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# Improving Learners' Critical Thinking and Learning Engagement through Socratic Questioning in Nominal Group Technique

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**Abstract**

*Critical thinking is assumed as one of the essential skills in today's era. One of the ways to foster students' critical thinking is through discussion that provokes their curiosity. Unfortunately, in the online setting, some studies reported that students face challenges in online discussion. Therefore, teachers should find a way to optimize students' engagement in online discussions. The Nominal Group Technique (NGT), which this paper argues for proposing a potential way in improving students' participation and their critical thinking in an online discussion, is less used as a teaching strategy in educational practices. With the integration of Socratic Questioning, this research implemented a pre-experimental method with a one-shot design aimed at investigating the effectiveness of the NGT implementation in Critical Reading Classes conducted online combining both synchronous and asynchronous settings. Pre- and post-tests were implemented in two classes involving 52 students in six meetings. The descriptive statistics and t-test analysis had been implemented to find out the differences in students' critical thinking skills before and after the NGT implementation. The result showed that there was a significant improvement in students' critical thinking skills at $p<0.001$, which confirmed that NGT with the integration of Socratic Questioning had a significant effect on the improvement of students' critical thinking skills in an online context.*

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## 1. INTRODUCTION

Literacy has been the main challenging issue faced by Indonesian citizens. Based on PISA 2018 (Program for International Students Assessment) conducted by OECD (Organization for Economic Cooperation and Development), Indonesian students performed low score which was categorized as below average based on OECD standard, specifically in the area of reading literacy (OECD, 2018). Indonesian students only reached 30% of the total reading skill score that covers the skills to find the main ideas in a medium text, identify the explicit information, as well as reflect on the goals and type of the text. It indicates that Indonesian students have a very low level of reading skills compared to the average OECD standard which reaches 70%. Indonesia has participated in PISA for 10 years, yet, only 29% of Indonesian students reported having a growth mindset in 2018 (OECD, 2018).

The Indonesian government has been responsive to this literacy issue through a national program called *Gerakan Literasi Nasional* (GLN or National Literacy Movement) to support the improvement of the literacy skill of Indonesian citizens. As a proactive response, the English Language Education Program (ELEP) in the Faculty of Cultural Studies, Universitas Brawijaya, has reformulated the curriculum to integrate critical thinking skills into English Language Teaching. Critical Reading is the course replacing extensive reading that is projected as a course that helps the students to support their critical thinking skills, specifically in English language reading.

The initiative of ELEP to have a Critical Reading course was part of the scientific decision-oriented to both faculty's and students' needs. Critical Reading is a course that encourages students to evaluate, predict, and organize ideas by decision making, inferences formulation, and conclusion making based on relevant and valid evidence (Vaseghi et al., 2012). Among five critical reading skills, the faculty considered that more complex critical reading skills such as synthesizing, questioning, and applying are more useful than the simpler critical reading skills such as skimming and reviewing (Sutherland & Incera, 2021). In addition to the need for faculty requiring the students to have more complex critical thinking skills, the existing condition of Indonesian future EFL teachers showing moderate levels of concern on their ability on inductive reasoning is mostly below average (Moeljono & Lintangsari, 2021). Critical thinking skill is crucial to support the second language reading as it is a skill that is mostly used by the students in academic context both in and out of class (Vaseghi et al., 2012). The skills of reading critically play a crucial role to prepare students to comprehend text and instruction that helps them to understand and evaluate the text scientifically from various perspectives (Behrman, 2006). Previous research has postulated the needs and the urgency of critical thinking integration into pedagogical practices (Behrman, 2006; Moeljono & Lintangsari, 2021; Sutherland & Incera, 2021; Vaseghi et al., 2012). Therefore, effective teaching strategies to boost students' critical thinking are important to address.

Today's era requires the academic field to prepare the students not only to acquire information but also to critically evaluate the acquired information in order to

help them critically decide on the correct and valid information that can help them solve their personal and social problems (Snyder et al., 2002). ELEP offers students the Critical Reading course which encompasses the improvement of critical thinking in English reading based on Higher Order Thinking Skills (HOTs) of Bloom Taxonomy. This course is offered as expected to support the students to read critically with a problem-solving approach, strengthening their growth mindset, nurturing critical thinking through an effective discussion, and evaluating information critically.

