

USING BLOOM'S TAXONOMY TO MEASURE HIGHER ORDER THINKING SKILLS (HOTS) IN GROUP DISCUSSION

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ABSTRACT

Developing higher order thinking skills (HOTS) or critical thinking skills is one of the main foci of 21st century learning. Studies show that the skills can be promoted through collaborative work and questioning technique. The problem that many of us are facing is how to measure students' thinking skills. Therefore, this study was conducted to measure pre-service students' thinking levels after using the questioning technique called the Peer Socratic Questioning (PSQ) in group discussions. The study was conducted at an Institute of Teacher Education (ITE) or also known as Institut Pendidikan Guru (IPG). The study employed a qualitative study method. The data was mainly collected from transcripts of group discussions. The transcripts were analysed for the types of Socratic questions used by the participants in their group discussion and the levels of thinking from their responses. The levels of thinking were measured by using the revised Bloom's taxonomy indicators. The results indicated that there were improvements in thinking levels shown by the HOTS levels (analysing and evaluating levels) after using the PSQ technique as compared to before using the technique. Generally, the PSQ technique helped the participants to ask questions that enabled their friends to give answers of HOTS levels.

Keywords: 21st century learning, Peer Socratic Questioning, Higher Order Thinking Skills, Bloom's taxonomy

INTRODUCTION

Developing higher order thinking skills (HOTS) has been the main aim of education for a very long time. HOTS according to Reid (2014) include critical thinking, creative thinking, logical thinking, reflective thinking and metacognitive thinking. HOTS or critical thinking skills are becoming more important for students to develop especially for the 21st century learning with the emphasis on the 21st century skills. Among others, the 21st century skills include critical thinking such as problem solving, reasoning, analysis, interpretation and synthesizing information; teamwork, collaboration and cooperation (Ministry of Education, 2013). Despite the importance of HOTS, Hurd (2013) claims studies reveal that HOTS or critical thinking skills are rare in

college classrooms. He asserts that teachers or instructors tend to focus only on facts and concepts, which are at the lowest cognitive levels.

There have been many efforts done by the Malaysian Ministry of Education to ensure that HOTS are emphasised and developed at schools and higher learning institutions including changing the syllabuses for schools and also for tertiary levels to include critical thinking skills (Ministry of Education, 2013). In the Malaysia Blueprint 2013-2025, it is also mentioned that the Ministry would review the curriculum for pre-service teacher training at Institute of Teacher Education (ITE) or Institute Pendidikan Guru (IPG) since teachers too need to be adequately prepared to teach Malaysian students the desired higher-order thinking skills (Ministry of Education, 2013). Apart from fulfilling the aspirations of the Ministry of Education to increase the quality of teacher training by improving the curriculum which includes critical thinking (Ministry of Education, 2013), the IPG students also need to be exposed and trained in critical thinking skills.

PROBLEM STATEMENT

Group discussion is a common activity in IPG and it is believed to enhance critical thinking skills and HOTS among students (Adams & Galanes, 2012). However, students in IPG are not guided on how to conduct their group discussion in order to develop or enhance their critical thinking skills and HOTS. Students can be trained to ask questions which can enhance their HOTS and critical thinking during group discussion by using a questioning technique called the Socratic Questioning. According to Eggen and Kauchak (2012), "Questioning encourages students to put their understanding into words, and responding to questions is the most effective way for them to develop this ability."

Other than teaching students to develop HOTS and think critically, there is also a problem of measuring thinking levels in face-to-face group discussion. Since the introduction of Bloom's taxonomy in 1956, it has been widely used in education to form questions by using the verbs related to each level to achieve respective levels of answers from students. It has also been used to determine the objectives or learning outcomes of a course or subjects. However, there were also studies which made use of this taxonomy to specifically measure students' answers (Athanassiou, McNett & Harvey, 2003; Meyer, 2004; Pappas, Pierrakos & Nagel, 2013). In this study the revised Bloom's taxonomy indicators were used to evaluate participants' responses or answers to the questions asked by their peers during group discussion as these indicators clearly state the skills that are demonstrated at each level.

