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Fostering Students' High Order Thinking Skills through the Use of Interpretation Cards

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ABSTRACT

In teaching and learning process particularly at university level, High Order Thinking Skills (HOTS) should be an integral element to foster students's critical and creative thinking. It should not only be designed for assessment purposes but also be implemented within classroom teaching process. This study is aimed at analyzing students' HOTS encompassing three cognitive domains as parameters to identify students' HOTS namely; analysing, evaluating, and creating. This is a mixed method study which is descriptively presented. The data collection was conducted by employing three observations during teaching learning process and distributing questionnaires to 32 students of English department in semester 5. In addition, students were selected using snowball technique and were interviewed. Both qualitative and quantitative approaches were used to data analysis. The finding reveals that indicators and characteristics of HOTS are presented very consistently during classroom teaching. Students frequently show critical and creative thinking through variety of ways when participating in the classroom teaching process. The Interpretation Card works so effectively and contributes vividly to the HOTS of the students.

Key words: HOTS, Interpretation Card, Analysing, Evaluating, Creating

INTRODUCTION

The teaching and learning process carried out by teachers in the classroom greatly affects the learning process of students. This is because learning outcomes are important parameters in determining the level of understanding and knowledge possessed after the learning process takes place. Sudjana (2004) defines learning outcomes as a form of abilities owned by students after receiving their learning experiences. This definition is in accordance with what was conveyed by Hamalik (2004) who states that learning outcomes as a level of mastery are achieved by students in following the teaching and learning process in accordance with established educational goals. The level of mastery occurs because of changes due to learning experiences obtained by students. These changes can be in the form of attitudes, knowledge, or skill aspects.

Basically there are two main factors that influence student learning outcomes, namely internal and external factors. Both of these factors greatly determine the quality of learning outcomes produced by students. One type of factor that presents a significant effect is intelligence factor or in this case is the students' thinking skills. It means that this aspect of thinking is an important factor for a learner to develop ideas by relating them with what a learner understands. This skill contributes very positively to a learning process since it reflects the essence of learning. The essence of learning lies in the aspect of thinking which is a manifestation of teaching or educating activities (Sanusi, 2013). Teaching activity is an attempt to teach students to think, so the emphasis on the skills aspect of thinking is very important. Students must be directed to be able to think critically, think highly and independently in learning activities. Thinking skills can be divided into two levels, namely high-level thinking skills or Higher Order Thinking Skills (HOTS) and low-level thinking skills or Lower Order Thinking Skills (LOTS). There are several levels in thinking skills such as thinking by memorizing, thinking in a basic manner, thinking critically, and thinking creatively. Among these 4 levels, creative thinking and critical thinking are classified in HOTS category.

High Order Thinking Skill is a high-level thinking skill that requires students to think critically, analytically, creatively on problems or situations or information to find solutions (Barratt, 2014). Students are required to think comprehensively to provide solutions to a challenge, situation, or a particular matter. Fresh, logical, argumentative ideas from the results of the expansion of mindset becomes the characteristic of HOTS. However, the application of HOTS requires a lot of demands on teachers. Material mastery, high strategy and technical evaluation both in terms of affective, cognitive and psychomotor dimension are very necessary. This is intended in order that students are able to meet the demands of the expected performance. In the aspect of cognition, for example, students are asked to be able to reach the level of mastery of thinking skills by including high levels of cognition. Krathwohl and Anderson (2009) devel-

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oped Bloom's taxonomy in particular at the HOTS level on aspects of cognition namely analyzing, evaluating and creating. The results from Krathwohl and Anderson are very easily accepted by many scientists and practitioners so that their existence is always a reference of the development of learning theory. In its development analyzing and evaluating are categorized in critical thinking. Meanwhile, creating is categorized as creative thinking.

Teacher's role is very crucial and significant in teaching and learning process especially in the beginning of the teaching learning process (pre-teaching). It is a phase when teacher needs to encourage, motivate students to think critically and creatively by delivering questions, presenting challenging situation to lead students to the incoming topic the teacher is going to deliver. According to Conklin and Manfro (2012), they suggest that there are some ways a teacher can do to encourage students to think critically as such 1) delivering questions encouraging students to think critically soon after opening a class (apperception) as a 'stepping stone' to create small discussion to attract students to actively get involved in the process of teaching and learning, 2) committing brainstorming activity during whilst teaching to drive students to present critical and creaive opinion, 3) providing assessment or assigment requiring questions leading to HOTS to build students creativity and critical thinking.

