INCORPORATING DEBATE INTO INQUIRY-BASED TEACHING APPROACH TO IMPROVE THE STUDENTS’ HIGHER-ORDER THINKING SKILLS

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ABSTRACT
Since it is believed that individuals with higher-order thinking skills are more welcomed in educational and vocational contexts, teaching them has become a desirable goal in education. For that reason, this study aimed at improving the students’ higher-order thinking skills by incorporating debate in inquiry-based teaching. The study used mixed-methods research design utilizing pre-test and post-test to collect quantitative data and observation checklist to collect qualitative data. The quantitative data were analyzed using a rubrics, while the qualitative data were analyzed using a checklist. The study revealed that the students’ higher-order thinking skills at all levels improved after the treatment. The improvement at Analyze level could be seen from the students’ better organization of information, at Evaluate level, the students showed improvement in seeing problems from various perspectives and at Create level, the students showed improvement in expressing their ideas better.
level, the students improved in communicating solutions better. Other than that, the improvement was also observed in terms of the students’ speaking ability.

**Keywords:** higher-order thinking skills, inquiry-based teaching, debate.

**Introduction**

Teaching thinking skills has become an important topic and goal in education (Halx and Reybold, 2006). By teaching thinking skills, the students are expected to be able to think more deeply, more consistently, more productively and more effectively than they otherwise might (Nagappan, 2001). Although thinking skills are not included in the four skills of language (reading, listening, writing and speaking), mastering it is considered as crucial as mastering the four skills. In fact, some researchers believe that thinking skills should go hand in hand with mastering the four skills of language.

It is believed that in this 21st century, people with higher-order thinking skills become a great demand in the growing workforce. Higher order thinking is mental processes of analysis, synthesis and evaluation which are usually employed in situations that demand problem solving, thinking, reasoning, assessing and concluding (Bloom, 1956). In fact, individuals with higher order thinking and good communicative skill are more welcomed in both academic and vocational contexts (Mason, 2007; Rudd, 2007; Kosciulek and Wheaton, 2003). This is because, when they are equipped with those main skills they are likely to be able to negotiate, solve problems and maintain communication better. The needs for that kind of staffs in nowadays employment are growing bigger and bigger. However, the problem is no one is born with higher order thinking. Research show that “creative and critical thinking abilities do not develop automatically” (Nagappan, 2001). This problem leads to the urge for teachers to teach thinking skill in addition to their main subjects especially English.

There are numerous teaching methods which are believed effective to be used in teaching higher order thinking skill and inquiry-based teaching is arguably the most popular one. Inquiry-based teaching is “a cognitive educational theory as well as a teaching practice” (Lee, 2014). It puts an emphasis on cognitive and discovery learning which promotes higher order thinking (Lee, 2014). The key element in this method is questions that are usually problems which students ought to solve in the end of the lesson. It is believed that through questions, students are able to
achieve deeper understanding, discover knowledge and rules and apply them in their everyday situations (Lee, 2014). This method is then students-centered and should make them more engaged in the teaching and learning activities by participating actively (Neuby, 2010).

As mentioned in the previous section that inquiry-based teaching utilizes questions and discussion to provoke students’ thinking skills. The techniques can actually be elevated even further to something more challenging by engaging them into a debate. Debate, as described by Shuster and Meany (2005), is “an organized public argument on a specific topic”. They further explained that there are two teams in a debate, the one in favor of the topic and the one opposing the issue. Debate demands each student to make arguments and rejections supported by research, reasoning and evidence (Burek and Losos, 2014), accordingly, implementing debate in a language classroom does not only provide students with an opportunity to practice English speaking skill, but also, it helps them build higher-order thinking skills (Othman and Zare, 2013).

Some studies have documented the use of inquiry-based teaching and its benefits in language classrooms. However, they did not cover the impacts of inquiry-based teaching on thinking skills which are regarded as crucial skills that one should possess to gain a place in this 21st century growing workforce. For that reason, this study is aimed at promoting the students’ higher-order thinking skills by incorporating debate in inquiry-based teaching and investigating how it influences their higher-order thinking skills.

**Method**

The study was conducted in a senior high school in Bandung involving 30 eleventh graders as participants. The study employed mixed-methods research design to answer the research questions which concern if the incorporation of debate in inquiry-based teaching could improve the students’ higher-order thinking skills and how it influenced their thinking.

To collect the data, the study utilized pre-test and post-test and observation. In analyzing the quantitative data, rubrics from Brookhart (2010) were used meanwhile for the qualitative data, checklist from Depka (2017) was used. After the scores from pre-test and post-test were collected, they were separated based on the levels of higher-order thinking skills. After that, the scores were analyzed
using Kolmogorov-Smirnov test to see the data distribution. Since it was found out that the data were not normally distributed, non-parametric sign test was used instead of t-test (Shier, 2004).

