HOTs FOR TEACHING AND LEARNING IN A TEACHER EDUCATION UNIVERSITY

[1*]Logeswari Arumugam M. Pillay, [2]Charanjit Kaur Swaran Singh, [3]Melor Md. Yunus

Abstract---Purpose of the study: *This study investigated the implementation of higher order thinking skills (HOTs) in the classroom and the processes involved in the teaching and learning of HOTs to determine the strategies that the TESL teacher educator (TE) employed in implementing the teaching and learning of HOTs.*

Methodology: *This study utilized a qualitative approach to obtain the TE's experiences in the natural context of implementing HOTs. Fourteen lessons of the semester 5 and 6 of the TESL programme involving one TE and twenty-seven STs were observed and analysed inductively for dominant issues and categories. The environment of the classroom and the teaching and learning process through various methods have been described as being highly interactive, supportive of critical and creative thoughts, as well as evaluative and analytical. These are key attributes that influenced the implementation of HOTs in the TESL classroom, which established the successful use of HOTs.*

Main Findings: *The findings of this study would give an insight to teacher educators training TESL student teachers in the teaching and learning of thinking, more specifically in incorporating HOTs in their daily lectures through the teaching and learning planned and designed for teacher education. It would also help teacher educators to understand the specific strategies in the aspect of implementing HOTs for teaching and learning amongst student teachers. This study would also be an eye-opener to the TESL teacher educators as it will inform them on what are the factors that influence the implementation of HOTs for teaching and learning in the TESL teacher education programmes. Having knowledge of the factors that influence the implementation of HOTs can help teacher educators to be well equipped with the learning strategies, learning environment and learning activities that promote the teaching and learning of HOTs in their classroom.*

Applications: *The pedagogy styles in this study are basically the best practices and strategies used by the teacher educator in this study to implement HOTs. When the student teachers undergo learning based on HOTs, they are bound to develop skills which enable them to reflect upon the provided topic of learning. Not only that, the student teachers are able to develop their own perceptions about the topic. While implementing HOTs based learning, the student teachers were motivated to question the topic of learning. It was possible for them to develop their questioning skills and enhance reasoning and aptitude skills.*

Novelty of this study: *According to Malini & Kaur (2014), there is scant research which has attempted to investigate how teachers construct pedagogical content knowledge to teach HOT skills. In fact, very few studies have been carried out to investigate how teachers construct the pedagogical content knowledge for teaching language skills by integrating HOTs in Malaysian secondary ESL classrooms. Having said this, there are no studies carried out to investigate teacher educators' practices for implementing HOTs in the TESL teacher education programmes in Malaysia.*

*[*1]Policy and Research Sector, Curriculum Development Division, Ministry of Education Malaysia, Wilayah Persekutuan Putrajaya, Malaysia.*
[2]English Language and Literature Department, Faculty of Communication and Languages, UniversitiPendidikan Sultan Idris, Malaysia.
[3]Universiti Kebangsaan Malaysia, Bangi, Malaysia logeswari@moe.gov.my

I. INTRODUCTION

This study focusses on the TE's implementation of HOTs for teaching and learning in a teacher education university. Based on the Malaysian Education Blueprint 2013-2025, the Ministry of Education Malaysia aims to afford all Malaysians with equivalent access to shape excellent students who are highly-skilled and knowledgeable at all levels. Critical and creative thinking is necessary to be a highly-skilled and knowledgeable citizen. There are more reformed efforts taken to make Malaysia a country which has well-balanced citizens. This move is more apparent in the National Education Philosophy (NEP) which was documented in 1987. The reforms stated, visibly draw attention on how the education system of Malaysia works towards molding students to become capable of achieving a high level of self-well-being to contribute to the betterment of the nation, family and society. TESL TEs have been trained for many years to use Bloom's Taxonomy of higher-order thinking skills (HOTs) to help STs to become critical and creative thinkers during their training period in the university. This study presents a breakthrough in the teaching and learning of HOTs by the TESL TE. Fundamentally, the purpose of this study was to investigate the TESL TE's implementation of HOTs in the TESL teacher education lecture room and the processes involved in the teaching and learning. In addition to this, this study identified the factors that influenced the TESL TE's implementation of HOTs for teaching and learning. This study is aimed to better inform TEs on how to prepare STs to identify their students' needs when implementing HOTs in their own classrooms.

This study is guided by the research question stated below:

How are HOTs implemented for teaching and learning in the TESL teacher education programme by the TE?

II. LITERATURE REVIEW ADD MORE LITERATURE REVIEW

A study found that teachers prefer teaching facts and asking students to listen to the teachers' explanation. The dominant problem-solving strategy teachers use is making analogies to similar problems (Dewitt et al., 2016). Problem-solving which is an important skill that enables students to critically evaluate arguments, and to develop and support their own arguments (Bassham et al., 2012) must be taught in every class in order to develop students higher order thinking skills. However, according to Dewitt et al. (2016) studies from the implementation of thinking skills in the curriculum indicated that teachers had problems in inculcating higher order thinking for teaching problem solving as more often teachers focus on surface level understanding of the subject matter and do not specifically teach higher order thinking or problem solving (MOE, 2012). In addition, Dewitt et al. (2016) also state that teachers did not have clear understanding on the definition of thinking skills and were unable to differentiate and understand between the different levels of higher order thinking as stated by Nagappan (2002) in his study.

Thus, teachers must equip themselves with skills and approaches on how to incorporate higher order thinking skill into their teaching and learning process. One of the ways to do it is by engaging students in critical thinking. The teacher plays the role as a facilitator to allow for discussion and encourage a freer thought process as carried out in this study by the TE.