One of the ways forementioned is implementing brainstorming activity during whilst teaching. Implementing this activity is very relevant to the purpose of this study where brainstorming activity can be carried out in various forms such as giving games, providing interesting teaching media to support the learning process and so on. This is because brainstorming is a method or activity requiring teacher to give a problem and students respond them in the form of opinions or comments. So, it will create a discussion which consequently leads to creating new problem as a result of students' exploration and argument onto the discussion. Opinions come up with a short tempo during this phase (Roestiyah, 2001). Based on this argument, it is necessary to have learning process equipped and supported by efficient teaching media that stimulates students to show their HOTS. The use of Interpretation Card as a media of teaching in the lectures of Cross Culture and Communication (CCC) is one alternative that needs to be tried in order to bulid and grow students HOTS.

CCC course offers a critical approach to the field of cross cultural communication by introducing students to fundamental conceptual and practical dimensions of cross cultural communication in everyday life in social interaction especially between the eastern and western. Since this course requires students to understand concept and dimensions of customs and cultures of two different countries compared to their own it is then very challenging to explore students' knowledge horizon on them. The use of Interpretation Card in the teaching learning process is expected to create a classroom atmosphere full of fruitful, acceptable and logic ideas or arguments delivered by all students in which they should have shown it in the class of CCC.

Interpretation Cards (IC) basically are a collection of cards, each of which presents a situation where an ambiguous encounter occurs. Students read each card and they brainstorm a variety of possible meanings of each situation given. These cards are very helpful to stimulate discussion where HOTS are expected to occur. Limbach and Waugh (2009), identified five steps in the process of developing high-level thinking skills that can be implemented in almost all learning environments. Two of them are asking questions and choosing learning activities that allow students to practice so as to encourage them to think critically, In the card there is a situation where students are required to give their opinions. This situation is a case statement or question to encourage students to think critically. The use of this card is used because the learning process that has been going on so far does not involve media that can create high reasoning power from students. During this time the existence of media seems to function to help students understand and tend to lead to aspects of remembering, memorizing, understanding, and applying. This framework of thinking in Bloom's taxonomy is still classified in LOTS. Therefore, we need a medium that can create a learning situation (learning process rather than learning evaluation) that leads to HOTS.

High-level thinking skills (HOTS) are very necessary in the current era of globalization. Students are no longer led to be told, but the have to find out to search for themselves. Finding out means needing a smart and creative thinking process. This correlates with the views of (Kerka, 1992) and (Chinedu, Libunao, Kamen, & Saud, 2014) that the best way to prepare future employees and problem solvers is to teach students how to think instead of what to think. Thinking that requires students to be directed from remembering, understanding, even solving complex problems. The role of teacher is very urgent at this stage. Chinedu, and Kamin (2015) said that there are many teaching methods or techniques that can be chosen by the teacher to direct students' thinking abilities to a higher level. Teachers can use methods or techniques for solving problems, case methods, cooperative learning or other methods that are relevant to the teaching needs needed.". The use of Interpretation Cards with the situation or case given is very precise with that opinion. So, complex thinking skills will make students accustomed to facing something difficult. To deal with something difficult requires high-level thinking skills.

Several studies conducted by several researchers used HOTS as a research variable in order to increase the creative and critical thinking of students towards the subject of learning. There are very few issues about HOTS by emphasizing aspects of the learning process in the classroom. The research conducted by Kusuma and Abdurrahman (2017) for example, emphasizes the HOTS indicator analysis on assessment instruments. Another study was conducted by Nurhayatia (2017) who aims to describe the ability of higher order thinking students to solve the problem of the concept of optics after given the learning with problem-based learning models.

The above researches emphasize on the assessment aspect in order to evaluate the learning process by applying different types of methods, approaches, or strategies that vary in each research. This research emphasizes the indicators of

achievement of HOTS in the ongoing learning process in the classroom by referring to the three realms of cognition suggested by Bloom conducted by teacher of CCC for 3 meetings. The process of learning from pre-teaching to the end (post-teaching) with an emphasis on the use of Interpretation Card is a major issue in order to foster critical thinking skills of students. Identifying students' HOTS through the process of teaching and learning is crucial since teaching learning process affects so strong in students' competences through the result of assessment developed by teachers. Krathwohl and Anderson (2009, p. 30) state that students' ability in accomplishing HOTS questions are very lacking due to teaching learning process which is not driven into HOTS most of the time. Teacher is the central of teaching source with their central role.