As for the qualitative data, the students’ worksheets and interactions were taken into account. They were analyzed using the checklist to see if they performed the criteria in the checklist. They were then compared from week to week to see if they improved.

Results and Discussion

There are three levels in higher-order thinking skills (analyze, evaluate and create) and they are discussed separately.

1. The Improvement at Analyze Level

The result of sign-test of the students’ higher-order thinking skills at analyze level suggests that there was an influence caused by the treatment employed between the pre-test and post-test. As it can be seen from the table above that there were more than half of the classroom who showed improvement after the treatment on this skill. This suggests that debate activity in inquiry-based teaching brings about positive influence to their analysis skill.

To assess the students’ analytical capacity, they were assigned to find a main idea in a passage. Finding main idea is one of many cognitive processes which involve the properties of analysis (Nagappan, 2001). To successfully find the main idea, “students have to break the text into parts and see what the parts have in common and what message they point to or support” (Brookhart, 2010). Their answers were then assessed based on three criteria; how accurate their theses reflected the main idea, how relevant the evidences were and how well such evidences supported the theses (Brookhart, 2010). One of the students’ answers that reflect their analyses of the main ideas are presented in Table 1. As shown in the table, in the pre-test, the student uttered that the main idea of the passage pertained the problems or dangers associated with smoking. However, he did not provide evidence nor reasoning to support his thesis.

<table>
<thead>
<tr>
<th>Table 1. The Student’s Answers at Analyze Level</th>
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<tbody>
<tr>
<td><strong>Pre-test</strong></td>
</tr>
<tr>
<td><strong>The main point is the problems associated with smoking</strong></td>
</tr>
</tbody>
</table>

In the post-test, the student showed some improvement in his answer.
Although he could not identify the correct main idea in the pre-test, in the post-test, not only was he able to find the correct main idea but he also gave evidence that strengthened his answer. Although it would be much more preferable if he could present the main idea in his own words, he still did a good job by providing evidence in the passage that supports his answers which indicates that his answer was generated from the process of analysis and not merely guessing.

The improvement at this level was also observed in the students’ worksheets (Figure 1).

2. The Improvement at Evaluate Level

The result of sign-test at evaluate level showed that there is positive influence caused by the treatment. To be exact, there were 20 students who show improvement after the treatment. This serves as an indication that incorporating debate technique in inquiry-based teaching can lead to the students’ improved evaluative capacity. To support the result, the students’ answers are presented in the following.

To assess evaluation skill in classrooms, according to Brookhart (2010) it can be done by giving them some material and then asking them to judge its value for some purpose. What needs to be highlighted is that such evaluation is not a personal preference, but “a reasoned evaluation that can be stated as a thesis or a conclusion and supported with evidence and logic” (Brookhart, 2010). In other words, it is similar to the previous task but this time the students need to argue why they think the writers’ opinions in the passages shown before are good or not and they also need to give evidence and
reasoning for their evaluation. One of the students’ answers is presented in Table 2.

In the pre-test, the student explained that the writer’s opinion was good because it informed readers the dangers of smoking. Unfortunately, this reason was irrelevant because the passage did not explain the dangers of smoking but how one can avoid the problems associated with smoking. Her evaluation was also not supported by any kind of evidence which made it not really convincing.

Table 2. The Student’s Answers at Evaluate Level

<table>
<thead>
<tr>
<th>Pre-test</th>
<th>Post-test</th>
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<tr>
<td>“Good, this opinion tells or inform the reader the dangerous of smoking”</td>
<td>“Yeah, the writer’s opinion is good because it’s same with reality (that people are lazy to throw away trash appropriately). In fact, I often see and find people throw away trash into the wrong places. For example, someone is drinking when on the way to home. After drinking, he can’t find any garbage (can) so he just throw it on that road.”</td>
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</tbody>
</table>

In the post-test, the student managed to present her evaluation in a thesis or conclusion which was supported by evidence and logic which is an improvement which she failed to present in her pre-test answer. She was able to present her evaluation in a more elaborate way by giving a valid reason, presenting their own views and finally providing a logical evidence. It is also noteworthy that she was able to support her thesis with an accurate and relevant evidence. The evidence was accurate because it depicted a real-life situation where people became lazy to throw away garbage appropriately just because they could not find trash can nearby.

The improvement at Evaluate level can also be seen in the student’s worksheet (Figure 2). The worksheet was made when the student was trying to formulate refutation for her peer’s argument. To do that, she needed to evaluate the argument and find what was wrong with it. As can be seen in the figure, she was successful in providing evaluation by explaining why she disagreed with what her peer said.