The researchers of a recent study claim that present and future English major lecturers have better ideas to implement more effective teaching methods for their classes however, there is still room for improvement and improvisation for other similar degree programmes to implement higher order thinking skills in lectures through the effective use of ICT tools to

promote better learning (Ganapathy et al., 2017). They said that the use of ICT is an effective strategy to implement higher order thinking skills for teaching and learning any subject or course. Teachers need to master the knowledge and skills in the field of comprehensive planning, especially in integrating thinking skills in all subjects. Lesson planning must focus on certain aspects (Seman et al., 2017). A participant in the same study quoted that "...I need more focus to plan the lessons in selecting and defining approaches, techniques and activities that correspond with the skills...".another participant also said that "...teachers must plan and prepare early, if not...the objectives and goals of teaching thinking skills and curriculum are difficult to achieve...". This shows that teachers need to have knowledge on the right approaches and strategies to inculcate higher order thinking skills in their lessons in order to develop their students critical and creative thinking skills.

An investigation on the implementation of higher order thinking skills in Malaysian L2 classrooms suggest that the implementation of HOTS in the L2 classroom is very minimal and hindered by various factors, particularly those related to students, pedagogical and institutional factors. This implies the need for a more holistic and integrated approach involving L2 teachers, students and administrators in ensuring the successful implementation of HOTS in the L2 classrooms (Aziz @ahmad et al., 2017).

According to Balakrishnan et al. (2016), in their study to explore how the fun game-learning approach enhances teacher trainers' higher order thinking skills state that the teacher trainers' higher order thinking skills were enhanced after the two-day Continuous Professional Development Programme. The researchers in this study said that it is important for teachers to be knowledgeable and skillful in their subject matter so that they will be able to equip students with the skills they need for future success. Thus, teachers should equip themselves with skills and approaches on how to incorporate higher order thinking skill into their teaching and learning process. One of the ways to do it is by engaging students in critical thinking. The teacher plays the role as a facilitator to allow for discussion and encourage a freer thought process. Teacher should encourage learning as it enhances the thinking skill of the students and is applicable in problem solving (Balakrishnan et al., 2016).

Latief, Karim, & Pabbajah (2018) in their article explore the emergence of higher order thinking skills in a classroom practice at Universitas Teknologi Yogyakarta (UTY), Indonesia. They found that HOTs is not easy to implement in the classroom as it requires more work, time, deeper practical understanding, a number of strategies and practices in the different contexts and situation. Yet, the researchers claim that it is very important to apply higher order thinking in the classroom as it benefits both the students and the lecturers as it develops their problem-solving skills and enables them to think critically. Besides all of these being said, it is of utmost truth to say that effective teaching gives rise to effective learning and students' learning can come in all forms, one of them being learning to think at the higher levels. This naturally makes effective teaching of HOT imperative in ensuring students' effective learning as a whole (Tan & Halili, 2015).

III. METHODOLOGY

This study employed a qualitative approach as the study aims to describe the phenomenon under study from the perspective of the participants (Varutharaju & Ratnavadivel, 2014). The qualitative approach is deemed suitable when the study is explorative in nature and aims to provide an interpretative-descriptive analysis of a phenomenon under study (Creswell, 2007). The interpretative paradigm allows this study to explore the phenomenon in its naturalistic environment and makes an interpretation of what is seen, heard, and understood in the process of interaction. One teacher educator (TE) and twenty-seven student teachers (STs) from the same programme were selected to be the sample for this study because this study intended to explore and understand the actual practice, processes involved and how these supported the implementation of HOTs for teaching and learning at the higher education level in specific the teacher education. In deciding

the sample population for this study, the researcher had identified the individuals and sites. The need to gain access to the individuals and sites are central in a qualitative study. Thus, purposive sampling was used in order to develop an in depth study aimed at understanding the phenomenon. The study involves STs from the KPD 3016 INSTRUCTION, TECHNOLOGY AND ASSESSMENT 1 of the Teaching English as a Second Language (TESL) teacher education programme. This study was conducted in the only teacher education university in Malaysia.

IV. RESULTS

Data from the TE's interview were analysed and interpreted. The interview conducted was a semi-structured interview designed to elicit detailed information pertaining to how HOTs was implemented, for example by looking at the procedures involved in teaching HOTs. This will also answer some questions pertaining to why and when such procedures were used. According to Owen (2014) the goal of an interview is to find out how people perceive an occurrence or object. The TE used several strategies and methods to implement HOTs in her TESL classroom. Various themes emerged from this study based on the strategies and methods used. The themes emerging within the TE's implementation of HOTs for teaching and learning in the TESL education programme were organized into two categories:

- **Planning lessons to implement HOTs**
- **Major considerations at each planning stage in implementing HOTs**

The themes that emerged under the category of planning lessons were: the defining of HOTs (explaining to students what HOT is), resource materials for HOTs (prepare resource materials for effective teaching and learning), active involvement of STs in HOTs (involve students actively in the teaching and learning of HOTs), provide feedback to students for the effective learning of HOTs and evaluate students' HOTs improvement in the classroom. Findings under the category of stages involved in implementing HOTs revealed that the TE adhered to five key elements of HOTs in the classroom, namely reasoning, questioning and inquiry techniques, creativity and solution of the problem. The themes that emerged under this category were as follows: reasoning (developing lessons that require students to reason), questioning (creating opportunities for student to enquire and pose different questioning techniques), creativity (creating opportunities for students to be creative) and solution of the problem (students searching for solution of the problem given in the classroom).