RESEARCH OBJECTIVES

It was the aim of this study to investigate how the Peer Socratic Questioning (PSQ) technique had influenced the thinking levels of TESL students in IPG as measured by the revised Bloom's taxonomy and how it helped to carry out effective group discussion. The objectives of the study were:

1. To determine the types of questions the participants asked during group discussions with the use of Peer Socratic Questioning (PSQ) technique.
2. To investigate the levels of thinking of the participants in their group discussion with the use of Peer Socratic Questioning (PSQ) technique.

LITERATURE REVIEW

Higher order thinking skills (HOTS) according to Reid (2014) include critical thinking, creative thinking, logical thinking, reflective thinking and metacognitive thinking. According to Anderson and Krathwohl (2001) and Reid (2014) the skills are represented by the last or the upper three levels, analysing, evaluating and creating in the Revised Bloom's taxonomy. The first three levels in the Revised Bloom's taxonomy, remembering, understanding and applying are considered as the Lower Order Thinking Skills Levels (LOTS) domain. The higher the level means the higher your critical levels are.

One of the techniques to teach critical thinking is by questioning. According to Eggen and Kauchak (2012), by questioning, students are encouraged to put their understanding into words and the most effective way for them to develop this ability is by responding to question. Chin and Osborne (2008) claim that the process of asking questions allows students to articulate their current understanding of a topic, to make connections with other ideas and also to become aware of what they do or do not know. The act of asking questions encourages students to engage in critical reasoning. Asking questions means the students are thinking about the ideas presented.

One of the questioning techniques was introduced by Paul (1993) known as the Socratic questions, also called the probing questions. It is also known as dialectical approach or dialogic teaching where the teacher is engaged in dialogue with the participants. In Socratic questioning, teachers should be asking the questions and students should be doing the talking, discussing and writing (Wilcomb & Wilcox, n.d.).

There are six types of Socratic questions. They are the questions about conceptual clarification, the questions that probe assumptions, questions that probe reasons and evidence, questions that probe viewpoints and perspectives, questions that probe implications and questions about questions. Usually,

Socratic questioning is used by instructors, teachers or facilitators to lead discussions. However, the researcher believes that if the teacher models and trains the participants with this type of questions they can be guided to use the technique on their own when conducting group discussion activities.

Table 1 : The Six Types of Socratic Questions

Type of Question	Example	Explanation
Questions about conceptual clarification	What exactly does this mean? Can you give me an example? Can you rephrase that please?	The questions that make the students think more about what they are thinking about and prove the concepts behind their argument. These 'tell me more' questions will enable the students to go deeper.
Questions that probe assumptions	What else could we assume? What are you assuming? How did you choose this assumption?	Students think about the presuppositions and unquestioned beliefs on which they are basing their arguments
Questions that probe rationale, reasons and evidence	Why is that happening? How do you know this? What evidence is there to support What you are saying?	The questions help students to describe the evidence behind the arguments and prove if those are facts or fiction.
Questions about viewpoints and perspectives	What alternative ways of looking at this are there? What is the difference between ... and...? What are the strengths and weaknesses of...?	The questions enable students to give different viewpoints and perspectives
Questions that probe implications and consequences	What are the consequences of the assumption? What are the implications of? How does ... fit with what we learned before?	The questions teach students that the argument they give may have logical implications or consequences that can be predicted
Questions about the question	What was the point of asking that question? Why do you think I asked this question? What else might I ask?	The questions help students to understand the issue or the questions that are presented to them.

The revised Bloom’s Taxonomy was published in 2001 (Churches, 2008).The changes involve terminology, structure, and emphasis. The most apparent differences are the changes in terminology from noun to verb forms and the lowest level, knowledge was renamed remembering. Finally, comprehension and synthesis were retitled to understanding and creating respectively (Forehand, 2010). From the changes, it can be seen that the highest level is creating. The changes are summarized in Table 2.

Table 2: Critical Thinking Levels and Skills Demonstrated

Level	Skills Demonstrated
Remembering	Retrieving, recognizing, and recalling relevant knowledge from long-term memory.
Understanding	Constructing meaning from oral, written, and graphic messages through interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining.
Applying	Carrying out or using a procedure through executing, or implementing.
Analysing	Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure or purpose through differentiating, organizing, and attributing.
Evaluating	Making judgments based on criteria and standards through checking and critiquing.
Creating	Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing.