METHOD

This study follows a mixed method research approach where analyses are carried out separately and each set of data is interpreted. Results from one set of data are not used to build on during analysis. Following separate collection, analysis, and interpretation phases, the researchers integrated the inferences. Data collection was carried out during the learning process through three observations, questionnaires distributed to 32 students from semester 5 of English Education department, and interviews with both the teacher and the students. The interview was given to students employing snowball technique. Obeservation was carried out 3 times with a focus on the learning processes while the learners were engaged in using Interpretation Cards. The students were taught intercultural communication in Cross Culture and Communication class especially on the process of deciding what foreigners' words and actions mean and why they do what they do. The cards were about daily conversations and common actions done by westerners. There were six cards given. As an addition questionnaires were distributed to students with the same focus. The questionnaire was constructed by the researchers and validated by a panel of experts. In addition to the quality of the questionnaires, internal reliability employing Alpha Cronbach statistical analysis was applied. The result indicated that Alpha Cronbach's value for the overall measurement scale is 0.860. It means that it has good reliability. Interview was carried out to assure any findings determined from the result of observation and questionnaire. Data were then presented according to the results of observations, questionnaires, and interview.

FINDING AND DISCUSSION

The finding shows that the Interpretation Card depitches an interactive classroom teaching and learning atmosphere within creative and critical thinking students demonstrate. The result of ovservation, questionnaire, and interview indicate positive responses toward this media implementation. It can be identified from each domain of the parameters employed. The three domains present consistent result concerning with several indicators of HOTS as indicated by students' creative and critical thinking. Each indicator emerges so frequently and each student performs so enthusiastically during the teaching learning process. The 'Analysis' skill with 8 indicators in it occurs in every interaction or circumstance appeared within the class discussion. Table 1 displays the dimensions of 'Analysis' skill of students' HOTS.

Table 1 indicates that each dimension of students' Analysis skill occurs and is performed by students. Those dimensions are demonstrated frequently and consistently by all students participating in the class. Either the result of observation or questionnaire or interview indicates positive responses toward the use of Interpretation Card. The Interpretation Cards encourage students to be able to deliver logical ideas toward the situation presented in the IC. Although they do not have rich references on the issue presented, they are able to find and deliver opinions very convidently and convincingly.

Table 1. Students' 'analysis' skill dimensions on hots

Dimensions of 'analysis' skill	**Result of**				
	Observation	**Questionnaire**			**Interview**
		Less agree	**Agree**	**Strongly agree**	
Able to find out acceptable or logical opinions from the situation presented in the ic.	√	0	79.17%	20.83%	Yes
Able to distinguish between appropriate and the inappropriate material that do not match to the opinions that arise.	√	8.37%	91.67%	0	Yes
Able to explain further about the situation given in ic.	√	4.17%	75%	20.83%	Yes
Able to distinguish facts with opinions to any opinions arise.	√	0	83.33%	16.67%	Yes
Able to connect ideas to be one entity.	√	4.17	58.33%	35.5%	Yes
Able to provide conclusions supported with relevant statements.	√	0	75%	25%	Yes
Able to classify various opinions to a particular domain.	√	4.17%	91.66%	4.17%	Yes
Able to question classmate opinions	√	0	87.5%	12.5%	Yes

This dimension is not the only indicator showing how students' HOTS work. Students are also capable to distinguish any discrepancies of opinions that go for the intended issue. Students can justify very critically on the opinions which are not directly relevant to the issue being discussed. They can determine whether the opinions go out of the intended issue or not. They can even distinguish opinion which belongs to either a fact or trully an opinion. Woolfolk (2008), suggests that students who have HOTS are able to differenciate between facts and opinions, identify relevant information, solve problem and conclude any information they have analysed. This is very good outcome since students in this class are commonly silent, reluctant, and unmotivated.

