ISSN: 2527-8037

Proceedings of the 1st English Education International Conference (EEIC) in conjunction with the 2nd Reciprocal Graduate Research Symposium (RGRS) of the Consortium of Asia-Pacific Education Universities (CAPEU) between Sultan Idris Education University and Syiah Kuala University

November 12-13, 2016, Banda Aceh, Indonesia

ISSUES RELATED TO THE TEACHING AND LEARNING OF HIGHER ORDER THINKING SKILLS AMONG TESL STUDENT TEACHERS

Logeswari Arumugam M. Pillay [*], **Ainon Omar**, **Raja Nor Safinas Raja Harun** and **Nurfilzah Zainal**

Sultan Idris Education University, Tanjung Malim, Perak, MALAYSIA
[*]*Corresponding author: logesupm@gmail.com*

Abstract
This paper reviews literature on the issues of teaching and learning of higher order thinking skills, and the factors which influence the understanding of the teaching and learning HOTs among TESL student teachers in higher educational institutions. Other issues related to the teaching and learning of higher order thinking skills (HOTs) are also discussed in this paper. To conclude, teachers lack the appropriate pedagogical knowledge to teach HOT (Fisher, 1999; Zohar & Schwartzer, 2005; Zohar, 1999). Hence, this paper analyses further the need to investigate the issues that are related to the teaching and learning of HOTs which is of utmost pertinence in order to unravel these prevailing concerns.

Keywords: *Higher Order Thinking Skills, student teachers, TESL programme.*

INTRODUCTION

Higher order thinking skills have long been regarded as an essential outcome of an educational process in Malaysia. Yet, research shows that the teaching and learning of higher order thinking skills does not follow a coherent path. Studies by Zohar (2013) report that policy documents from all over the world highlight the need to teach 21st century skills. HOT is an important component of any list of 21st century skills.

The transformation of the education curriculum in the Malaysia Education Development Plan (PPPM) 2013-2025 focuses on the Higher Order Thinking (HOT) concept which aims to produce knowledgeable students who are critical and creative in their thinking and can compete at the international level (Soo, Nor Haniza, Rohani, & Siti Nuur-ila Mat, 2015). Teachers' teaching practices are hoped to change or at least be adapted and adopted to fulfil what has been outlined in the Malaysia Education Blueprint 2013-2025, the National Higher Education Strategic Plans 2007-2020 documents and the Malaysia Education Blueprint Higher Education 2013-2025 (Malaysia Education Blueprint 2013 - 2025, 2013). Along with the principles of the National Philosophy of Education Malaysia, reform efforts by the government in the 1990s were focused on the demands of the Vision 2020. These efforts included restructuring the education system in the country which brought about many outcomes, one of which was the introduction of a significant and explicit attempt to teach higher order thinking skills in schools. In order to promote the implementation of teaching higher order thinking skills (HOTs) in the Malaysian classrooms, the government structured a revised curriculum and resource materials for its educators. Various short courses and workshops were conducted to help educate teachers and teacher educators on the implementation of teaching HOTs (Nagappan, 2001).

Higher order thinking skills are grounded in lower order skills such as discriminations, simple application and analysis, and cognitive strategies and are linked to prior knowledge of subject matter content. Appropriate teaching strategies and learning environments facilitate their growth as do student persistence, self-monitoring, and open-minded, flexible attitudes. Therefore, these skills are the ultimatum in the field of education particularly amid pre service teachers in the TESL programme as it is these student teachers who will eventually take the role of English language teachers in the English language classroom in schools.

METHODOLOGY

This paper provides information on the issues related to HOTs based on the literature review of previous research by other scholars. By using a document analysis technique, information which is found related with the issue discussed is included in this paper as shown in the table below.

Table 1. Information related with the issue discussed in this paper.