The COVID-19 pandemic has forced online learning as the only option. It leaves challenges to the implementation of the Critical Reading course as the main student-centered teaching approach with a case-based method that requires an effective and active group discussion to trigger the students' critical thinking skills. This online learning has invited the lecturer and the students into one digital interaction which indirectly creates a distance between the student with the lecturer, their peers, as well as the learning process. It challenges the lecturer to creatively design meaningful learning that can help students to optimize their interaction with the learning environment including the lecturer, their peers, and the learning materials (Jones, 2005). Engaging students optimally in learning activities not only requires the benefits use of technology but also requires the innovative and interactive teaching method that enhances engagement, collaboration, and connectivity among students with the lecturer, students with their peers, and students with the learning activities.

Activities related to ideas evaluation, problem-solving, and decision making are the significant skills that are projected to be acquired by the students. Group discussion is one of the activities which is promising to support the aforementioned expected skills in the Critical Reading course (Garrison et al., 1999). Yet, the group discussion method cannot ensure the participation of all members of the group (Williams & Lahman, 2011). One of the discussion methods that can guarantee the participation of all students is the Nominal Group Technique.

Nominal Group Technique (NGT) is a structured method to support the group discussion by inviting all of the group members to contribute their ideas to the discussion (Macphail, 2001). The use of NGT in an educational context has been widely reported as an effective method to support the active learning as well as improve the students' active participation and their engagement in discussion both online and in the face to face learning mode (Abdullah & Islam, 2011; Macphail, 2001; Madar, 1982; Miller, 2009). The benefits of NGT implementation in an educational context include the ability to engage all of the students in a group including those with passive participation, to improve problem-solving and critical thinking skills (Abdullah & Islam, 2011; Macphail, 2001; Madar, 1982; Miller, 2009).

The effectiveness of NGT in improving students' critical thinking skills and promoting students' engagement in online discussion has been reported in detail by Miller (2009) who compared the students' performance in the NGT group and brainstorming group. It showed that the students' joining NGT was proven to be more active and critical with an average of 64 response for each group compared to the students joining the brainstorming group which showed only 42 responses for each group. This difference was statistically proven to be significant ($t=3.98$, $p<0.001$) (Miller, 2009).

Based on the aforementioned arguments, the researchers would like to apply NGT as a learning method to support students' engagement in an online discussion setting that would be integrated with Socratic Questioning. Socratic Questioning is the

questioning method based on the great philosopher Socrates that invites the students to continually investigate the subject by guiding them with thoughtful questions (Lee et al., 2014). The use of Socratic Questioning has been well reported as an effective strategy in improving the students' learning engagement and their collaborative learning which helps them develop their critical thinking skills (Elder & Paul, 1998; Lee et al., 2014; Yang et al., 2005).

This research reported the implementation of the NGT with the Socratic Questioning integration in the Critical Reading course aiming to improve students' critical thinking skills and the students' online discussion engagement in English reading. Critical review related to the role of NGT, students' engagement, and critical thinking skills have been framed to offer an insightful contribution to English language teaching in online practices, specifically in the Indonesian context. Despite the widespread proof of NGT as an effective technique in improving students' critical thinking skills, less research has reported the use of NGT in English Language Teaching. Therefore, this research intends to fill in the gap.

## 2. LITERATURE REVIEW

Advocating the critical review of this research, this section highlights the review of the relevant literature which is structured into four topics of discussion: English literacy and critical thinking, students' engagement toward peer discussion in online learning, Nominal Group Technique in educational practices, and Socratic Questioning.

### 2.1 English Literacy and Critical Thinking

As a lingua franca, English plays a significant role in Indonesia as it has a vital role in international communication, media and information distribution, dissemination of knowledge, science, and technology, and also acts as a medium of intellectual development (Lauder, 2008). Regrettably, Indonesian students' English literacy skills are in a low category according to English Proficiency Indicator by English First (EF EPI) which involved 100 countries. Indonesia takes the 74$^{th}$ position of 100 countries and takes the 15$^{th}$ position of 24 ASEAN countries with a 453 EF EPI score that is categorized as low (EF, 2021). Meanwhile, the ratification of English as the operational language in the ASEAN charter in 2009 forced ASEAN countries to make English the foreign or second language besides the national language, including Indonesia (Kirkpatrick, 2012). The gap between the expected English literacy skills and the existing condition of English literacy skills in Indonesia has challenged the education field experts, specifically English language education practitioners to find out an effective solution to minimize the gap.

