

## Meta-Analysis Study of Teacher Issues on Higher Order Thinking Skills in Malaysia

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**Abstract:** Higher order thinking skills is very important to be implemented among teachers in Malaysia. This is due to higher order thinking skills require explanations in particular to minimize confusion and to improve teacher attitudes about thinking. Teaching and learning activities should be designed based on learning strategies, including training, decomposition, organization and metacognition. This article aims to identify the issues that teachers having in order to implement higher order thinking skills in their teaching and learning session in school. The finding shows that there are four elements of higher order thinking skills that reached data saturation point which are critical thinking, creative thinking, decision making and problem solving.

**Key words:** Teacher • Issues • Higher Order Thinking Skills

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### INTRODUCTION

Higher Order Thinking Skills is very important in vocational education institution nowadays since it is play a major role in developing critical thinking as well as creative thinking among students in Malaysia. Higher order thinking skills is about an individual be able to apply a critical thinking, logic thinking, reflective thinking and also creative [1]. Higher order thinking skills is transferable and learnable. With the capability of applying higher order thinking skills, a person can be developed to be more innovative, having good creativity and imaginative [2].

As stated by [3] in their research, thinking skills is very important in teaching and learning process. Integration skills between critical thinking and creative thinking in teaching and learning will not be happen without cooperation from teacher and parents. Higher order thinking skills in teaching and learning can affect student's learning styles as well as teacher be able to use different style of teaching methods.

**Research Background:** Generally, the theory of higher order thinking skills requires a cognitive processing compared to other type of thinking. Despite the various taxonomies and practicing different terms to illustrate various type of skills, experts still agree that critical and creative analysis is the most important part of the hierarchy. Anderson [4] states that Bloom's Taxonomy puts the ability to analysis evaluate and create skills on

the levels in cognitive domain. While [5] states that the analysis and use of knowledge at the top of the hierarchy in the cognitive system. Metacognitive allows students to monitor their own thinking, diversity of values and accuracy in thought. Among the key concepts associated with higher order thinking skills are the assumption of thinking and learning. First, level of thinking cannot be neglected because level of learning is related between one and another. The second is teaching content focuses on learning theories. While the third level of higher order thinking skills will involves various thought processes that enable it to be used in complex situations with different variables [5].

One of the criteria that educator should have is a soft skill. An educator should be able to solve the problem, have good decision skills and also good interpersonal skills. Teachers are the backbone of the educational system and are the initiator of the policies and goals that have been set by the government through the Ministry of Education in Malaysia. Teachers and trainers should be exposed to industries more often which are very crucial to ensure teachers know the need of industrial requirement [6]. Implementations of higher order thinking skills in the current teaching and learning can be accessed through ability of the students who can apply critical thinking when solve the problem. In order to assess the student's critical thinking, observations can be made toward student skills when the data or information need to compare, discriminate, organize, manage, classify and identify cause and effect [7].

Teachers are often to confuse whether to teach creative and critical thinking skills in isolation or to integrate them into daily lessons. Teachers in Malaysia also lack the time to carefully plan and create a lesson that effectively infuses the thinking skills [8]. In addition, teachers in Malaysia also lack creativity in thinking planning and implementing a lesson which they find very difficult to infuse higher order thinking skills which are problem solving, decision making and critical thinking [9, 10] in daily lessons without overwhelming the content [8]. Main focus of this research is to explore the problem that the teachers having in order to implement higher order thinking skills.

**Methodology:** This study uses the suggested approach by [11] which suggested that each theme analysis should follow the following steps:

- Researchers should familiarize themselves with the data collected.
- All the abstracted data from the documents should be transcribe.
- Researchers should produce initial coding for the data
- Researchers should find themes that related to the data
- Researches should have to rechecking the themes developed from the abstracted data
- Researcher must name the themes that are developed

The steps recommended by [11] were used as a reference in this study where researchers have been familiarized with the data obtained from six articles on higher order thinking skills. Data were collected until it reaches saturation point. Saturation point is very

important to ensure that the data that is used is valid for the analysis. Documents that are referred as data must be a few years back instead of been using papers that were published twenty years ago [12]. This is because the contents and citation of the older papers maybe not relevant with the current situation. Data saturation is reached when there are no additional themes and no new information is gathered through the data collection [12]. This means there is enough information to replicate that study. The six articles used in this study as per below:

**Data Analysis:** Documents that are selected is based on the issues in higher order thinking skills among teacher in Malaysia. In detail, analysis of these documents was conducted over six articles regarding problem that teacher are facing in implementation and applying their higher order thinking skills in their teaching and learning. All those documents that have been use are from Norraini and Khairul Azmi, 2014; Tan and Siti Hajar, 2015; Senel, 2014; Shamsuddin, Ruzlan and Siti, 2016; Dorothy, Norlidah and Saedah, 2016; Malini *et al.*, 2017. The papers were selected only three years back as [12] stated that only newer paper will provide validity of the data gathered since they have newer quotation. Researcher analysis those document by using thematic analysis methodology. Table below shows that coding for the selected articles.

From the data gathered, there are eleven themes that have been developed through the analysis. Those themes are teaching problem solving, performing problem solving, teaching critical thinking, performing critical thinking, teaching creative thinking, perform creative thinking, teaching decision making, performing decision making, knowledge, motivation and learning skills. Table below shows the coding for themes in this research analysis:

Table 1: List of articles used for data collection.

N0.	Title	Published Year
1	Nooraini Othman and Khairul Azmi Mohamad. Thinking Skill Education and Transformational Progress in Malaysia International Education Studies; Vol. 7, No. 4; 2014 ISSN 1913-9020 E-ISSN 1913-9039 Published by Canadian Center of Science and Education	2014
2	Tan Shin Yen and Siti Hajar Halili. EFFECTIVE TEACHING OF HIGHER-ORDER THINKING (HOT) IN EDUCATION. The Online Journal of Distance Education and e-Learning, April 2015 Volume 3, Issue 2	2015
3	Senar Temel. The effects of problem-based learning on pre-service teachers' critical thinking dispositions and perceptions of problem-solving ability. South African Journal of Education; 2014; 34(1)	2014
4	Shamsuddin Muhammad, Ruzlan Md. Ali and Siti Noor Ismail. TAHAP AMALAN PENERAPAN KEMAHIRAN PEMIKIRAN KRITIS (KPK) DI SEKOLAH MENENGAH BERPRESTASI TINGGI, SEDERHANA DAN RENDAH Proceeding of ICECRS, 1 (2016) 967-976 ISSN. 2548-6160 International Seminar on Generating Knowledge Through Research, UUM-UMSIDA, 25-27 October 2016, Universiti Utara Malaysia, Malaysia.	2016
5	Dorothy DeWitt, Norlidah Alias and Saedah Siraj. Problem Solving Strategies of Malaysian Secondary School Teachers Educational Technology World Conference 2016, 31 July - 03 August 2016, Bali, Indonesia.	2016
6	Malini Ganapathy, Manjet Kaur Mehar Singh, Sarjit Kaur and Liew Wai Kit. Promoting Higher Order Thinking Skills in Teaching Practices 3L: The Southeast Asian Journal of English Language Studies – Vol 23(1): 75 – 85	2017

Table 2: Code for selected articles.

No.	Code	Article Title
1	A1	Nooraini Othman and Khairul Azmi Mohamad. Thinking Skill Education and Transformational Progress in Malaysia International Education Studies; Vol. 7, No. 4; 2014 ISSN 1913-9020 E-ISSN 1913-9039 Published by Canadian Center of Science and Education
2	A2	Tan Shin Yen and Siti Hajar Halili. EFFECTIVE TEACHING OF HIGHER-ORDER THINKING (HOT) IN EDUCATION. The Online Journal of Distance Education and e-Learning, April 2015 Volume 3, Issue 2
3	A3	Senar Temel. The effects of problem-based learning on pre-service teachers' critical thinking dispositions and perceptions of problem-solving ability. South African Journal of Education; 2014; 34(1)
4	A4	Shamsuddin Muhammad, Ruzlan Md. Ali and Siti Noor Ismail. TAHAP AMALAN PENERAPAN KEMAHIRAN PEMIKIRAN KRITIS (KPK) DI SEKOLAH MENENGAH BERPRESTASI TINGGI, SEDERHANA DAN RENDAH Proceeding of ICECRS, 1 (2016) 967-976 ISSN. 2548-6160 International Seminar on Generating Knowledge Through Research, UUM-UMSIDA, 25-27 October 2016, Universiti Utara Malaysia, Malaysia.
5	A5	Dorothy DeWitt, Norlidah Alias and Saedah Siraj. Problem Solving Strategies of Malaysian Secondary School Teachers Educational Technology World Conference 2016, 31 July - 03 August 2016, Bali, Indonesia.
6	A6	Malini Ganapathy, Manjet Kaur Mehar Singh, Sarjit Kaur and Liew Wai Kit. Promoting Higher Order Thinking Skills in Teaching Practices 3 <i>L: The Southeast Asian Journal of English Language Studies – Vol 23(1): 75 – 85</i>

Table 3: Code for generated themes.