Socratic Questioning and Bloom’s taxonomy are very closely related, as the types of questions proposed by Socratic Questioning method require answers at certain levels of thinking in Bloom’s taxonomy. The relationship between Socratic Questions and the levels of thinking in Bloom’s taxonomy is summarised in Table 3 based on the description given by Wilson (2017).

Table 3: Relationship between Socratic Questions and Levels of Thinking

Socratic Question	Examples	Level of Thinking (Bloom’s taxonomy)
Questions for conceptual clarification	What exactly does this mean? What do we already know about this? Can you give me an example?	remembering
Questions that probe assumptions	What else could we assume? What are you assuming? How did you choose this assumption?	understanding applying analysing
Questions that probe rationale, reasons and evidence	Why is that happening? How do you know this? Show me...? What do you think the causes...?	understanding applying analysing

Questions about viewpoints and perspectives	What alternative ways of looking at his are there? What is the difference between ... and...? What are the strength and weaknesses of...?	analysing evaluating creating
Questions that probe implications and consequences	What are the consequences of the assumption? How could ... be used to ...? What are the implications of? How does ... affect...? How does ... fit with what we learned before?	evaluating creating
Questions about the question	What was the point of asking that question? Why do you think I asked this question? Am I making sense? Why not? What else might I ask? What does that mean?	any of the above

The first type of question, the question for conceptual clarification, requires the answers at the lowest level of Bloom's taxonomy, which is remembering. The questions require the answerer to recall the information needed, to state what he or she already knows, give example or rephrase his or her words. Basically, the questions require the lowest level of answers. The second and the third type of question – the questions that probe assumptions and the question that probe rationale, reasons and evidence – require the answers at the understanding, applying or analysing level. Questions about viewpoints and perspectives require answers at analysing, evaluating or creating levels. Questions that probe implications and consequences, on the other hand, require evaluating or creating levels of thinking. The last type of question, which is the question about the question, requires the combination of all the levels of thinking (depending on the question asked) – remembering, understanding, applying, analysing, evaluating or creating.

METHODOLOGY

This study employed a qualitative research design. The study examined in detail how the participants used the PSQ technique and how it influenced their thinking skills. By employing a qualitative study method, processes (with the use of the Peer Socratic technique) involved in group discussion could be observed and understood.

A purposive sample was used in this study. The participants for this study were chosen from a class of semester two first year students taking a degree in Teaching English as a Second Language (TESL) at an IPG in Terengganu. There were altogether 20 students in this class and everyone was chosen as the research participants. The students were divided into five groups of four. The participants were used to questioning and group discussion activities after

spending two semesters of their foundation year and one semester of their degree programme.

The setting chosen for this study was an Institute of Teacher Education, also known as Institut Pendidikan Guru (IPG), in Kuala Terengganu. It is one of the 27 Institutes of Teacher Education under the Institute of Teacher Education Malaysia or known as Institut Pendidikan Guru Malaysia (IPGM). This IPG was chosen because it was one of the IPGs specializing (the niche) in Teaching of English as a Second Language (TESL) education. Specifically, the setting for this research was the places chosen by the participants to conduct their group discussion activities around the campus. Different places could be chosen by the groups to conduct their group discussion activities depending on the availability, accessibility, and preferences of the groups.

The data collection process involved in this study was in several stages. Data collection took about eleven weeks to complete. The data was obtained from video recordings of the participants' group discussions before the introduction of the PSQ technique and then from another six recordings after the introduction of PSQ in group discussions and participants' reflective journals for a period of eleven weeks. Finally, data was obtained from a focus group interview to elicit participants' perceptions on the techniques introduced to enhance critical thinking. The interview was done in Week 11.

The data collected from the video recordings of group discussions was analysed by using the ATLAS.ti, software. The recordings were then transcribed verbatim and coded for reference and detailed analysis. The recordings were sorted according to group numbers and number of recordings. All the transcripts were later "exported" or saved into ATLAS.ti for coding. The types of question were coded as clarification, assumption, evidence, viewpoint, implication, and question. The levels of thinking were coded as remembering, understanding, applying, analysing, evaluating and creating respectively.

After all the questions were coded, they were analysed by using the ATLAS.ti software again to look at the frequency of each type of question asked by the participants. By using ATLAS.ti software, the frequency of questions was calculated and converted into Excel worksheet for analysis. This quantitative analysis of the frequency of questions asked provided the information on the types of question asked by the participants. ATLAS.ti also helped to provide the quotations for each of the questions asked or codes which then were saved on the Microsoft Word.

