives Opportunity	Guide	Covers Key Areas
Discussions			

Based on the findings, teachers were well acknowledged with the understanding of the Higher Ordered Thinking Skill. Most of the teachers responded in the very positive manner about the implementation of HOTS. Some of the teachers

were still looking forward to the better improvement towards the implementation of this new effort. In this fast-moving generation and also to get along with the latest 21<sup>st</sup> century of teaching skills, teachers need to strive for more and more demanding thinking from their pupils because they have enormous benefits for their future. According to reference [19], [20], the cultivation of thinking skills at primary school level is important in the context of current development. Efforts to promote and develop thinking skills should start at the elementary school level because this level is considered the best time to cultivate the basic foundations for higher education.

In this sense, HOTS enable understanding of transferring information, which is considered a point of good thinking and ability to find solutions for problems. As such, reference [5] stated that good thinking which is generated from HOTS will make learning and knowledge is applied in the real world. Besides that, HOTS provides a bigger understanding of learner-centred teaching. When the learners become involved with the HOTS type of inquiries, learners will eagerly explore increasingly knowledge by themselves. Admittedly, higher level questions that were practiced in classrooms related to HOTS thinking skills such as 'how and why something happens or how an event, object or idea can be linked to other events, objects or ideas' is vital for quality education. Higher order thinking skills requires students to practice and connected them to other facts and concepts, categorise them. Furthermore, the unity of the important measures that must be assessed in the capacities of the 21st century is to tax the potential of an individual in an integral way; therefore, it must be taken in a well-planned manner and in accordance with the procedures established by our educational system, as well as providing tasks that require skills related to HOTS.

In applying HOTS process in primary schools, teachers were asked questions how they are implementing the skills into their teaching to enhance pupils thinking level in applying the skill. To ensure whether students able to demonstrate or understand and apply what they are learning, teachers would give them their opportunity to use ideas, theories or techniques for solving problems, apply to new situations and also to ask questions that require students to define and apply and solve problems. Applying skill happens when teachers teach the students able to carry out tasks or use a procedure in a given situation or attempt problems by applying acquired knowledge, facts, techniques, and rules in different ways. There are a few levels of application that goes beyond the basic understanding to start applying what they have learned. Firstly, teaching from concrete to abstract and back to concrete can be very helpful for pupils because when teaching the concepts, the use of concrete materials can be used to reinforce the learning. When pupils apply an abstract idea to a specific situation to solve a problem or relate it to previous experience, they show their level of competence at this level and increase their learning when the concepts of the course are presented and then the opportunities given to practice by applying them. Secondly, applying skill is when we teach the pupils to carry out or use a procedure in a given situation or attempt problems by applying acquired knowledge, facts, techniques, and rules in different ways. The main emphasis is

that students able to use an abstract idea, theory or principle in a new and tangible situation to solve a problem. Besides that, applying skill is something that we do practically whereby giving pupils examples based on theory but pupils need to apply those skills to practical work so that they will understand. By giving skills and help them to identify what are the activities they can replace, uses a scalable and sustainable model for them to generate ideas especially when comes to problem-solving questions

From interviews, teachers admitted that they need more knowledge in teaching higher ordered thinking skill and also as a teacher should train themselves to think and can deliver the knowledge clearly to the pupils according to students' levels of understanding. Successful implementation of HOTS requires careful consideration of current teaching techniques and active engagement with the pupil-centred teaching and learning environment. Probably, students must develop reflective reflection habits on their experience, success, and failure, their plans and goals. Passing the pupils to a higher level of thought is transpiration into the necessary educational techniques, an effort that will be beneficial for all concerned. Based on the findings, the evaluation process is essentially the justification process of an election. Help students think about why they did something and if it's right. Based on the review of Bloom's taxonomy, evaluation is a way of judging ideas or methods that use external evidence or self-selected criteria confirmed by informed observations or rationalizations. Higher-level thinking capacities really imply the distinction of something from the facts we learn.

According to reference [21], they stated that superior thought is the ability to think beyond the mechanical storage of facts or knowledge. Rote memory is not really thinking. When pupils use their higher-order thinking skills in a different context, this implies that they have understood the many facts, the ability to manipulate them and put them together in new ways. The most important thing is that they can apply them to find new solutions to problems. According to reference [22], critical thinking or in other word is evaluation does not need to be taught to pupils because critical thinking is a natural procedure that everyone assumes. However, reference [23] have argued that thinking is an innate process, can often be partial, distorted, partial, misinformed and potentially prejudicial. Therefore, excellence in thought must be cultivated. As what can conclude from the teacher's perception, the question-answering method also be used in teaching this thinking skill which enhances pupils answering abilities to a higher order thinking questions. Besides, they also mentioned that by carrying out various type of appropriate strategies in answering evaluating skill questions the teachers are able to prepare the pupils knowledge to tackle challenges. By developing pupils' questions and answering skills is an effective way to pass from passive participants to active meaning makers. It is useful for their general understanding of what is asked for, and therefore their understanding will increase, and for teachers who take the practice of teaching pupils to identify what kind of questions are asked to prepare pupils for a journey for all life. In terms of achieving the skill, not only the pupils should master the various types of assessment skills, but at the same time,

teachers must also be able to use different strategies to assess their pupils learning. By doing this, teachers can upgrade themselves towards new and current to better education. Teaching appropriate teaching strategies will enhance pupils' knowledge in answering HOTS questions in terms of evaluating skill. Teachers can use various types of teaching method and evaluation techniques.