No.	Themes	Code
1	Teacher not be able to teach problem solving skills towards their students	TPS
2	Teacher not be able to perform problem solving during teaching and learning process	PPS
3	Teacher not be able to teach critical thinking skills towards their students	TCT
4	Teacher not be able to perform critical thinking skills during teaching and learning process	PCT
5	Teacher not be able to teach creative thinking skills towards their students	TCV
6	Teacher not be able to perform creative thinking skills during teaching and learning process	PCV
7	Teacher not be able to teach decision making skills towards their students	TDM
8	Teacher not be able to perform decision making during teaching and learning process	PDM
9	Teacher are lacking knowledge of meta-cognitive	KMC
10	Students are not motivated to think out of box	MTV
11	Teacher are lacking learning skills	LSS

Table 3: List of higher order thinking skills issues among teacher

No.	Code	Themes	A1	A2	A3	A4	A5	A6
1	TPS	Teacher not be able to teach problem solving skills towards their students	/		/		/	/
2	PPS	Teacher not be able to perform problem solving during teaching and learning process	/		/	/	/	/
3	TCT	Teacher not be able to teach critical thinking skills towards their students	/	/	/		/	/
4	PCT	Teacher not be able to perform critical thinking skills during teaching and learning process	/	/	/	/	/	/
5	TCV	Teacher not be able to teach creative thinking skills towards their students	/	/	/		/	/
6	PCV	Teacher not be able to perform creative thinking skills during teaching and learning process	/	/	/	/	/	/
7	TDM	Teacher not be able to teach decision making skills towards their students			/		/	/
8	PDM	Teacher not be able to perform decision making during teaching and learning process		/	/	/	/	/
9	KMC	Teacher are lacking knowledge of meta-cognitive	/	/			/	
10	MTV	Students are not motivated to think out of box	/	/				
11	LSS	Teacher are lacking learning skills				/		

## DISCUSSION AND CONCLUSION

From eleven themes that have been carried out, only six themes that reach saturated point and no new themes were developed. Table below shows the themes generated and saturation data gathered from the six articles:

Researchers analysis those documents by using thematic analysis methodology. From the selected articles, researchers found that there are eleven themes for the current study. Those themes are teaching problem solving, performing problem solving, teaching critical thinking, performing critical thinking, teaching creative

thinking, perform creative thinking, teaching decision making, performing decision making, knowledge, motivation and learning skills. From eleven themes that have been carried out, only six themes that reach saturated point. From the table, themes that are reach saturation point are performing problem solving, teaching critical thinking, performing critical thinking, teaching creative thinking, performing creative thinking and also performing decision making.

The main issues for teacher are they did not know how to improve knowledge and skills that can relate to their teaching and learning session in school. Most of the

teachers is lacking on thinking habits, reflection and idea generation [13]. Generating idea among teachers is very low. This is due to the lack of practicing on generating idea [13]. Teacher are not being able to teach critically because of teachers are confused themselves as they sometimes thought that they are teaching higher order thinking skills towards their students, but unfortunately, they only introducing lower order thinking skills [14]. Teachers are not being able to teach and perform critical thinking during teaching and learning session because of some teachers rely solely on Bloom's Taxonomy without realizing that the taxonomy is no prescribed specifically for teaching of higher order thinking skills [14]. Teacher teacher are not being able to teach and perform problem solving due to the lack of self-assurance among teachers [15, 16]. This mean that teachers nowadays lack of self-confidence that are needed in order to performing problem solving.

From the researcher's perspective, teachers in Malaysia nowadays are lacking of skills that can developed higher order thinking skills. To sum up, the fact that critical thinking, problem solving, creative thinking and decision making are really need to be focus to improve higher order thinking skills among teachers especially in Malaysia.

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