Figure 2. The Student’s Worksheet

3. The Improvement at Create Level

The result of sign-test at Create level indicates that the treatment brings about positive influence to the students’ performance in creative capacity.
To assess the students’ creation skills in the classroom, Brookhart (2010) suggests several ways that teachers can do such as presenting a problem to solve which include creating multiple solutions, planning a procedure to achieve certain goals or producing something new. Since debate is closely related to problem, problem solving was chosen in this research to be used as the pre-test and post-test items. The items consisted of problems in the form of a scenario. There are two kinds of solution that the students needed to provide. The first one is a suggestion of action that people can do to solve the problem while the second one is for local government. One of the students’ answers can be seen in the Table 3.

For the private citizens, the student suggested that the passengers who feel disturbed by the smokers should move away from them and as for the local government, he suggested giving fines to those who smoked in a bus. The suggestions might be good unfortunately, they were not supported by evidences and sufficient elaboration to show that they would be effective in solving the problem.

In the post-test, the student showed improvement in his answers. The improvement can be seen in his attempt to explain why he recommended his suggestion. Unfortunately, he did not provide further elaboration on how the suggestion would effectively solve the problem. Still, this is considered as an improvement for he managed to give an explanation that was absent in his pre-test answer.

The improvement at Create level was also seen in the students’ interaction as can be found in the following.

S: And the solution, for the government maybe can make the regulation about takaran of one portion of food
T: Portion, betul.
S: And for food industries maybe can count the loss from the food wasted and can make the portion more small, and for health, if we have a food, make sure the food is enough for us, and if we wasted, we must uummmh.. apa sih mempercepat itu segera?
S: Quickly
T: Gimana, gimana?
S: Kita harus segera buang sisa makanan itu ke dalam kantong terus dikubur ke dalam tanah
T: Oh, immediately
S: Immediately, ya gitu lah.
Table 3. The Student’s Answers at Create Level

<table>
<thead>
<tr>
<th>Pre-test</th>
<th>Post-test</th>
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<tbody>
<tr>
<td>“Menyuruh yang passengernya, suruh pindah tempat.”</td>
<td>“a. Amanda and friend take a trash and go to garbage disposal, b. Amanda and friend call garbage officer. I recommend choose option b because garbage officer have equipment and if Amanda take trash she can’t because Amanda just have two hand.”</td>
</tr>
<tr>
<td>Memberikan sarana untuk perokok Memberikan peringatan kepada perokok agar mereka tuh berhenti merokok, bisa dikasih sangsi kalo merokok di dalam bus”</td>
<td>“One, government can make a schedule for take a trash on every region on city, two, government make rules or add trash can capacity.”</td>
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The student was asked how to solve a problem related to food wasting. As can be seen, she offered three suggestions for the government, food industries and people. This serves as an indication that the student was aware that actually there were various solutions to overcome problems and she managed to identify them.

Another finding that is worth mentioning was also seen in the students’ language competence. Most of the students used Bahasa Indonesia in the pre-test. At first, they tried to speak their minds in English but they did not know what to say, accordingly, their messages were hardly conveyed and understood eventually, they were allowed to use Bahasa Indonesia. On the other hand, it can be seen that in the post-test most of the students managed to deliver their opinions in English. It is clear that they still needed to work on their grammatical aspects but their messages could be understood which is why it is a huge step up from the pre-test. This improvement is expected as debate is considered as a strategy that can help students improve their speaking skill for it gives the students more opportunity to communicate verbally (Othman and Zare, 2013), as a result, the students’ confidence in speaking will be built up (Hossain, 2016).

**Summary**

Overall, both quantitative and qualitative data obtained in this study reveal that the students’ higher order thinking skills at all levels can be enhanced by incorporating debate techniques in inquiry-based teaching.
Inquiry-based teaching plays an important role in improving the students’ higher-order thinking skills since it puts an emphasis on discovery learning, accordingly it is highly related to activities like building hypotheses, making inferences and transferring new knowledge which form Bloom’s taxonomy of higher-order thinking skills.

Also, all debate techniques and activities that include practice in formulating sound arguments and refutation correlate positively with the development of the students’ higher-order thinking skills. By practicing making arguments, they also hone their analytical capacity, by making refutation, they improve their evaluative capacity and by practicing solving the problems presented in the debate, they polish their creative capacity. Since there are four language skills and that they are equally important, it is suggested for future researchers that they expand the focus on the other language skills. By doing so, it is expected that students will not only develop their language performance in all skills but also improve their higher-order thinking skills at the same time.

Second, the study was conducted in a senior high school. Therefore, the method used may not be applicable to other levels.

Since it is crucial to introduce higher-order thinking skills as early as possible, it is recommended that researchers conduct similar research in other levels of school, for example junior high school.

References