Planning lessons to implement HOTs

Planning lessons to implement HOTs refer to the TE's preparation of her lessons with strategies and methods to inculcate HOTs in her STs and in her daily classroom instruction. The TE planned out her lessons for each of her lessons by ensuring that there were sufficient practices through activities for the implementation of HOTs based on the learning objectives outlined in the university's TESL instructional plan. Her lessons comprised elements such as the teaching and defining of HOTs, the resource materials and active involvement of STs through activities that required the use of HOTs such as problem solving, creating and evaluating. Costa (2001), claims in his studies that teaching and learning activities must involve teachers posing problems, raising questions and intervening with issues and discrepancies that challenge and engage students' minds. The same is seen in this study with the TE planning and executing lessons which are based on ample activities of the same criteria.

Relating HOTs - Explaining to STs the concepts of HOTs

Recent studies revealed that teachers had only basic knowledge on Bloom's taxonomy of cognitive processes; and they did not understand the functions and the differences between stages of lower order thinking skills and HOTs (Yusoff & Seman, 2018). To further support this fact, another study also quoted that:

> "*Furthermore, teachers lack knowledge and understanding in methods of teaching for thinking. The same research also found that teachers were unsuccessful in choosing the appropriate techniques, methods and approaches of teaching for HOTS effectively.*"
>
> *(Abdul Halim & Siti Muhibah, 2015, p. 47)*

During her lessons, the TE provides notes related to the concepts of HOTs and gives sufficient examples on activities that are infused with HOTs.

Example 1

The TE claims that inducting STs with knowledge on HOTs will help to prepare the STs with the required knowledge pertaining to HOTs. She believes that explicitly teaching the concept of HOTs is of utmost importance because she does not want her STs to be muddled or to be uncertain about what HOTs are and how to implement these HOTs in their classrooms. She makes sure her STs understand the critical features that define a particular concept and distinguish it from other concepts during the process of implementing HOTs for teaching and learning in the TESL teacher education programme.

Resource Materials for HOTs - Prepare resource materials for effective teaching and learning of HOTs

When implementing HOTs in students and in a classroom collectively, it is important to acquire the right resources to facilitate the teaching of HOTs. In this study, the TE managed to use several resource materials to facilitate her in producing an effective teaching and learning classroom as well as to implement HOTs in her STs. Students are very often more motivated and interested to learn from their own devices rather than a teacher lecturing on various topics. Through the use of Bring Your Own Technology (BYOT) or Devices (BYOD), teachers and students can change the focus of the classroom and become more student-centered (Amy S. Ackerman & Krupp, 2012). Higher order thinking engages analysis, evaluation, and synthesis skills to create new information that requires more cognitive processing. BYOD provides ongoing access to digital tools that can process information in a more complex manner. For example, the creation of flowcharts, surveys, mind maps, digital stories, and blog discussions are just some of the ways technology can develop higher order thinking in students. The TE in this study uses various resources during the implementation of HOTs for teaching and learning in her lesson. She believes that exposing her STs to a variety of resources would keep the students engaged with her lesson and also expose them to the 21st century learning skills. The TE uses BOYD which Bring Your Own Device during her lesson and lets the STs participate in several online games using *Kahoot*.

Example 1

In Example 1, the TE carries out part of her lesson for the day using the BYOD strategy which encourages a fruitful learning session for the day. The STs were seen participating in a simple online survey and a game with much enthusiasm and they stayed focus during the whole activity. The TE got her STs to participate in the online game after they downloaded an online application called *Kahoot*. Participating in this task was exciting for the STs as they had to race against time and

compete against their peers. This resource used by the TE during the implementation of HOTs for teaching and learning in the TESL teacher education programme indicated the level of *UNDERSTANDING* in the Revised Bloom's taxonomy.

TE:	*Besides parents are always a teacher, so you have a big role, um in your community. Yeah? Or in the schools in which you are placed, or whatever organizations that you working with later, yeah? Because we never know. Sometimes, you know, you might do teaching, sometimes you might not going to do teaching. Okay. Now are you guys ready for BYOD?*
ST:	*Huh? …*
TE:	*Bring Your Own Device.*
ST:	*……*
TE	*And I have something extra today.*
ST	*Would you share with us please?*
TE	*Yes, I'll tell you later.*
TE	*Okay, later we also going to do a survey. Okay? Yes a survey. (plays kahoot)*

Example 2

Another powerful resource material used by the TE to implement HOTs in her classroom as well as provide an effective teaching and learning experience are graphic organizers. Graphic organizers enable teachers to show and explain relationships between how content relate to other content areas. Graphic organizers allow students an active role in their learning. The TE discusses the use of a graphic organizer from a text and explains that it helps to organize our ideas according to the most important and up to the least important. It also helps STs to keep on track of what is being discussed. Graphic organizers can be used to simplify a long text and present ideas in a creative manner. It enhances the creative thinking skills of any individual as it helps to develop on presentation skills.