Although there are many problems with the implementation process, teachers must keep in mind that the continuous development of higher-order thinking skills is a direct determinant of continuous practice and involves tasks that stimulate the faculties of thought. In conclusion, by carefully planning lessons and discussions, teachers can ensure that the proportion is correct. It is useful to ask students to use the acquired knowledge by learning the language of thought to record the teacher's use of higher-order terms or to observe and evaluate their classmates in planned activities. Teachers should also encourage students to reflect on their learning so that they understand their strengths and weaknesses of thought. Furthermore, critical thinking is the ability of teachers and even students to resolve uncertainties in an appropriate but accepted way. This ability helps teachers personally and leads to the development of the student to understand the ability to evaluate.

Based on the findings, thinking skills are associated with the learning process, so a person's thinking can influence learning ability, speed and effectiveness of learning. Students who are trained to think will have a positive impact on the development of their education. As mentioned in Bloom's modified taxonomy, the process of creation is the place where students must be able to construct a complex part of the body to practice from multiple components. They must come together to form a whole, with particular attention to creating new meanings or social Organization. These provide convincing evidence of the value of teaching the thinking skills of creation. The emerging consensus, supported by some research evidence, is that the best way to teach thinking skills is not a separate subject but through the "infusion" of thinking skills in the teaching of content areas. Thinking skills are often seen as attributes of individuals, perhaps the property of individual brains. The creation of skills teaches our pupils how making sense of the world based on personal experience and observation and to make critical and informed decisions in the same way. As such, pupils gain confidence and the ability to learn from mistakes as they build productive and successful lives. By encouraging pupils to role play and discussion will allow them to develop and create thinking skill.

In summary, this study revealed that pupils' motivation rises when teachers make them responsible for higher-order thinking. This appears to be the case because of teaching students; the tasks of higher-order thinking force them to think around certain things and to make an evaluation that involves rational work and critical thinking. Memorisation, although beneficial in some cases, does not increase the pupil self-sufficiency and, to a huge level, does not contribute to mastery, although it can be argued that knowing the basic facts is essential to provide basic elements for understanding. Finally, one must take into account the fact that "knowing things" for instant remembrance is a quite unimportant skill. In

most of the things we do, it is not the facts that are important, but how we apply the knowledge to come out with lot more new and creative ideas.

Based on the overall questions and answer session in the interview with all teachers stated their views about the importance of HOTS. It is clear that HOT skills interpreted in daily life of the primary teachers. Understanding that HOT skills are learning skills and as the application of these skills based on the learning and teaching process of many teachers. Various parties, including ministries and educators, should work together to polish this potential by engaging in knowledge. Based on the findings, it was revealed that the process of applying, analyzing, evaluating and creating skills is been implemented by the primary school teachers. This resulted in the model which is diagrammatically represented below. This model can be marketed into schools in Malaysia as a precautionary model to give a clear picture to primary school teachers as well to help the teachers to enhance their teaching skills to make sure pupils could adequate the skills in answering the HOTS based questions. The framework of HOTS process in primary teachers is presented in figure 1:



Fig. 1. The Framework of HOTS in Primary Teachers

#### IV. CONCLUSION

The research methodology provided the researcher with the opportunity to gain new insights that will help in improving practice as a beginner to this implementation of HOTS in the Malaysia primary school. Although researcher came through many obstacles but was able to use the obstacles as the opportunities to know the responses, and perspective in implementing HOTS questions in teaching. Notwithstanding that, throughout the discussion of finding, researcher explored more effective strategies and elements that have to be considered in order to improve the implementation of HOTS in line with implementing 21st-century learning skills. For the successful implementation and practices of HOTS in the primary schools, both teacher and pupils have to put an effort together. The policy makers should give continuous support

to the teachers. Thus, professional development programs should regularly focus on the teaching of HOTS questions. Moreover, all the parties who are directly and indirectly involved in the effort of uplifting the education achievement of our country should be aware of the eleven shifts that stated in the Malaysia's Education. The acquisition of knowledge on implementation of HOTS improves the ability to teach effectively also heighten teachers' educational value as well. Furthermore, it also enhanced and enriched teacher's consciousness of the teaching career as well as the aim of reformed teaching and learning.

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