References	*Research title*	*Issue related/ findings*
Alghafri & Ismail (2014)	The Effects of Integrating Creative and Critical Thinking on Schools Students' Thinking.	• Educators should use thinking skills based instructional strategy to enhance the levels of creativity and learning among primary schools' students
Choy & Oo (2012)	Reflective thinking and teaching practices: A precursor for incorporating critical thinking into the classroom.	• The link between reflective thinking and its ability to stimulate critical thinking • Teachers did not reflect deeply on their teaching practices • Critical thinking is practiced minimally among teachers
Darling-Hammond & Lieberman (2012)	Teacher Education around the World: Changing policies and practices.	• Teaching profession is complex and consists in integrating a wide range of theoretical and practical knowledge with a series of beliefs, goals, expectations and personal attitudes acting as a guarantee for students' achievements based on how teachers shape their professional learning or professional cognition systems.
Edwards & Briers (2000)	Higher-Order Thinking Versus Lower-Order Thinking Skills: Does School-Day Scheduling Pattern Influence Achievement	• The level of achievement for HOTs as described by Newcomb and Trefz (197) • The level of achievement for LOTs as described by Newcomb and Trefz (1987)
Ennis (1993)	Critical thinking assessment. Theory Into Practice	• Critical thinking assessment, albeit difficult to do well, is possible • Purpose of critical thinking assessment and format used • Numerous traps for the unwary
Fahim & Masouleh (2012)	Critical thinking in higher education: A pedagogical look.	• College students should receive explicit instructions on how to think • Academic community opposed good thinking but believed it was a misguided effort • Examining the predictive relationships of student dispositions and their abilities to think • Opening a refreshed horizon in teaching students to develop their ability of Critical Thinking
Ghafar, Hamdan, Sihes, & Harun (2010)	Integrated Curriculum Concepts in Malaysia: Knowledge and Application Differentiation	• Teachers are still poor in the teaching and learning methods as needed by the integrated curriculum practice
Heong, *et al.* (2011)	The Level of Marzano Higher Order Thinking Skills among Technical Education Students.	• Students perceived that they have moderate level for investigation, experimental inquiry, comparing, deducing, constructing support, inducing and invention • Low positive relationship between the level of Marzano Higher Order Thinking Skills and other factors
Krishnan (2014)	The acceptance and problems faced by teachers in conducting higher order thinking skills.	• Teachers problems in implementing HOTs questions in schools • Teachers are willing and realize the role of HOTs in producing thinking society
Lipman (2003)	Thinking in Education.	• The pedagogy of the "community of inquiry" should be the methodology for the teaching of critical thinking, whether or not a philosophical version of it is being employed or not

Table 1 continued…

McLoughlin & Luca (2000)	Cognitive Engagement and Higher Order Thinking through Computer Conferencing: We know why but do we know how? In Flexible futures in tertiary teaching	• Tertiary educators know why higher order thinking (HOT) is important, but they may not know how to recognise HOT or how to support it through tasks, activities and interventions while teaching online
Ministry of Education (2013)	Malaysia Education Blueprint	• The need to develop young Malaysians who are knowledgeable, think critically and creatively, have leadership skills and are able to communicate with the rest of the world
Nagappan (2010)	Teaching Thinking Skills at Institutions of Higher Learning : Lessons Learned.	• The need to teach thinking skills, more specifically, higher- order thinking skills to students • The teaching of thinking skills has increasingly gained attention from educators, in general, in the last few decades
Resnick (2010)	Nested Learning Systems for the Thinking Curriculum.	• Students do not adequately learn higher order abilities • If we went back to old fashioned courses and old fashioned methods, perhaps the problem of teaching higher order skills could be solved
Soo, Nor Haniza, Rohani & Siti Nuur-ila Mat (2015)	Innovating with HOTS for the ESL Reading Class	• The idea of integrating higher order thinking skills (HOTS) in language classrooms has been viewed negatively by language teachers. • Students have been found to be passive and teachers have been found to lack creativity in innovating their lessons
Yang & Gamble (2013)	Effective and practical critical thinking-enhanced EFL instruction.	• Metacognition of knowing about knowing • Developing, implementing and evaluating effective strategies for simultaneously fostering EFL learners' English language proficiency and CT skills

Critical thinking, or higher order thinking skills (HOTS) as it is more commonly phrased in education, is seen as vital to our teachers and students both in college and in schools. However, several issues have been seen interfering with the successful learning and development of HOTS among these learners. Among those issues are several at the crux of the dilemma. Then, the conjunction of pre service teacher belief formation and higher order thinking skills will be reviewed in light of current research findings.