TE:	*What if you don't…but its singular. So that is just, uh, your- your choice of answer. Okay, um.. Okay that is the grammar part, the cloze passage. They have this section. Uh..ah the graphic organiser. Okay I'll show you an example of graphic organiser. Section B, 20 marks, sign- time suggested 20 minutes. Read the following information and answer the question that follow- the questions that follow. 'Saving the wild cattle campaign', okay.*

…..…………………………….continued…………………………

TE:	*Why do you- why do you want to use graphic organisers from a text? Okay, why? What would be- what is it that you are testing here?*
ST:	*Information transfer.*
TE:	*Information transfer from…*
ST:	*Linear to no-linear. Passage.*
TE:	*Okay, from linear to non-linear. Excellent. Okay. So maybe- to Student 9 … your brain is working.*

Example 3

In this example, the TE gives the STs a newspaper project. The STs group into fives to carry out this project. This enhances the chances of critical thinking and problem solving among the STs. The TE encourages her STs to relate their knowledge of concepts and theories pertaining to teaching and learning to the project given.

TE: *Okay. So this is actually, uh, a newspaper project. Okay. Uh, and the students are actually divided into group of 5 and all that so you must have a description, okay, the description that would, um… *puts a pencil case on the page of the book**

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TE: *Furthermore, in fulfilling this task students need to achieve the highest level of critical thinking skill which is creating.'' Okay, from the Bloom's Taxonomy. Okay, that is in a description. You have to th- uh, how they make use of thinking skills. Then the four skills. Which of the four skills are actually being focused in the project. "Through this project," okay, "all four skills – reading, writing, listening and writing are focused on.*

Active Involvement of STs in HOTs - Involve STs actively in the teaching and learning of HOTs

The best way to acquire HOTs is through action learning and practice. In this study, the TE uses several action learning strategies during her lessons to involve her STs actively in the teaching and learning of HOTs. The TE uses brainstorming for ideas in groups and as individuals when discussing a topic. She uses listing of ideas on the whiteboard to allow her students to conceptualize the topic being discussed and reinforces the points discussed.

Example 1

In Example 1, the TE gets the STs to carry out a debate after she assigns the topic. The STs organize the activity and participate in the debate to share and argue on ideas relevant to the given motion which was *The Introduction of the English KSSN Syllabus has more Advantages in the 21st Century Learning Compared to The English KBSM Syllabus*. The TE guides the STs with information on how to carry out a debate and briefs them on the structure of a debate. She then allows them the space to experience the whole activity on their own while facilitating them whenever needed. She allows the STs to demonstrate understanding of facts and ideas while organizing, interpreting and describing their stand during the debate. The STs examine and break information into parts of evidences to support generalizations of ideas and facts while they defend their stand during the debate.

TE: *Ah that is for you to answer later don't ask me. I can read your mind. Oh Zikri, come on. Did you hear what he asked me? Did you hear what he asked me just now? What's the difference between KBSM and KSSN? You tell me yourselves. Yes?*

TE: *Ah! Do you think transformation is a good thing or a bad thing? After I'll explain this one.*

ST: *Okay…*

TE: *After this we'll decide, we will have a debate.*

ST: *:……(continued)….Yeah, okay. Alright, so… Okay so I have the syllabus there but that's not important. This is important. Okay, yeah, so debate. So uh Logeswari, will explain to all of you how we are going to debate, okay. She's the head educator.*

TE: *Do you need a microphone if your voice is not loud?*

ST: *….(continued) Okay good morning to …, adjudicators, and the floor members. Today we are here, to talk about English…to the English KBSM syllabus. We as the government team fully agree with this motion. Okay first let me introduce you to the KSSM syllabus. KSSM syllabus, … growth of our country and the national development of our country in uh, uh in education.*

Example 2

In Example 2, the TE asks the students to do a micro teaching session individually to further involve her STs in the teaching and learning process of HOTs. The TE analyses the activities and the planning of the micro teaching sessions and provides feedback to the STs. She supports the STs by giving them constructive feedback on the HOTs activities which the ST has planned in his lesson

TE:	*Okay XXX, could you please explain your activities? We want to listen to your activities from your set induction..what you are doing and how you use and develop your explanation.*
ST:	*So first of all for set induction students are divided into groups of five. After that um..each group will receive an envelope of pictures. The envelope uh consist of like three riddles. They have to find out the answer and once they are finished, the group leader had to give the answers to the teacher and um..the rule is you ... finish off faster*
TE:	*Okay, the idea of having the riddle is good. She's going to have a riddle for her set induction.*
ST:	*Um the riddle is about endangered animals.*
TE:	*Okay, the riddle is about endangered animals. My question is, she's going to divide the students into five groups and give the riddles in an envelope, and then they will sort of discover what the answer is. .... Okay..you have to sort of get ... into groups.*
ST:	*After that, for the explanation stage uh the teacher explains the details of planning ... by using PowerPoint slides. After that, students have to brainstorm the riddle and do observations plan in their group..*

Example 3

In Example 3, the TE uses reporting as a form of evaluation on an activity done previously by the STs. This activity in which the STs revisit their identity which they have described in an earlier semester helps them to recollect on what they have said and now evaluate on their current actions. The STs said that they are able to check on their own prior thoughts and stand over any specific matter and then even critique or challenge their own decisions. while developing their problem solving and critical thinking skills.

Revisiting Your Identity

Upload the identity that you aspire as an English teacher which you had described in semester 5 before leaving for your teaching practice. Revisit those identities and reflect on your teaching practice experience. Reflect on what characteristics of the identity which remain, changed or modified. Upload according to your groups for easy reference before 20/3/2018 for class discussion. Thank you

Technologies have made bringing real-life situations into the classroom become more available to teachers. It is important that STs are taught explicitly on how to infer or make inferences by providing "real life" examples. The TE actively involves her STs by associating their answers with real life situations. When STs associate what they learn in the classroom with the real world they are able to understand better.