The 'Analysis' skill is not only shown from those factors forementioned above but is also indicated by critical dimensions expressed by students. Students very convincingly are able to relate opinions or ideas into one big concept resulting both detail explanation and elaborative argument. The issue becomes more developed and challenges for students to get involved further in the discussion atmosphere within the issue. Another frequent emerging critical dimension is that the ability of the students to deliver critical questions when they think that their friends' opinions are not in line with the discussion, irrelevant to the issue, and are still debatable. They try to critisize any ideas that do not concern very much with the issue or that of ilogical with his/her argument. This creates an interesting and remarkable classroom teaching atmosphere where all students involve so actively and everyone contributes so positively to the classroom discussion. This act of asking critical question characterizes 'analysis' domain as a result of justifying opinions. Sydoruk (2018) suggests that allowing students to think critically and to make judgment on what they learn are essential components to critical thinking and allow students to continually question and build upon what they know. Finally, the class goes lively indeed.

As one of the three domains of HOTS, analysis skill is also formed by the way how students can draw a conclusion. Students are able to conclude smartly of the emerging ideas or opinions with very critical statements. They do not summarize points delivered either by they themselves or others but they take inference and synthesize from opinions which finally come up with a conclusion. This way of thinking critically is the main factor of students HOTS. Students perform self eficacy to express freely their ideas which then it can yield students independence to undoubtly deliver their critical point of views in the forms of a comprehensive and vivid conclusion.

All the dimensions displayed on the Table 1 above demonstrate agreeable responses from most of the students while some others demonstrate more positively by agreeing strongly on those dimensions. There are only 2.08% of the whole respondents disagreeing to the presence of the dimensions in 'analysis' domain. Meanwhile, 80.20% of the respondents show acceptable mode on this factor and 17.72% of them strongly agree to have the 'analysis' domain in HOTS built. This result is supported by a consistent and reliable collected data as a result of both observation and interview employed. Finally, all dimensions within an 'Analysis' domain of HOTS are performed as a result of the use of Interpretation Cards.

As an addition to the HOTS of students, an 'Evaluation' domain is another element contributing to the indicator of HOTS students must possess. The results of three times observation, students' responses on questionnaire, and interview show a consistent and reliable responses of students' HOTS toward the use of the Interpretation Cards as displayed on Table 2 below.

As seen in Table 2 the six dimensions indicating students' HOTS on the 'Evaluation' domain occur consistently during 3 times of classroom teaching implementing the use of Interpretation Cards. Students demonstrate every dimension in this domain with so convincingly and high confidence. They are able to both interpret a situation given in the Interpretation Cards and interpret various opinions delivered by their classmates. The last part occurs particularly on second and third meeting. Students begin to have bravery to confirm, argue and even counter claim toward other students' opinions. They can build strong and logic argument to interpret one's opinion or their own. Sydoruk (2018) suggests that strengthening opinion and argument development allows students to improve upon their critical thinking skills by developing beliefs and perceptions on problems and situations presented to them. More to the point, they can even justify and criticize

Table 2. Students' 'evaluation' skill dimensions on hots

Dimensions of 'evaluation' skill	Result of				
	Observation	Questionnaire			Interview
		Less agree	Agree	Strongly agree	
Able to summarize various opinions.	√	0	79.16%	20.84%	Yes
Able to interpret situations presented in ic.	√	4.17%	54.16%	41.66%	Yes
Able to interpret various opinions.	√	8.34%	70.83%	20.83%	Yes
Able to compare variety of opinions dealing with the given situation in the ic.	√	0	91.67%	8.33%	Yes
Able to give arguments to own opinion or other opinions.	√	4.17%	70.83%	25%	Yes
Able to justify opinions arising from the situation in the ic.	√	4.17%	79.17%	16.67%	Yes

Table 3. Students' 'creation' skill dimensions on hots

Dimensions of 'creation' skill	Observation	Questionnaire			Interview
		Less agree	Agree	Strongly agree	
Able to create ideas or opinions.	√	0	62.5%	37.5%	Yes
Able to describe problems presented in ic.	√	4.17%	66.67%	29.16%	Yes
Able to combine various opinions to be used as hypothesis (temporary answers).	√	4.17%	83.33%	12.5	Yes
Able to combine several similar ideas.	√	0	70.83%	29.17%	Yes

other opinions by delivering logical reasons and critical questions. This circumstance characterizes two dimensions or more within two different domains (Analysis and Evaluation) of students' HOTS. Krathwohl and Anderson (2009) stated that teaching students to learn to develop evaluation techniques should comprise of activities that includes: coordinating, detecting, monitoring, testing, critiquing and judging. This domain is performed very consistently during three meetings of observation and it is reacted well by students as shown on the result of questionnaire where students dominantly agree that giving argument as a response to other opinion and to their own, interpreting various opinions, and justifying opinions are formed and well occured. The interview result shows similarly regarding these dimensions.

