

EXAMINING DEBATE IN DEVELOPING HIGHER-ORDER THINKING SKILLS: A CASE OF ENGLISH LANGUAGE CLASS IN SENIOR HIGH SCHOOL CONTEXT

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Abstract: The concept of higher-order thinking skills (HOTS) has become an important issue in 21st-century learning. One of the skills reflecting higher-order thinking skills is critical thinking that also becomes another important concept that has recently been studied in some researches. The number of previous studies supporting the influence of debate as a beneficial pedagogy on the development of critical thinking skills have been conducted through some researches. However, the studies contradicting the issue also need to be concerned to consider the influence of debate particularly in enhancing critical thinking in English language class. Having conducted a study by using a quantitative method and objective assessment, the purpose of the present study was to find significant effect of debate on the development of students' higher-order thinking skills in English language class. The study was conducted in public senior high school 1 in Bogor, West Java, Indonesia, involving 68 students divided into two groups. The result shows that there was no significant mean difference of the scores obtained, despite the higher scores achieved by the experimental group in which the group using debate, since the t_h is lower than the t_t ($1.21 < 1.669$). In other words, the study reveals that debate does not have significant effect on the development of higher-order thinking skills. Some possible reasons are then discussed and illustrated.

Key Words: debate; higher-order thinking skills; critical thinking skills; pedagogy

Introduction

The concept of higher-order thinking skills (HOTS) has become an important issue in 21st-century learning. It promotes higher-order learning outcomes that require synthesizing, analyzing, reasoning, comprehending, application, and evaluation rather than lower-order learning outcomes commonly gained by remembering or rote memorization. The concept is based on various learning taxonomies, particularly the one given by Benjamin Bloom whose taxonomy is often shown as a pyramid, ascending with the three levels of thinking skills: analysis, synthesis, and evaluation, at the top of the structure (Watson, 2019).

Analysis is at the fourth level of Bloom's taxonomy that refers to the ability to analyze the organizational structure of knowledge that students gain in order that they understand it. The activities include identifying the parts, analyzing the relationship between parts, and recognizing the organizational principles involved, so that the learning outcomes show a higher level of thinking than comprehension and application since they require students to understand both the content and structure of the knowledge (Watson, 2019).

Next is synthesis which is at the fifth level of Bloom's pyramid that refers to the ability to infer relationships among sources. The activities may involve the production of essays, articles, works of fiction, lectures, and even personal observations, by inferring relationships between what students have read and

what they have observed themselves. Therefore, the learning outcomes emphasis on creative behaviors dealing with formulating new structures and meaning. That means the high-level of thinking can clearly be shown when students are able to put the parts or information together to create a new pattern or structure (Watson, 2019).

The top level of Bloom's taxonomy is evaluation that refers to the ability to judge the value of ideas or materials based on definite internal criteria (organization) or external criteria (relevance and purpose) that student get or determine by themselves. At this level, students are required to mentally construct all they have learned to evaluate the ideas or materials, so that the learning outcomes show the highest level of thinking because they include all the elements of all the categories (Watson, 2019).

In conclusion, there are six levels of thinking skills that Bloom promotes dealing with knowledge, comprehension, application, analysis, synthesis, and evaluation. Students with higher-order thinking skills are those who are able to apply the knowledge and skills they have gained to new contexts (Watson, 2019).

Another important issue in the 21st century learning in which humanity is having serious problems at the societal, economic, and personal levels is critical thinking (Bialic and Fadel, 2015). Critical thinking is also one of the skills that reflects higher order thinking skills (Wilson, 2019), since critical thinking is regarded as a complex and dynamic process involving different thinking skills (Biggs in Leopold and Vickerman 2010), including conceptualizing, applying, analysing, synthesizing and/or evaluating information (Paul and Scriven, 1992).

Several researchers have been trying to study and discuss the influence of debate as a teaching strategy on the development of critical thinking skills. A study done earlier by Darby (2007) finds debate strategy an effective pedagogical method to develop communication and critical thinking skills of Old Dominion University students in the United States. The next study conducted by Camp and Schnader (2010) also shows the influence of using debate in accounting classrooms to enhance their students' critical thinking skills. Another study by Hall (2011) reveals that debate an innovative teaching method to enhance critical thinking and communication skills of students in physical therapy and health science. A study of debate strategy by Rashtchi (2011) also demonstrates the use of debate in enhancing Iranian EFL learners' competence in reading comprehension and critical thinking.