Next, the transcripts from the participants' group discussion were analysed for the level of critical thinking according to the revised Bloom's taxonomy. The analysis was the answers or responses to the questions posed by the participants during their group discussions. After all the responses were coded, they were analysed by using the ATLAS.ti software again to look at the

frequency of each level of thinking of the participants in each discussion and also in all the five discussions. By using ATLAS.ti software, the frequency of responses was calculated and converted into Excel worksheet for analysis. ATLAS.ti also helped to provide the quotations for each response or codes which then were saved on the Microsoft Word. Six sample quotations are chosen to show each level of thinking in Table 4.

Table 4: Sample of Responses, Level of Thinking and Codes

Responses given	Explanation	Level of thinking / code	Justification (Bloom's Taxonomy)
"First language acquisition is a study about how the infants acquire language in their native language."	The participant produced the definition from what they read in the module.	remembering	Receiving, recalling or recognizing knowledge from memory.
"The KSSR is the from what I know is the improvised version of KBSR whereby they add another elements for the 3M that we know before which are reading, writing and counting but for KSSR they add... added another one which is reasoning."	The participant was interpreting the concepts of KBSR and KSSR from their previous knowledge by comparing the two syllabuses.	understanding	Constructing meaning from oral, written, and graphic messages through interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining.
"For me KBSR and KSSR have same... have similarities in their principle too. Just the the approaches is different. Emm.. as we can see errr... in KBSR well the principle is errr... is education throughout life where longlife education where is KSSR this is still apply. KSSR they still have the same principle in KBSR but they add some ... add some... improvement."	The participant was looking at the differences and similarities between KBSR and KSSR in terms of principles.	analysing	Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure or purpose through differentiating, organizing, and attributing.
"From my view I think they have to think critically and. because	The participant	evaluating	Making judgments based

nowadays our country is developing and because we want to compete with the other countries that have the better technologies and when the students start thinking critically from their primary schools and they have practised this until they grow up, so at the end. of the day they can be innovative so they can produce something for the and contribute to our country.”

was making her judgment through critiquing as to why the students need to think critically.

on criteria and standards through checking and critiquing.

RESEARCH FINDINGS

Research Question 1 - “What types of question do the participants ask during their group discussion with the use of Peer Socratic Questioning (PSQ) technique?”

The number or type of questions asked by the participants during group discussion depended on how much knowledge they had on the topics and how well prepared they were with the materials for the discussions.

Table 5: Number of Socratic Questions Asked by Groups Before & While Using PSQ

Types of Questions	Group 1		Group 2		Group 3		Average	
	Before	While	Before	While	Before	While	Before	While
Clarification	6	13.2	2	20.6	4	21	4.0	18.3
Viewpoints & Perspectives	0	5.6	0	6	7	7.2	2.3	6.3
Implication & Consequences	0	1.2	0	1	0	0.6	0	0.9
Reasons & Evidence	0	1	0	1.2	0	0.4	0	0.9
Question	1	0.6	0	0.8	0	0.2	1	0.5
Assumptions	0	0.6	0	0.2	0	0.6	0	0.5
Total	7	22.2	2	29.8	11	30	6.6	27.3

The quantitative analysis provided the information on the types of Socratic questions asked during group discussion among the three groups (G1, G2 and G3). The findings showed that there is an increment of average number of Socratic questions (in five discussion transcripts for each group) from the discussion before using PSQ to discussion while using PSQ. Table 5 shows the types of Socratic questions before the introduction of PSQ technique and after the use of the technique and their frequencies. Before the use of PSQ technique, the average of 6.6 questions were asked by the participants during their group

discussions. After using the technique, the average frequency of the questions asked by the participants increased to an average of 27.3 questions.

In addition, the types of questions asked also increased from only three types (conceptual clarification questions, questions that probed viewpoints and perspectives and question about the question) to all the six types of questions (the conceptual clarification questions, questions that probe assumptions, questions that probe rationale, reasons and evidence, questions that probe viewpoints and perspectives, questions that probe implications and consequences and questions about the question).