Regardless of the significant and strategic issues of English literacy skill that is ideally important to be well mastered by most Indonesian students as it actively contributes to the international affairs, English literacy has been reported to play critical roles such as developing cultural understanding, providing international contribution, and also supporting the students' personal growth (Atherton, 2005; Macken-Horarik, 2014). Being English literate is pivotal recalling the fact that most information and knowledge are delivered in English. One of the effective ways to

improve English literacy is by enhancing critical thinking skills. Critical thinking skills support higher-order thinking and problem solving as highlighted by Bloom's taxonomy as the highest level of thinking involving the act of evaluating that focuses on the ability in making a decision based on critical analysis (Vaseghi et al., 2012). Therefore, integrating English language teaching with critical thinking skills is crucial although there is any formal agreement on how to teach it (Vaseghi et al., 2012).

National Council for Teachers of English defines critical thinking skills as a process of thinking that intensifies the behavior in evaluating information logically and in solving the problem based on evaluative decision making (Madison, 2016). The main goal of fostering critical thinking skills is teaching students 'how to think' instead of only teaching them 'what to think'. Fostering critical thinking in teaching English as Foreign Language (EFL) in Indonesia not only requires the strategies of how to think critically but also requires cultural sensitivity to the English language which has a very different culture compared to Indonesia (Vaseghi et al., 2012). Hence, the critical thinking skill will give a significant influence on English literacy, specifically the reading skill since it is more applicable to helping students read information, reading for pleasure, and also reading for academic matters that potentially improve their English acquisition.

### 2.2 The Students' Engagement toward Peer Discussion to Critical Thinking Skill

Students' engagement in college activities or commonly termed college engagement is one of the predictors of college success (Astin, 2014). College engagement is defined as the students' investment in college activities both cognitive and affective activities (Astin, 2014). There are three aspects of college engagement namely cognitive engagement, affective engagement, and behavioral engagement that invite the reciprocal connection between students and the college community (Kuh, 2007; Pace & Kuh, 1998). When the students are more engaged in the college activities by actively interacting with the institution, they are believed to have more capability in developing their college skills and their self-confidence, particularly in completing their higher studies (Astin, 2014).

Students' engagement in an online learning setting fully depends on interaction (Kennedy, 2020). Peer interaction is highly suggested to improve the students' engagement in online learning that can be reached out through discussion (Xia et al., 2013). A strategic discussion is reported to be more effective in engaging students in an asynchronous discussion that is by equipping the students with clear instruction and by giving them time to prepare their responses compared to an impromptu discussion with random topics and group members (Darabi et al., 2013). Furthermore, researchers also claimed that peer interaction in focus group discussion is proven to successfully improve the students' ability to think critically and to have higher-order thinking skills by encouraging them to give comments and appreciate others' opinions (Szabo & Schwartz, 2011). Students expect the lecturer to provide clear and less ambiguous instructions in the discussion so they can prepare themselves to be actively engaged in the discussion. Moreover, lecturers are also expected to provide timely, friendly, and constructive feedback (Nwankwo, 2015).

The online discussion provides potential benefits to improve the critical thinking skill of the students by optimizing the peer interaction in some conditions specifically (Lee & Martin, 2017):

(1) the lecturer is more focused on quality rather than quantity in designing the discussion technique, smaller numbers in one group are highly suggested,
(2) the lecturer needs to provide a clear and directed instruction to create a more effective discussion environment, and
(3) the lecturer needs to assure that s/he provides supportive and constructive feedback.