Example 4

In Example 4 the TE associates real-life situations to the topic that she teaches in the class by saying that she does not expect her STs to be the same as anyone else but be their original self.

ST:	*But, well, bit taken from.*
TE:	*That's not the matter as long as you have the words. I'm not expecting you to be the same.*

> ST: *Um, to be the best teacher, I will listen attentively to every T. Educator exercising critical thinking, present confidently in class, instructing clear instructions for every task. And always inspire myself.*
>
> TE: *Okay, alright. What just putting it from a ST's perspectives. Okay I did say right? You have to have it from a perspective, um teachers. So that's okay right. Probably you can, actually you can reword it a little bit.*

Provide feedback to STs for the effective learning of HOTs

Feedback allows one to understand their shortcomings well and encourages them to make a positive change. The TE provides feedback by first giving a sign of compliment, stating if it's a good answer or if it needs to be reworked. She extracts the significant words and points given by her STs to provide a deeper explanation.

Example 1

In this example, a ST explains the important characteristics of a HOTs induced teacher in the 21st century learning environment. The TE then compliments the ST's effort by stating that the ST's idea is unique and further expands it by providing another point that helps to strengthen the ST's answer.

> ST: *Yea… You think critically and when you're reading … to instruct clearly and last but not least that you should listen attentively to their explanation.*
>
> TE: *Haa, good.*
>
> ST: *Whoo (clapping)*
>
> TE: *I like the last one. What's the last one?*
>
> ST: *Listen attentively to the students…*
>
> TE: *Listen attentively to students' ideas. That's something different from um, other groups, yea? So that's something unique about it, okay? You have to listen to students' idea. Do not be so authoritative. Yea, okay.*

Example 2

In this example, the ST says that a teacher should not only have sound critical thinking skills of their own but should also employ critical thinking skills towards their students. The TE complements the ST's idea and provides feedback by explaining about thinking.

> TE: Yes? …
>
> ST: *A 21st century education is always be inspiring to his or her students. He or she should promote the students to think critically and out the box. Ideas given by the students should be listened attentively. He or she should present and allow thinking process to happen within the task itself.*
>
> TE: *Okay, the thinking process is extra there. Thinking out of the box, I would like to see that. You always say, you have to think out of the box, think out of the box, but, are the teachers actually preparing platform and spaces and opportunities for the students to be thinking out of the box? That will be the question. You cannot get your students to be just thinking out of the box, out of the blue, without providing them with the opportunities or platforms*

Evaluate STs' HOTs improvement in the classroom

The TE evaluates her STs' understanding of HOTs through activities such as group presentations and individual assignments. She sets tasks and activities that get her STs to understand their own practices and how they have understood the skills to analyse, create and evaluate. She guides her STs with more details if they require more support on using their analytical skills, creative and critical thinking skills as well as their evaluation skills.

Example 1

In Example 1 below, the TE asks her STs to set an appropriate timing for a test which comprises writing a summary, answering short answer questions, fill-in the blanks, some Multiple-Choice Questions. The STs discuss in their groups and throw some possible answers. The STs are able to analyze and justify the reasons for the amount of time that should be allocated for this test. The STs reason out that the students will not be able to complete the test in one hour with so many items to answer.

ST:	*um.. one and a half*
TE:	**laughs* Yeah, at first just now they said, well, one hour and now they have added 30 minutes that's- which is very good. Why? ...*
ST:	*Because it's not possible for the students to write a summary that they will be able to write summary, answer short answers, fill-in the blanks, all the graphic organiser-answer every MCQs some more in one hour.*
TE:	*So, having 1 hour and 30 minutes, uh, you know, i- it's wise. Okay. Alright? Yes? ..so you have analysed that..uhh well...uhh..yes.. to see the problem right...about the timing*

Example 2

In Example 2, the TE asks her STs to think critically on how they would award marks for a formal letter writing essay. The STs rationalize on why a certain amount of points is most suitable for the number of content points given. In this activity the TE encourages her STs to scrutinize the task and think critically to determine the marks allocation while evaluating the STs HOTs.

TE:	*How? How do you decide that the content is this, how do you decide- how,*
ST:	*Uh, probably for 5 out of 10, you can like create- if they manage to come up with two main ideas then ...*
TE:	*Excellent*
ST:	**clap and cheer for student 8**
TE:	*Come on, repeat that. Yes..this is when you are critical...For example...?*

Major Considerations at each planning stage in the implementation of HOTs

For each stage identified by the TE it was observed that the TE considered the proposed recommendations and the criteria that would provide a clear picture on the implementation of HOTs. These considerations are closely related to the key aspects of HOTs which are analyzing, evaluating, creating and problem-solving skills.

Reasoning - Developing lessons that require STs to reason

HOTs require students to really understand a concept. Hence, encouraging students to elaborate their answers and talk about what they are learning is vital. The TE plans and develops her lessons in a strategic manner that it involves her STs to provide logical and strong reasoning to their answers.

Example 1

In Example 1, the ST elaborates the meaning of the term *authenticity*. The TE prompts questions to check on her STs' understanding of facts. When a restricted response occurs, the TE uses probing to search for possible reasons. This gives the ST a chance to elaborate more specifically his or her answers. She gets her STs to evaluate and validate the ideas shared by their peers by justifying their opinions. This places the implementation of HOTs at the level of *EVALUATION* of the Revised Bloom's taxonomy.