In the discussion before using the PSQ technique, only two types of Socratic questions dominated the discussion, the conceptual clarification questions and the questions about viewpoints and perspectives (6.6 questions on average). Only one question about the question was asked. However, in discussions using the PSQ technique, there were increases in the average Socratic questions asked by the three groups to all six types of questions (increase to 27.3 questions on average).

Basically, the clarification questions were the easiest to ask and answer because they only required the participants to explain, elaborate and give examples of what they were saying. Therefore, this type of questions was the most frequently asked. This type of question also required low level of thinking since it only required knowing and understanding levels as indicated in Bloom's taxonomy.

The viewpoint and perspective questions were also easy to ask and answer since the participants only needed to ask what their friends think about certain issues and their friends only needed to give their opinions. This type of question was also asked to encourage participation of all members, especially the quiet ones. All the other questions - the questions that probed reasons and evidence, the questions that probed implications and consequences and questions that probed assumptions, except the questions about questions, were difficult to answer as the questions required deep thinking and also proofs. That was why the questions were not asked very frequently. As for the questions about questions, they were only asked when the participants were not clear about the questions asked by their friends or when they were not clear about the task for their discussion. The questions were easy to ask and answer but they were not asked unless the questions asked by their friends were not clear.

In conclusion, to answer Research Question 1 "What types of question do the participants ask during their group discussion with the use of Peer Socratic Questioning (PSQ) technique?" all the six types of Socratic questions were asked by the participants during their discussions but some types of questions were more frequently asked compared to the others. The conceptual clarification questions dominated all the five discussions by all the three groups.

The questions that probed viewpoints and perspectives were the second most frequently asked questions after the clarification questions. These two types of questions were asked in every discussion. The other four types of questions were also asked but very rarely. In some discussions, some groups did not ask these types of questions at all. These four types of questions were rarely asked because they were hard to answer or they were not necessary, for example, questions about the questions.

Research Question 2 - What are the participants’ levels of thinking in their group discussion with the use of Peer Socratic Questioning (PSQ) technique?

The findings from the analysis of discussion transcripts before and after using PSQ had shown that there were increases in the levels of thinking according to the revised Bloom’s taxonomy indicators. Before PSQ technique was used, most of the answers or responses given were at understanding level. There were only three levels of responses given by the participants which were the understanding, evaluating and remembering levels. The answers were very much dependent on the type of questions asked and since they were not yet introduced to the PSQ technique, their questions were also at low levels (Table 5).

Table 6: LOTS and HOTS Levels in Discussions before and after using PSQ

Level of Bloom's taxonomy	Number of responses								
	Discussion before PSQ				Discussion after PSQ				% increase
	Grp1	Grp2	Grp3	Average	Grp 1	Grp2	Grp3	Average	
HOTS	2	0	11	4	13	14	12	13	225
analysing	0	0	0	0	3	7	5	5	Post-PSQ
evaluating	2	0	11	4	11	7	7	8	100
LOTS	15	12	6	11	12	14	19	15	36.4
remembering	4	2	1	2	2	4	5	4	100
understanding	11	10	5	9	10	10	14	11	22.2
TOTAL	17	12	0	15	26	28	31	28	86.7

In Table 6, the average number of responses given by the participants had increased for all levels of Bloom’s taxonomy – remembering, understanding, analysing and evaluating levels. Table 5 also shows that there were increases in the average number of responses at HOTS and LOTS levels from discussion before PSQ to discussions after using PSQ.

The findings from the analysis of responses given by the participants showed that after the introduction of the PSQ technique, the most frequent responses given by the participants were mainly at understanding level followed by evaluating, analysing and remembering levels. The levels of responses had

increased from only three levels (understanding, evaluating and remembering) to four levels (understanding, evaluating, analysing and remembering). There were no responses at the applying and creating levels since none of the tasks required participants to show the application of their knowledge or create something. The average responses had increased for HOTS levels (analysing and evaluating) while there were decreases in LOTS responses.

DISCUSSION

The results of this study had shown that the Peer Socratic Questioning (PSQ) technique had influenced the critical thinking skills of the participants in their group discussions by increasing their thinking levels, particularly their analysing and evaluating levels. By using the PSQ technique, the participants learned to ask a variety of questions that require the answers or responses at different levels of thinking according to the Revised Bloom's taxonomy.