A recent study by (Ghafar, Hamdan, Sihes & Harun, 2010) has revealed that "after 22 years of the Integrated Curriculum for Secondary Schools (KBSM) implementation, which focuses on the development of higher order thinking skills, the teachers are still poor in the teaching and learning methods as needed by the integrated curriculum practice". Teachers often perceive that critical thinking skills need to be taught, however research has shown that they may not know how to do this effectively (Choy & Oo, 2012). This lack of knowledge of HOT skills may eventually lead to teachers' inability to assess students' HOT skills. Teachers are not always sure of how to teach HOT (Nagappan, 2010). According to Zohar (2013), in-service and pre-service teachers' initial knowledge of thinking strategies was often not sound enough for purposes of instruction.

The last decade and a half has shown the emergence of international student ranking lists such as TIMSS, PISA, PIRLS, and Olympiads, which have put tremendous pressure on education ministries. International comparisons have shown that schools in Finland lead the league tables, but why is this, what new policies and practices in teacher education have they developed and how do they support the changes? (Darling-Hammond & Lieberman, 2012). Research by Akademi Kepimpinan Pengajian Tinggi (AKEPT) (Ministry of Education, 2013) found that 50% of the teachers observed failed to deliver their lessons effectively, particularly, their inability to inculcate higher order thinking skills.

Educators and researchers (Fahim & Masouleh, 2012; Yang & Gamble, 2013) have emphasized the value of the teaching of thinking. In practice, higher-order thinking is an essential tool used to compete in the global job market. In addition, developing students' higher cognition has become a critical component of educational curriculum and a desirable goal in higher education in numerous countries, including Malaysia.

Resnick (2010) argues that scaling up the "thinking curriculum" in a way that will foster proficiency for all students is currently a major educational challenge: "Today we are aiming for

something new in the world: An elite standard for everyone… That is what the term 21st-century skills really mean.

Limitation of the Study

This paper reviews limited only on the issue pertaining of Higher Order Thinking Skills and the context being discussed which is teaching and learning.

DISCUSSION

Higher order thinking skills is an important aspect in teaching and learning especially at higher education institutions (Heong, *et al.,* 2011). Higher order thinking essentially means experiences that involve cognitive processes of combining ideas and information to hypothesize, generalize, synthesize, explain and arrive at interpretations or conclusions that can lead to the discovery of new meanings (Baron & Sternberg, 1987; Nagappan, 2010; Pogrow, 2005). The complexities of thought processes engage an array of cognitive construct from baseline knowledge structure of recalling facts and ideas, and information processing to one that can develop the potential to take up higher order of thinking to critical review of situation, synthesizing information and solve problems (Alghafri & Ismail, 2014). It involves complex thinking that requires effort and produces valued outcomes. This study will use Bloom's highest three cognitive learning objectives: analysis, synthesis, and evaluation as a foundation for higher-order thinking.

Although different theoreticians and researchers use different definitions of HOTs, generally they agree that higher-order thinking or learning means the ability to go beyond the information given, to inculcate a critical attitude, to have metacognitive intelligences, and to solve problems (McLoughlin & Luca, 2000). Numerous researchers (Ennis, 1993; Lipman, 2003) have discovered that the most frequently occurring issues in the literature of higher-order thinking are independent thinking skills and moderate judgment qualities. Using Bloom's taxonomy as a key concept, Newcomb and Trefz's model (1987) considered four cognitive levels for HOTs: remembering, processing, creating, and evaluating. Different terminologies have been used to describe the thinking process: remembering and processing levels were identified as lower-order thinking, and creating and evaluating levels were categorized as HOTs (Edwards & Briers, 2000). The comparison of the conceptualization of Bloom taxonomy and Newcomb-Trefz's levels of learning model are exhibited in the figure below.