### 2.3 Nominal Group Technique in Educational Practices

The aforesaid explanation of the role of discussion in enhancing students' critical thinking has shaped a conclusion that the most effective discussion should meet the following criteria: (1) inviting small numbers of students, (2) providing clear and directed instruction, and (3) providing supportive and constructive feedback. The Nominal Group Technique (NGT) has met those aforementioned criteria of effective discussion; moreover, it also offers the assurance of full participation of all group members. The NGT has been well known as a discussion technique that is usually applied in decision making, this technique guarantees that all of the participants participate and share their ideas. It has been widely used as an evaluative discussion technique in many disciplines such as medical, ICT, policymaking, management, and also education (Macphail, 2001).

The implementation of NGT in educational settings mostly deals with curriculum design and evaluation. Nonetheless, it is also used in pedagogical practices as an instructional method. The NGT has been reported as an effective discussion technique that provides room for passive students to generate ideas and trigger them to actively participate in learning (Chapple & Murphy, 1996). The NGT is also reported successfully in improving students' productivity and their problem-solving ability through a systematic discussion (Madar, 1982).

The NGT steps in this research are modified to suit the class situation. The process of NGT application consisted of five steps as seen in Figure 1 and a detailed explanation is provided in the following subheading. The steps can be implemented in synchronous and asynchronous settings. It consists of the silent ideas generation, series discussion of ideas, voting and ranking, concluding, and report writing.


**Figure 1.** The process of NGT application.

The steps to the NGT are as the following:

1. Step 1: Silent Idea Generation
   The first step of the NGT application is silent idea generation. Silent idea generation is meant to invite students to share their opinion in one statement without any clarification. The term silent in this step means that the students share their ideas in a written form (not verbally).

2. Step 2: Series Discussion of Ideas
   The second step is the series discussion of ideas. In this step, the student who is assigned as the facilitator should clarify the ideas shared by all of the group members in Step 1.
3. Step 3: Voting and Ranking
   The third step is voting and ranking. In this step, the facilitator shares the ideas that have been discussed in Step 2 and invites all of the members to vote and rank each idea.
4. Step 4: Concluding
   The fourth step is concluding the most voted idea that has been voted in Step 3. The most voted idea will be the final group decision and will be reported to the class. If there are more than one ideas that have a similar vote, then the discussion can be repeated from Step 2.
5. Step 5: Report Writing
   The report writing is the final step that should be done by the students who is assigned as a facilitator. S/he writes their discussion report that has been provided by the lecturer.

### 2.4 Socratic Questioning: A Potential Method to Foster Critical Thinking Skill

Verbal interaction is believed to be the most powerful method to improve critical thinking skills. Socratic Questioning, after the name of the great Philosopher, is a method to develop critical thinking skills by triggering the rationale dialogue and questioning among the students and the instructors (Elder & Paul, 1998; Lee et al., 2014; Yang et al., 2005). Socratic Questioning provides thoughtful questions to stimulate students to continuously probe the subject of the discussion by triggering their inductive reasoning (Lee et al., 2014). It encourages the students to be curious by guiding them with some provocative questions to continuously probe their opinion. There is six taxonomy of Socratic Questioning (Elder & Paul, 1998):

(1) Questions about the questions that ensure that the students understand the given question,
(2) Questions of clarification that invite the students to verify or give additional information on their opinion,
(3) Questions that probe assumptions that ask the students to explain the reliability of an assumption,
(4) Questions that probe reasons and evidence that require the students to give additional examples and reasons to support their statements,
(5) Questions about viewpoints or perspectives that ask the students to see the matters from alternative viewpoints, and
(6) Questions that probe implications and consequences that assist the students to explain the implication or the cause-and-effect of an action.

## 3. METHODS

This study used a quantitative approach by applying the pre-experimental research with a one-shot study design. It aimed to report the effectiveness of the NGT to improve the students' critical thinking skills from two Critical Reading classes.

### 3.1 Design and Participants

The pre-experimental research with a one-group pre-post-test design was applied to measure the effectiveness of the use of NGT in improving the students' critical thinking skills and engagement in online discussion within a similar group (Ary et al., 2010). This research involved 52 students from the Department of English Language Education, Faculty of Cultural Studies, Universitas Brawijaya, who were attending two different Critical Reading classes that consisted of 39 females and 13 males (see Table 1). All of the classes are taught by the researchers and have been given the same treatment on the topic of the course as well as the NGT and Socratic Questioning implementation.