The analysis had shown that there were increases in the participants' analysing and evaluating levels of thinking throughout their five group discussions. According to Anderson and Krathwohl (2001) and Reid (2012), these two levels and the creating levels are considered higher order thinking levels. Thus, generally, the use of PSQ technique had increased the participants' HOTS. This was similar to the result of a study by Menden (2012) (by using Socratic questioning in small group discussion) which revealed that there was a noticeable increase in the students' ability to use "apply," "analyse," "evaluate" and "create" levels of Bloom's Taxonomy to increase the quality, quantity, and length of student discussions. In addition, according to Chin and Osborne (2008) studies show that students who are trained to ask questions engaged in significantly more complex knowledge construction than those who were not. The act of questioning also encourages students in critical reasoning. Cruchette (2017) also showed that using Socratic Discussions in groups increased students' ability to support reasoning by referring directly

Before the PSQ technique was introduced, the participants did not know what type of questions they would ask except for the recall questions. They were only asking for examples and some explanations from their group mates and the responses were at LOTS levels, that is, at remembering and understanding levels. None of the groups gave responses at analysing level while only two groups responded at the evaluating level. That was because the questions asked before using the PSQ technique were mainly the conceptual clarification questions, which required the participants to give answers at remembering level (Wilson, 2017). The questions only required the participants to recall the answers of what they had learnt in the classroom and what they read from the module provided for them. The same situation was reported by Cacchiotti (2011) whereby the participants in his study claimed that before the study, they did not know what the teachers were asking them to do when they were supposed to

think of something but the intervention used in the study helped them to understand what they were supposed to do by defining what it takes to think.

After the participants used the PSQ technique, they started asking more questions, which required their peers to give responses or answers at higher levels of thinking (HOTS). Other than conceptual clarification questions which require responses at remembering level, they started to ask other types of questions such as the questions that probe rationale, reasons and evidence; questions about viewpoints and perspectives; questions that probe implications and consequences and questions that probe assumptions. These questions required the participants to give responses at higher levels such as analysing and evaluating. They started to respond at analysing and evaluating levels as predicted by Wilson (2017). Questions like “What do you think...?”, “What are the similarities between... and ...?” and “Which is better...? (Questions about the viewpoints and perspectives) required the participants to answer by giving elaboration; evidence and evaluation instead of merely giving a “yes” or “no” answer or recall answers. The questions they asked became more open-ended as compared to before using the PSQ technique.

This study is also supported by a study by Nor Lisa (2012) which showed that the practice of asking open-ended questions such as the Socratic questioning in small group discussions were effective to promote critical thinking skills of students. This is also supported by many studies, which proved that Socratic Method had improved critical thinking skills of students for instance Lee (2009), McGuire (2010), Menden (2012), Cleveland (2015), and Jensen (2015). Another study also proved that student-initiated questions increase higher-order learning by requiring them to analyse information, connect seemingly disparate concepts, and articulate their thoughts (Tofade, Elsner & Haines, 2013).

CONCLUSION

Using Bloom’s taxonomy had proven useful in measuring students’ thinking when using the PSQ technique. The taxonomy indicated that the participants learned to ask questions that required their peers to answer not only to recall information (remembering) but also to demonstrate their understanding (understanding), compare and contrast between two elements or concepts, analysing information and organise their ideas and discussing implications of a theory they had learnt and making links to their own life as student teachers (analysing) and also making judgement by giving their views and opinions (evaluating). Even though the answers were mainly at understanding levels, they were necessary to help the participants to understand the concepts better. According to Paul and Elder (2007) students need to have the necessary knowledge and understanding about the concepts first and in order to understand the concepts, they had to be clear about them. Once they had

understood the concepts, they could start giving answers at higher level of thinking such as analysing and evaluation.

Since the PSQ technique had proven useful to aid students in group discussion, it can be applied in other courses or subjects involving discussions such as literature. It can also be used in other languages such as Malay and Arabic. Besides PSQ, Bloom's taxonomy had also proven easy to use to measure students' thinking levels in group discussion. It is recommended that it to be used to measure thinking involving other skills such as reading and writing.

This technique should first be introduced to teachers or lecturers to familiarise them with this technique before it could be introduced to the students. The technique should be practised in classroom first before the students can practise it among themselves. The topics chosen for the discussion are also important to enable the students to develop different levels of thinking. With longer time to practise the technique, the students could develop higher levels of thinking.

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