ST: *The authenticity.*

TE: *The authenticity, what do you mean by the authenticity? Do you want to elaborate a little bit?*

ST: *Uh..the students would be exposed to the real world then uh.. this text describes something they..*

TE: *Ya, okay, the students will eventually be exposed to the real world, how is it used in real situation, you know, rather than just reading a text.*

ST: *They can understand the text better.*

TE: *Which one? Which one can they understand the text better?*

ST: *Non-linear.*

TE: *The non-linear ones? So, Asma's saying that the non-linear one. Who agrees? She's saying that the non-linear ones would help the students understand the content better. Okay, who agree? Okay somebody says it depends, yes, Ruby, why is it it depends?*

ST: *Um.. I think it's based on the students' understanding.*

TE: *So it's based on the students' understanding. What..*

ST: *Whether it is linear or non-linear.*

Example 2

The TE prompts the ST to explain more in Example 2 when the ST states what she expects. The ST elaborates on her perceptions at this point on what being the best teacher is to her. This example shows how the TE still encourages her STs' reasoning abilities even though the answers might be similar which is a form of motivation and self-confidence.

ST: *But, well, I have bit taken from*

TE: *That's not the matter as long as you have the words. I'm not expecting you to be the same. You just be confident with what you have and that's fine..*

ST: *Um, to be the best students, I will listen attentively to every T. Educator, exercising critical thinking, present confidently in class, instructing clear instructions for every task. And always inspire myself.*

TE: *Okay, alright. What just putting it from a ST's perspectives. Okay I did say right? You have to have it from a perspective, um teachers. So that's okay right. Probably you can, actually you can reword it a little bit.*

Questioning and Inquiry Techniques - Pose questioning techniques and creating opportunities for STs to enquire

The TE constantly prompts the STs to ask questions in most of her lessons especially after she has explained a topic and also very often during the STs' peer presentations. A classroom where STs feel free to ask questions and pose inquiries without any negative reactions from their peers or their TEs is a classroom where STs feel free to be creative. A recent research states that not much is known about the level of teachers' knowledge and skills in HOTS especially in their knowledge and skills in questioning to stimulate HOTS (Yusoff & Seman, 2018). This strategy also empowers the STs with confidence as they become self-assured creative thinkers. There are two categories of questions that are used in regular classrooms which are the Lower Cognitive Questions and Higher Cognitive Questions. Lower cognitive questions are usually closed questions which have very direct answers and require students to recall from their previous knowledge. Higher cognitive questions are higher order questions which are open questions and may have indirect answers that need students to analyse information and apply their knowledge.

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Example 1

In Example 1, the TE prompts her STs to ask questions relevant to the discussion. The TE does not provide immediate answers to the questions the STs post and instead she throws the questions back to the floor and holds an open discussion with the STs while drawing out on their opinions and ideas. The TE promotes higher cognitive questions in her class during this lesson where she challenges the ST at one point by asking "Can the teachers develop their potentials?"

ST: *You said that, S. Teachers play a symbiotic developing, but for me the most…*
TE: *Most?*
ST: *Relevant is teachers learn.*
TE: *You said more relevant one is teachers learn? Why?*
ST: *Because according to National Ministry, we need to develop teachers' potentials.*
TE: *Develop the teachers' potentials? But can the teachers?*
ST: *Yeah like we did with each other.*

Example 2

Sometimes it is important to prompt lower cognitive questions which actually play an important role in developing and embedding the prior knowledge of the STs to engage with higher cognitive questions. In Example 2 the TE posts questions related to the skills and topic being discussed todevelop the interest of the ST.

TE: *…you have to make it explicit that the teachers are able to point out the characteristics from the role play because that would actually be an input for them to write in the paragraph. Okay. Any other questions? What about that one? Predicting outcomes? Are they thinking skills?*
ST: *Yesss.*
TE: *ok…yes..so..any questions? Yes..*
ST: *uh..if it is thinking skills..uh can it be like creating a new character?*
TE: *creating character..uuhh yes and how would you do that?*
ST: *uumm…for the role play..uumm*
TE: *how would this new character..i mean how will the character fit into..uhh?*
ST: *when predicting the outcomes …uum can create a new character that…suits the outcome*

Creativity - Creating opportunities for STs to be creative

Creativity is one of the key elements of HOTs. It allows one to express new ideas using their prior knowledge. The TE aims to produce teachers who can not only think creatively but also be able to teach their future students on how to be creative. Therefore, the TE allows creativity to take place either through her lectures, her classroom HOTs activities or through her questioning techniques.

Example 1

The ST is allowed to use his or her creative skills to understand and state that feedback should not necessarily be given at the end of any lesson and that constructive feedback can be given during the lesson as an alternative. The TE intervenes to give her comments and reinforces the ST's innovative idea by posing another question to make sure that ST is well informed with her pedagogical content knowledge.

ST: *And then they will explain their work.*

TE: *They explain their work, of course. My question is, do… err… does the teacher tend to give feedback…*

ST: *No..*

TE: *Okay, Hiller Lim said no. Why? Why? Okay thank you Andri. Why? Why did you say no? Yeah.*

ST: *Um, it's not necessary for the teacher to give the feedback at the end of the lesson because during the lesson, teacher also can give constructive feedback so that there is a ……. during the process. It's not exactly at the end.*

TE: *Okay, it's not exactly at the end. So, what kind of roles do you think, do a teacher, does a teacher play?*

ST: *Facilitator...*

Connecting Concepts and Problem Solving – TE connects concepts and STs' problem solve on the topic given

Teaching the concept of concepts explicitly is important. Concepts in particular content areas should be identified and taught. Inferences help the STs in this study understand a certain topic collectively with a clearer picture to it as well as improve their problem solving skills. TEs should make sure STs understand the critical features that define a particular concept which are its meaning and function, and how to make inferences as well as distinguish it from other concepts so that this understanding can help them understand situations better, find solutions to problems and become better teachers themselves. The STs should learn how to make inferences so that in their future teaching and learning process they would be able to make logical and strong inferences and conclusions based on certain evidences.