Debate is a kind of dialogue between two or more people talking about a topic and exchanging ideas to find answers or solutions. Debate involves verbal interaction and mental aspects of the human mind to deliver opinion by exploring the truths (Soraya in Najafi, Motaghi, Bakhtiyar, & Nosrati, 2016). An example of application of simple debate is shown in the interaction between teachers and students in which a problem is firstly set and students are required to give active participation directly or indirectly as an individual or a team to propose their findings and arguments with some reasoning. In the activity, teachers function as the masters that guide and control the discussions (Pajoohande in Najafi, Motaghi, Bakhtiyar, & Nosrati, 2016). In multi-stages debate, the activity includes preliminary debate, attending classes, studding, and debating conducted in several stages (in Najafi, Motaghi, Bakhtiyar, & Nosrati, 2016).

There are several debate formats that can be used in conducting debate. One of the systems that can be applied in high school context is World Schools Debating Championships (WSDC) format which consists of 2 teams debating as government or affirmative and opposition or negative teams in one session. Each team consists of 3 (three) debaters being the 1st, 2nd, and 3rd speakers of the team. Each speaker will give 8-minute substantive speech started by the first speaker of the government or affirmative team. Then, the first speaker of the opposition or negative team will give rebuttals along with substantive speech. This activity can be demonstrated through the following schema (Iman, 2017).

AFFIRMATIVE TEAM	NEGATIVE TEAM
1ST SPEAKER (8 minutes)	1ST SPEAKER (8 minutes)
2ND SPEAKER (8 minutes)	2ND SPEAKER (8 minutes)
3RD SPEAKER (8 minutes)	3RD SPEAKER (8 minutes)
REPLY SPEAKER (1st/2nd SPEAKER – 4 minutes)	REPLY SPEAKER (1st/2nd SPEAKER – 4 minutes)

Figure 1. World school debating competition format (Iman, 2017)

During the substantive speech, each speaker of the opposing team is allowed to give a POI, standing for points of information, which is a kind of interruptions to the speaker delivering the speech only between 1st and 7th minute of substantive speech, After the third speaker of the opposition team delivers the last speech, either the 1st or 2nd speaker of both team will deliver the reply speeches in 4 (four) minute duration, with the negative team going first. It is can be seen that all the speakers of the teams have different roles during the debating activities, so that they need to prepare before the debate. Therefore, every team is usually given 30-minute preparation before the debate begins.

Debate is assumed as a beneficial learning strategy for developing leaners' critical thinking skills, so that debate has been applied in educational setting from different backgrounds considering potential benefits to learners (Othman & Zare, 2013). The studies confirming the idea of how debate influences learners' critical thinking skills have been conducted through some researches. For example, a study by Hui & Rusly (2012) describes the use of debate as a pedagogical tool in enhancing pre-service teachers critical thinking. His study is also confirmed by Brown (2015) who finds the use of in-class debate as a teaching strategy in increasing students' critical thinking skills in higher education. Likewise, a study by Iman (2017) demonstrates the impacts of debate instruction in EFL Classroom on critical thinking skills by giving speaking tests using critical thinking rubric. Just as the previous studies, Malone and Michael (2018) finds the effect of a debate-based pedagogy on critical thinking levels by evaluating their students during the classroom activity.

There have been some more studies of how debate influences critical thinking skills conducted since then. However, it is also necessary to consider the contradicting finding revealed by Bačiková (2017) that gives some kinds of critics towards the previous and recent studies that support the idea of the influences of debate on the development of the students' critical thinking skills. She reveals that the use of debate has no significant effect on the development of the level of critical thinking. Compared to other studies, the different research method used in her study makes it interesting to be applied in the present study, since the data collected, and the method used are quantitative and gained through an objective assessment. Furthermore, her study focuses on measuring the learners' critical thinking level by applying the Waston-Glaser Critical Thinking Test which is an objective instrument presented in the form of multiple-choice questions. The finding does not also show ambiguous analysis of the development of the skills since it does not give subjective evaluation towards the learners' language skills, such as speaking and writing. Unlike her study (2017), other studies tend to use debate strategy in order to improve leaners' language skills mostly by using qualitative method and subjective evaluation. The instruments used are also commonly in the forms of questionnaires that produce qualitative data. Moreover, other studies do not actually focus on measuring the leaners critical thinking level. Instead, the discussion mostly leads to the development of the learners' language skills, such as speaking which is primary evaluated through subjective assessment.