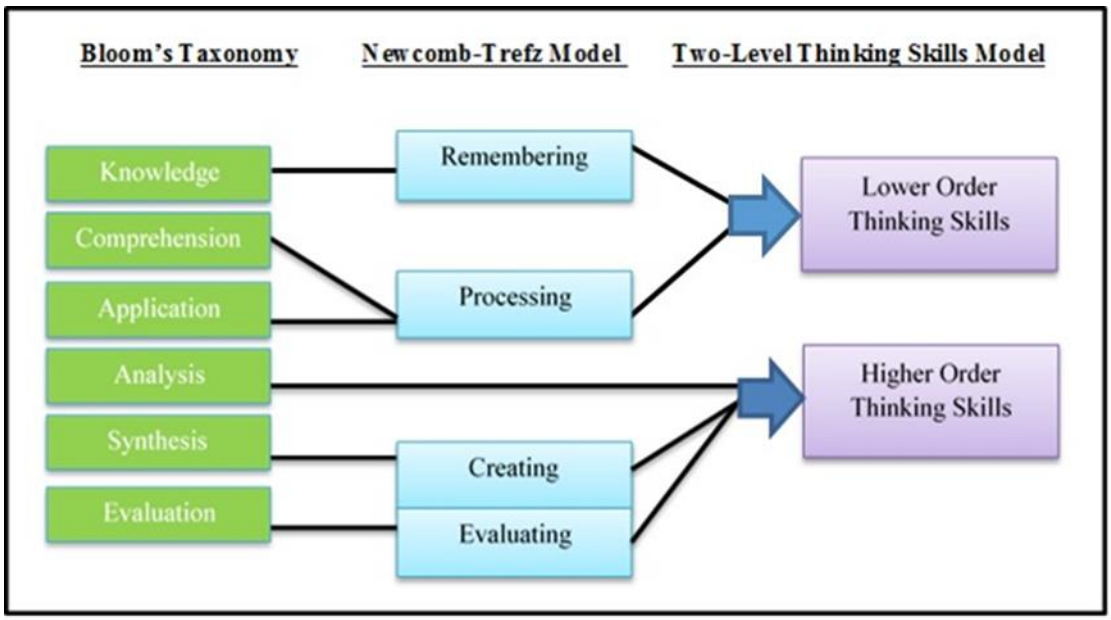

Figure 1. The comparison of the conceptualization of Bloom Taxonomy and Newcomb-Trefz's Learning Model, and a Two-Level Thinking Skills Model (Whittington, 1995, p. 33).

Currently, traditional pedagogical approaches are still being practiced in the teacher education environment in Malaysia. Lecturers are expected to provide teaching materials and conduct assessments as required in every syllabus. Not only do educators need to learn how to teach thinking skills, but they have to train themselves to think as well, so that they can choose the appropriate material according to the level of students (Krishnan, 2014). A major dynamic impacting the teaching of critical thinking skills to pre service teachers appears to be that these attempts are filtered through their already-held beliefs concerning critical thinking (Joram, Gabriele, Iowa & Falls, 1998). Beliefs are the unconscious schemas people develop through their experiences and the interpretation of those experiences (Borg, 2003).

CONCLUSION

The teaching of Higher-order Thinking (HOT) has its own challenges and these challenges deserve due attention. In the 21st century, one critical aspect in discussing effective teaching and learning is examining the effectiveness of teachers in developing students' capability to think while ensuring content mastery at the same time. The aim to develop and enhance students' HOT has been a major educational goal. As a matter of fulfilling a national aspiration in education, the role of teachers in inculcating HOT is considered as a very important and crucial aspect of teaching HOT effectively. Thus, pre service teachers should be well equipped with the skills to teach HOTs, in order to play their roles to decrease the emergences of students who are passive learners and lacking problem solving skills which at present is elevated as a remarkable concern amongst various stakeholders.

REFERENCES

Alghafri, A. S. R., & Ismail, H. N. Bin. (2014). The effects of integrating creative and critical thinking on schools students' thinking. *International Journal of Social Science and Humanity*, *4*(6). http://doi.org/10.7763/IJSSH.2014.V4.410

Baron, J., & Sternberg, R. (1987). *Teaching thinking skills: Theory and practice*. New York: Freeman.

Borg, S. (2003). Teacher cognition in language teaching: A review of research on what language teachers think, know, believe, and do. *Language Teaching*, *2,* 81–109. http://doi.org/10.1017/S0261444803001903

Choy, S. C., & Oo, P. S. (2012). Reflective thinking and teaching practices: A precursor for incorporating critical thinking into the classroom. *International Journal of Instruction*, *5*(1), 167–182. http://doi.org/e-ISSN:1308-1470

Darling-Hammond, L., & Lieberman, A. (Eds.). (2012). *Teacher education around the world: Changing policies and practices.* New York: Routledge.