Example 1

In Example 1 the TE uses video clips to share content knowledge with her STs. Then, she discusses the content knowledge in the video by holding a discussion and connecting the content knowledge to other concepts. She relates the curriculum as discussed in the video to teaching standards and the structure used to teach as mentioned by the STs.

TE: *…..(continued)…Now let's listen to, um let's look at this video on curriculum and try to get some general understanding of what curriculum is all about.*

TE: *Okay, were you able to get some of the things that they said about curriculum?*

ST: *Curriculum is the heart of the school.*

TE: *Okay, curriculum is the heart of the school, correct. Why do you think the curriculum is the heart of the school?*

ST: *It's about developing the young people.*

TE: *Curriculum is about developing the young people. What else?*

ST: *It consists of skills and knowledge.*

TE: *Consists of skills and knowledge, okay consist of skills and knowledge, good, what else?*

ST: *It drives teaching.*

TE: *it drives teaching and learning, it drives teaching and learning, okay, what else?*

ST: *Old standards.*

TE: *As it's old standards. Okay that's interesting, when we talk about standards, what, what do you guys think of when we talk about standards?*

Example 2

In Example 2 the TE connects the concept of principles to electronic devices, explains it to them and tells them how it works. The STs are able to provide inferences by not only connecting the concepts, but by recalling their past

experience and knowledge to answer the TE's questions and prompts. The TE makes her STs understand her teachings by providing them with some examples too.

TE:	*Okay, yea. What would it be among the principles, you think? You're talking about web, you're talking about electronic. What would it be among the principles?*
ST:	*Flexible.*
TE:	*Yes, good. The flexible.*
ST:	*24 hours…*
ST:	*Throughout the day…*
TE:	*Throughout the day, yes. That is flexibility. Okay you see, you can even think of it even when you don't have background knowledge, you know. If you think hard and try to make the connections, yea. So of course, flexibility means….*
ST:	*Synchronous and uh asynchronous.*
TE:	*Okay good. What is synchronous?*
ST:	*Face to face… why…*
TE:	*Face to face? Not really face to face interaction.*
TE:	*Real time. Okay, real time. For instance, you know you are doing forum discussion at the same time. You know everybody log in at the same time and you are doing the forum discussion. So that's uh, uh, synchronous*

V. DISCUSSION

Based on the data collected, this study indicates that the strategies and methods used by the TE for the implementation of HOTs in her TESL teacher education programme classroom contains the key elements and aspects of putting into practice the levels of HOTs with relevance to the Revised Bloom's Taxonomy. The methods and strategies used by her to inculcate HOTs in her classroom has shown that it involves creating, evaluating, analysing and critical thinking. When STs were exposed to activities which were inculcated with HOTs, they tended to become more creative, began thinking out of the box and analysed matters more deeply to satisfy their doubts and questions in the back of their minds (Alghafri & Ismail, 2014). The TE exercised ample brainstorming sessions, which then allowed and set a platform for her STs to analyse the topic discussed, problem-solve the tasks set and make appropriate evaluations. Then, the TE asked her STs to present their work in front of the whole class while giving them the opportunity to build on their confidence as they verbalized their thoughts through their creative presentations.

The TE conducted micro teaching sessions in which she allowed her STs to create and design their own teaching and learning process and HOTs induced activities that they will be employ in their classrooms for their students in the future. The TE then gave constructive feedback on their work, thought provoking ideas and at certain junctures provided and explained better alternatives for her STs to use in their HOTs activities which are integrated in their lesson plans. It also enabled the STs to analyse deeply on a certain matter or topic of discussion to come up with accurate judgements and then ground their theories and arguments for the given topic (Sukla & Dungsungneon, 2016). Thus, we can clearly see that frequent type of HOTs activities which is used by the TE in this study, aids in the execution of HOTs in the TE's TESL teacher education programme classroom.

In this study, the TE prompted the STs by using her powerful scaffolding method to improve the reasoning abilities of her STs. We can observe that she did this by questioning them deeper about their answers, making the STs think critically to come up with a logical reasoning to answer or rebut the TE's questions. The ST snow will be able to not only analyse things

better, but also will be able to understand the topic discussed on a very analytical level. The TE in this study clearly understood that the quotidian ways are not going to suffice if she wanted to employ HOTs in her STs and in her classroom instruction. A recent study found that ESL lecturers encounter challenges that need to be addressed in order to facilitate the learning process with the integration of ICT as a supplementary tool in promoting HOTs (Ganapathy, Kaur, Singh, Kaur, & Kit, 2017). The TE embraced the digital world to assist her in developing and improving the HOTs of her STs. She used the concept of Bring Your Own Device (BYOD). This altered the focus from the classroom being a teacher-centred classroom to a student-centred classroom. Due to this positive change, it can be seen that the TE in this study took on an important and significant role of being a meddler in the middle as she encouraged more participation from her STs. This method has changed the environment of the class from being a very conventional class to a 21st century learning style. The STs have enjoyed this difference made by the TE in this study as the method used not only provided a new way of learning, but also gave a fun experience for the STs. This strategy used by the TE not only enhanced the STs' critical thinking and evaluating abilities but also strengthened the STs' lower order thinking skills (Abrami et al., 2014).