Based on the consideration that critical thinking skill reflects higher-order thinking skill (HOTS), it is necessary to investigate the influence of debate on the development of HOTS by not measuring the

language skills such as speaking or writing, instead by focusing on the development of learners' level of thinking skills. Assuming that the results will give significant contribution to education in senior high school context, the research question is formulated as follows: Does debate influence the development of students' higher-order thinking skills in senior high school level?

Method

This study was carried out by quantitative approach using experimental research design. The study was conducted in public senior high school 1 in Bogor, West Java, Indonesia. The sample in this study was 68 students divided into two groups that were experimental and control groups. Each group consisted of 34 students who were studying on the third level of senior high school with age range from 16 to 18. During the treatment, the experimental group was divided into 12 teams and given modified classroom debating activities adapted from WSDC system and the need of language learning pedagogy conducted for 5 times. Meanwhile, the modified classroom debate was not applied in the control group. Each debate was between 2 teams debating as affirmative and opposition teams, while the rest of the class became the audience that was also allowed to participate by giving interruption.

In collecting the data, a test was given to both groups. The data collected was measured by using descriptive statistics and mean difference analysis with decision-making criteria based on the level of error of 5% with hypothesis: "Debate influences the development of students' higher-order thinking skills". The data collection took place on 4th December 2019 by conducting computer-based test (CBT). The test was in the form of multiple-choice questions designed to evaluate students' higher-order thinking skills by using Bloom question stems for evaluating the three top levels of thinking skills (analyzing, evaluating, creating), for example:

- What can you infer ...?
- What ideas support ...?
- Why do you think ...?
- What is your opinion about ...?
- What would happen if ...?
- Etc.

The following text is for question number 13 to 16

There are many reasons for both sides of the question, "Should we have printed advertisement?" Many people have strong views and feel that ads are nothing more than useless junk mail, while other people feel it is important source information.

.....

16. Why does the writer present two sides of opinions of advertisements?
- A. She/he wants to take side
 - B. She/he wants to be in the affirmative side
 - C. She/he uses the opinions to emphasize her own stance
 - D. She/he wants the readers know the opinion about the issue
 - E. She/he wants the readers to understand her stance

Figure 2. A sample question designed for evaluating HOTS

Results and Discussion

By using descriptive statistics, the result showed the mean difference of the scores obtained by the experimental and control groups on the test. The mean of the scores reached by the experimental group was

71.27 with the standard deviation 10.2, while the mean of the scores of the experimental group was 68.04 with the standard deviation 11.6, as shown in the table.

Tabel 1. The mean and the standard deviation

	N	Mean	Standard Deviation
Control group	34	68.04	11.6
Experimental group	34	71.27	10.2
Total	68	2.43	1.4

It can be seen on the table above that the scores reached by the experimental group was higher than the control group. However, despite the higher scores achieved by the experimental group than the control group, the results unfortunately did not show significant difference between the mean of the scores obtained by the experimental group and the control group, since the t_h is lower than the t_t ($t_h = 1.21 < t_t = 1.669$). Therefore, the results did not support the hypothesis that debate influences the development of students' higher-order thinking skills. In other words, the finding in of the present study contradicts the findings in the previous studies. There is some reasonable explanation supporting the results.

Tabel 2. The comparison of $t_{Hypothesis}$ and t_{Table}

$t_{Hypothesis}$	1.21
t_{Table}	1.669
$t_H = 1.21 < t_T = 1.669$ (Mean difference is not significant)	

It is assumed that the result was affected by the research method used in measuring and analyzing the data by using quantitative and objective assessment. The result may seem criticism towards the previous studies, but it is evident that the studies supporting the idea of how debate influences learners' level of thinking skills have mostly been conducted through qualitative methods and instruments such as questionnaires or surveys to students. For example, a study by Scott (2008) shows the use of qualitative method and instrument by analyzing the results of the questionnaire given to students after conducting classroom debate and finds that they believe that debate increases their critical thinking skills. Another qualitative method is also shown in Camp and Schnader's study (2010) suggesting debate is necessary to enhance critical thinking in the accounting classroom after getting feedback from their students through surveys taken before and after conducting the debate. Similarly, a study by Rusly (2012) shows the results of students' self-reflection through a questionnaire given after conducting classroom debate.