It is also found that the use of the Interpretation Cards can foster students' HOTS through the way in which they compare and contrast opinions emerging during classroom discussion. Students are able to show their skills in communicating different opinions that other students have or they theirself have. This is a high skill performance leading to critical way of thinking to evaluate and justify opinions. This dimension frequently occurs when teaching process is on. It can be seen from the result of observation where this dimension is performed frequently by students. It is also supported by students responses on the questionnaires which show agreeable stance and even some of them strongly agree that they are able to compare and contrast variety of opinions concerning to the given situation on the Interpretation Cards. The results of observation and questionnaire are confirmed with the interview results as displayed in Table 2.

Students' HOTS are also identified so frequently and consistently in terms of summarizing various opinions from different students. In this indicator students frequently demonstrate good performance with no denying stance as shown in the questionnaire results. Students are able to summarize by eliciting points from collecting some emerging opinions. They show creative and critical way of summarizing any opinions coming up. Of three meetings, there is no single meeting that this performance of summarizing fails to happen. It is the characteristic and indicator of creative and critical thinking. The Interpretation Cards contributes and creates this situation to occur. Principally all the dimensions presented in the domain of 'Evaluation' emerge during classroom teaching and observation and they are in line with the result of interview and questionnaires where students who accept or agree to the emergence of the 'Evaluation' dimensions or indicators in HOTS during classroom teaching reach 56.93% and those who strongly agree are 22.22%. The disgreed students are very few reaching only 20.85% of the total respondents.

Table 3 displays that students responses on the questionnaire indicate dominantly an agreeable stance (70.84%) on some dimensions and there are very less students (2.08%) responding disgreeable on some dimensions of this domain. Meanwhile, although there are few students agree strongly on some dimensions (27.08%), it reflects positive feedback toward the emergence of the HOTS dimensions. This summary is supported with the results of observation which shows a consistent performance on students' skill in expressing those dimensions. The interview records similar result as the two previous collected data. The dimensions of this domain are certainly performed by all students as illustrated in the following detail.

Referring to Table 3 on the dimension items it indicates that students are able to create opinions since the issue provided in the Interpretation Card is challenging and inviting students' curiousity to express opinion. According to Rajendran and Idris (2008), HOTS is the expanded use of the mind to meet new challenges. He viewed HOTS as a thinking function of the mind's ability to solving challenging situations. They are encouraged to deliver ideas as a 'forced response' on the situation presented in the card. At this point, students need to speak to express their opinions and to describe any situation, reasons and even problems situated on the card. As a consequence, there emerges many opinions, ideas, claims, justifications that need to be filtered for them to synthesize and finally to formulate temporary answer or hypothesis based on a combination on several typical ideas. This is the characteristics of HOTS encompassed from this domain. Students are able to create new and unexpected idea before hypothesizing it. Students who are able to function their HOTS will positively create new knowledge with logical explanation that follows (Budsankom, Tatsirin, Suntorapot, & Jariya, 2015). There is a process of debating, arguing among students which obviously indicates creative and critical thinking as shown in the domain of 'Creation', 'Evaluation', and 'Analysis'. Some dimensions in particular domain indeed can be combined and intermingled with other domains since those dimensions can be integratedly or even automatically formed.

CONCLUSION

The use of Interpretation Cards are obviously able to foster students' higher order thinking skill with all dimensions of the three domains such as Analysis, Evaluation, and Cre-

ation performed during classroom teaching. The students' performances with all indicators identified lead to critical and creative thinking. Conklin and Manfro (2012) state that the main characteristic of HOTS is critical and creative insight possessed and demonstrated by students. The characteristics of HOTS as elaborated in several dimensions are not individually constructed. The dimensions can intermingle to other dimensions within different domains. One dimension can actually cause other dimensions to occur. They have link although they are classified in different domains.

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