Another educational online platform that the TE in this study used is *Padlet*. *Padlet* is an educational infrastructure that allows one to upload documents, images and power point presentations on the internet. In this study, the TE used *Padlet* to upload her notes on her recent lectures online for the use of her STs. The STs used the notes online to better themselves by recalling what their TE has previously taught them and to strengthen their understanding of the topic further. The TE also used *Tes Teach* by *Blendspace* which allows the user to create digital lessons for educational purposes. *Tes Teach* provides access to the user to also upload videos, notes and any form of educational information online and can be used for teaching and presenting. She used *Tes Teach* to uploaded maps, charts, concise notes and videos explaining the concept or theories that she has taught her STs. Findings from this study showed that the TE used graphic organisers to inculcate HOTs in her STs. According to Hassan, Rosli, & Zakaria (2016) graphic organisers allow the user to organise the information collected in a strategic manner and allows them to become more like strategic learners. The TE used graphic organisers to improve her STs' critical thinking skills and creative skills as STs had to think critically to place the information given in the right place and create a map or chart which connected the information accurately.

Questioning has been known to be a useful tool in making people reassess their knowledge, making them recall it, pushing the boundaries of the mind to think further outside the box and become even more creative than usual with ideas and innovations (DeWaelsche, 2015). Through the findings it has been revealed that the TE took great advantage of the benefit of questioning and promoted it in her TESL teacher education programme classroom. The TE frequently questioned her STs when she finished teaching a certain topic to make sure her STs managed to grasp the knowledge that she has taught them. She questions them further on their answers to make them think more critically, analyse and evaluate their answer or even to create a much stronger and well supported answer for the TE. Based on the findings of this study, the TE branded this questioning method as the scaffolding method; where she questioned and prompted them further to think more deeply about the topic discussed.

The TE in this study promoted both the Lower Cognitive Questions and the Higher Cognitive Questions to give a balanced rate of learning in her classroom, instilling lower order and HOTs in her STs. Lower Cognitive Questions lead to the strengthening of the lower order thinking skills as Lower Cognitive Questions required direct answers that allowed STs to reconnect themselves with previously learnt knowledge, recall and use it (Zohar & Cohen, 2016). The TE also questioned

her STs with Lower Cognitive Questions often to make sure that their knowledge retrieving skills are up to par and that they can recall what has been taught to them. The Higher Cognitive Questions demanded analytical and critical thinking, requiring the STs to analyse their answer and support it appropriate justifications and judgements. These types of questions also pushed the STs to innovate new and logical answers to these questions as well.

According to Tajudin & Chinnappan (2016), to acquire HOTs, one must attain the ability of connecting concepts and theories to the knowledge learnt. One must be able to understand a concept or theory explicitly, its use and its critical features before associating it with their knowledge. In this study, the TE taught her ST show to connect concepts and theories to the knowledge or topic at hand as a strategy of implementing HOTs in her TESL teacher education programme. For example, the TE showed the STs an education video regarding curriculum and its importance. After the video ended, the TE discussed extensively with the STs regarding curriculum and how they can relate curriculum to the teaching and learning concepts that they have learnt previously.

The TE in this study does not forget the traditional methods of teaching and still practices it in her classroom. The TE still used the whiteboard and whiteboard marker to write down her content and conducted her lectures using these tools. For example, the TE read an article online for the STs. But to give a clearer view of the important pointed and concepts in the article, she writes them down on the whiteboard as she verbalized it. This helped the STs grasp the important parts of the lecture as the can see the significant points listed on the whiteboard by the TE. The TE did not only write the points down on the whiteboard but also verbally explained it to her STs and made sure they understood it by questioning them after her explanation. By doing this the TE made certain that the STs can attain the important points from the article studied, understand it and recall it when necessary. Since a clearer picture was given by the TE, analysing and interpreting the information obtained will be easier for the STs to do.

VI. CONCLUSION

The most observed contribution of the implementation of HOTs in the TESL teacher education programmme has been an increased intensity of engagement between the TE and the STs. The introduction of HOTs approaches in the TESL classroom has resulted in the TE approaching the topics in a radically different way than before. The TE frequently brings about the application of the topics discussed in the classroom in a wide range of contexts and has enabled STs to perceive things through varied perspectives. By inculcating problem-solving skills, it becomes possible for an individual to assess and ideate various provided situations and context, and in turn develop one's analytical skills. It has to be noted that while implementing the HOTs-based learning, the STs have been motivated to question the topic of the learning. For the said reason, it has been possible for them to develop their questioning skills. By doing so, they acquire the capability to enhance their skills such as reasoning and aptitude.

LIMITATIONS

This study has limitations as it is a case study format with purposive sampling of 27 students who are student teachers and one lecturer who is a teacher educator at a single university. This may limit the generalization of the results to other institutions. It is limited to teacher educators in teacher education institutions and universities in Malaysia. The findings of this study will be founded on the responses and performances of the teacher educator and student teachers in a particular progamme and a particular semester, without considering those in other programmes or semesters. Thus, it does not reflect

the outcomes of the whole learning programme in all the other semesters. The focus of this study was to look at the implementation of higher order thinking skills through the teaching and learning process. Thus, it does not look at any aspects of the English language nor can any correlations or links be made to particular language skills.

SUGGESTIONS

It is suggested that this research can be expanded and explored on the unique findings of which are the processes of implementation of higher order thinking skills by the teacher educator in this study, the teacher educator's point of view and the student teachers' responses towards the implementation of higher order thinking skills.

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