Furthermore, Brown (2015) also finds the perspectives of students in his study by giving class structured interview questions focusing on weekly debates participated by them. Likewise, Latif and Mumtaz (2017) conclude the results of the responses of medical students by exploring their views and perspectives of a series of debates conducted during problem-based learning recorded on a formulated questionnaire, despite the use of the descriptive statistics analysis and t-test. Then, a study by Chekeleze (2018) demonstrates an assessment of outcome focusing on students' perceptions as debaters that believe their skills in communication and critical thinking have improved. The use of open-ended questions through a survey to gain feedback from them shows qualitative method used to collect and analyze the data. According to the methods and instruments used by the previous studies, it can be concluded that the results are commonly reached by conducting subjective assessments to collect and analyze qualitative data.

Students with better level of thinking commonly have more knowledge and better views, so that they tend to know more about their weaknesses than lower level thinkers (Bačiková, 2017). By having subjective evaluation towards the students' self-reflection or responses through questionnaires or surveys, the results of the previous studies may lead to showing the development of students' self-esteem, instead of the development of their levels of thinking. Students' beliefs that debate increases their critical thinking skills may get it untrue. It is because worse critical thinkers actually tend to be confident about themselves. They think that they are better critical thinkers.

Other criticism that may arise from the result of the present study towards the previous studies is in the matter of evaluation of the learners' speaking skill along with the critical thinking skills. The studies of how debate influences learners' level of thinking skills have commonly been conducted by focusing not only on the improvement of learners' critical thinking but also speaking skill, so that it can also make the results dubious. The studies do not actually focus on measuring the learners critical thinking level. Instead, the data collection and the discussion of the results mostly lead to the development of the learners' language

skills, particularly speaking skill which is mainly evaluated through subjective assessments. For example, Fuad, Ardana, and Kuswandi (2015) found that debate as a teaching method in increasing critical thinking skills by conducting classroom debate performed by their students in group and giving qualitative assessment of their speaking skills, despite the use of the descriptive statistics analysis and t-test.

Another study by Iman (2017) also shows the impacts of debate instruction in EFL Classroom on critical thinking and speaking skills by giving speaking tests using SOLOM (Student Oral Language Observation Matrix) and critical thinking rubric which is also a qualitative assessment. A study by Handayani (2017) also describe the students' critical thinking skills by conducting classroom debate and analyzing the data in the form of students' arguments, counterarguments, and rebuttal. Just as the previous studies, Malone and Michael (2018) finds the effect of a debate-based pedagogy on students' critical thinking levels by evaluating their speaking skills during classroom debate instead of using a self-report questionnaire to rate themselves. Therefore, excellent judgement from the teachers as the researches in the previous studies towards the learners' oral communication skills may be influenced by the improvement of the learners' speaking skill rather the level of thinking skills. This assumption is based on Kennedy (2007) who states that debate requires students' oral communication skills and Asrida (2016) who also points out that debate is a valuable activity for students in which they are challenged to talk and speak up, so that the evaluation given by the previous studies may actually show the development of the learners' language skills rather their level of thinking skills.

Conclusions

Based on the findings and discussion, it can be concluded that debate does not significantly influence the development of higher-order thinking skills. There was no significant mean difference of the scores obtained, despite the higher scores achieved by the experimental group than the control group, since the t_h is lower than the t_t ($1.21 < 1.669$). Therefore, the finding in of the present study contradicts the findings in the previous studies. Some reasonable explanation is given assuming that the result was affected by the research method used in measuring and analyzing the data by using quantitative and objective assessment. The result arises some criticism towards the previous studies, in the matter of the qualitative methods and subjective evaluation of the learners' critical thinking skills resulted from their speaking skill.

The previous findings obtained from the students' self-reflection or responses through questionnaires or surveys may have been untrue, since students having better level of thinking skills tend to be less confident. The previous evaluation of the learners' oral communication along with the critical thinking skills have probably made the results ambiguous, since the excellent judgement from the teachers as the researches in the previous studies may have been influenced by the evaluation of the learners' speaking skill rather the level of thinking skills. Therefore, some criticism may be necessary to be concerned by educators from different background to consider some beneficial learning activities that can actually help students improve their level of thinking skills. In spite of the objective evaluation given showing the strength of the present study, the test may have frailty by facilitating some students to predict the answers of the multiple-choice questions when finding difficulties facing a test purposely designed to measure higher-order thinking skills. From the discussion above, we may also find it interesting to have some more concern on the psychological aspects of learners having higher-order thinking skills, by conducting case studies in the future researches.

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