Edwards, M., & Briers, G. (2000). Higher-Order Thinking versus Lower-Order thinking skills: Does school-day scheduling pattern influence achievement? *Journal of Southern Agricultural Education Research*, *50*(1), 15–23. Retrieved from http://pubs.aged.tamu.edu/jsaer/Vol50Whole.pdf#page=15

Ennis, R. H. (1993). Critical thinking assessment. *Theory Into Practice*, *32*(3), 179–186. http://doi.org/10.1080/00405849309543594

Fahim, M., & Masouleh, N. S. (2012). Critical thinking in higher education: A pedagogical look. *Theory and Practice in Language Studies*, *2*(7), 1370–1375. http://doi.org/10.4304/tpls.2.7.1370-1375

Ghafar, M. N. A., Hamdan, A. R., Sihes, A. J., & Harun, A. (2010). Integrated Curriculum Concepts in Malaysia: Knowledge and Application Differentiation. *European Journal of Social Sciences 19*(2), 208-217.

Heong, Y. M., Othman, W. B., Yunos, J. Bin, Kiong, T. T., Hassan, R. Bin, Mohaffyza, M., & Mohamad, B. (2011). The level of Marzano Higher Order thinking skills among Technical Education students. *International Journal of Social Science and Humanity*, *1*(2), 121–125. http://doi.org/10.7763/IJSSH.2011.V1.20

Joram, E., Gabriele, A. J., Iowa, N., & Falls, C. (1998). Pre-service teachers' prior beliefs: transforming obstacles into opportunities *Teaching & Teacher Education, 14,* 175-191.

Krishnan, B. A. (2014). *The acceptance and problems faced by teachers in conducting higher order thinking skills*. (Unpublished Master's thesis). Universiti Teknologi Malaysia, Kuala Lumpur.

Lipman, M. (2003). *Thinking in education*. Cambridge: Cambridge University Press.

Malaysia Education Blueprint 2013-2025. (2013). Retrieved from moe.gov.my/userfiles/file/PPP/Preliminary-Blueprint-Eng.pdf

McLoughlin, C., & Luca, J. (2000). Cognitive Engagement and Higher Order Thinking through Computer Conferencing: We know why but do we know how? In A. Herrmann, & M. M. Kulski (Eds.), Flexible futures in tertiary teaching (pp. 2-4). *Proceedings of the 9th Annual Teaching Learning Forum*. February 2-4, Curtin University of Technology, Perth.

Nagappan, R. (2001). Language teaching and the enhancement of higher-order thinking skills. *Anthology Series-Seameo Regional Language Centre* (April 2000) (pp. 190–223E). Retrieved from http://nsrajendran.tripod.com/Papers/RELC2000A.pdf

Nagappan, R. (2010). Teaching Thinking Skills at Institutions of Higher Learning : Lessons Learned. *Pertanika J. Social Science & Humanities*, *18*, 1–14.

Pogrow, S. (2005). HOTS revisited: A Thinking development approach to reducing the learning gap after Grade 3. *Phi Delta Kappan*, *87*(1).

Resnick, L. B. (2010). Nested Learning Systems for the thinking curriculum. *Educational Researcher, 39*(3), 183-197. http://doi.org/10.3102/0013189X10364671

Soo, K. Y., Nor Haniza, H., Rohani, J., & Siti Nuur-ila Mat, K. (2015). Innovating with HOTS for the ESL reading class. *English Language Teaching*, *8*(8), 10–17. http://doi.org/10.5539/elt.v8n8p10

Yang, Y. T. C., & Gamble, J. (2013). Effective and practical critical thinking-enhanced EFL instruction. *ELT Journal*, *67*(4), 398–412. http://doi.org/10.1093/elt/cct038

Zohar, A. (2013a). Challenges in wide scale implementation efforts to foster higher order thinking (HOT) in science education across a whole school system. *Thinking Skills and Creativity*, *10*, 233–249. http://doi.org/10.1016/j.tsc.2013.06.002

Zohar, A. (2013b). Scaling up higher order thinking in science classrooms: The challenge of bridging the gap between theory, policy and practice. *Thinking Skills and Creativity*, *10*, 168–172. http://doi.org/10.1016/j.tsc.2013.08.001