**Table 1.** Research participants' demography.

| Category | N | % |
|---|---|---|
| Total | 52 | 100 |
| Class | | |
| A | 27 | 51.9 |
| B | 25 | 48.1 |
| Gender | | |
| Male | 12 | 23 |
| Female | 39 | 77 |

The intervention by using the NGT was implemented in six meetings with 100 minutes per meeting that consisted of 50 minutes of students' discussion using the NGT and 50 minutes of reflection. This research implemented the three steps in pre-experimental research, which included administering the pre-test, implementing the NGT in Critical Reading classes, and administering the post-test (Ary et al., 2010).

The students' engagement in online discussion was measured through a pre and post-survey that was implemented before and after the intervention. The survey consisted of six questions with 5 Likert scales from the least to the most agreed response (1-5). The questionnaire was adopted from Buelow et al. (2018) and had been statistically validated. As the Pearson's correlation showed a significant correlation and the Cronbach alpha score was bigger than .60, it indicates that all of the questionnaire items are valid and reliable (Goss-Sampson, 2019).

### 3.2 Instruments

The first instrument used in this research was the Critical thinking test designed by the Assessment Day that can be freely accessed on their website (https://www.assessmentday.co.uk/free/watson-glaser/freetest1/FullTest/). The test covers five sections of critical thinking measurements, namely Argument analysis, Assumptions, Deduction, Inferences, and Information interpretation. The second instrument used was the questionnaire adapted from Buelow et al. (2018) that measures the students' engagement during online discussion. The questionnaire consists of six questions inquiring about the students' experience in the online discussion, their active participation during the discussion, their community engagement by helping classmates, and getting actively involved in the conversation. Statistical validity and reliability have been implemented to guarantee the validity of the instruments. The Pearson's correlation was employed to verify the validity of the

instruments, while Cronbach's alpha was used to measure the reliability of the instruments.

### 3.3 Data Collection

The data was collected through a critical thinking pre-test and pre-survey on online discussion engagement which was administered online using Google Classroom. The pre-test and pre-survey were administered at the beginning of the class before the students were treated with the NGT and Socratic Questioning. The form was administered asynchronously using Google Classroom. After implementing six meetings of intervention by using the NGT and Socratic Questioning as the strategy of students' discussion, the critical thinking post-test and post-survey on online discussion engagement were also administered online by using Google Forms.

### 3.4 Data Analysis

The data were analyzed by using the JASP (Jeffreys's Amazing Statistics Program) statistical software, which was by calculating the paired samples t-test to see the significant result of the intervention by comparing the students' pre-test and post-test results on their critical thinking test and comparing the students' perception on their online discussion engagement before and after the NGT implementation. To assure that the dependent variables (X=NGT) were measured on a continuous scale (online critical thinking skill test and online engagement survey), this research also reported the test of normality result, the descriptive statistics, and the result of paired sample t-test (Goss-Sampson, 2019).

## 4. RESULTS

This section elucidates the findings of this research which encompasses the exploratory explanation of the procedures of NGT in Critical Reading Class to improve the students' critical thinking skill and their engagement in an online discussion. It is followed by the results of the intervention which were measured by comparing the students' critical thinking skills before and after the implementation of NGT and the pre-and post-surveys of online discussion engagement.

### 4.1 Procedures in Implementing the Nominal Group Technique in Critical Reading Class

**The** Nominal Group Techniques (NGT) had been implemented six times during the six meetings that consisted of four meetings in synchronous sessions using Google Meet and two meetings in asynchronous sessions using Google Classroom. Each meeting consisted of 100 minutes which is divided into 50 minutes of the NGT application and 50 minutes of reflection. In each meeting, the lecturer grouped the students into five groups with 5-6 students in each group. Every student took part as a facilitator in facilitating the discussion by using NGT with different topics of discussion in each meeting. In each meeting, the lecturer provided some articles, speeches, and news on various topics covering mental health, environmental issues,

gender equality, and also inclusive education as a discussion trigger. There was no specific question for the group; the lecturer only asked the group to discuss and finally decided their group's decision related to the most priority issues, drew arguments, and also conclusions related to the topics being discussed.

### *4.1.1 Step 1: Silent idea generation*

Figure 2 shows the example of silent idea generation in asynchronous sessions.

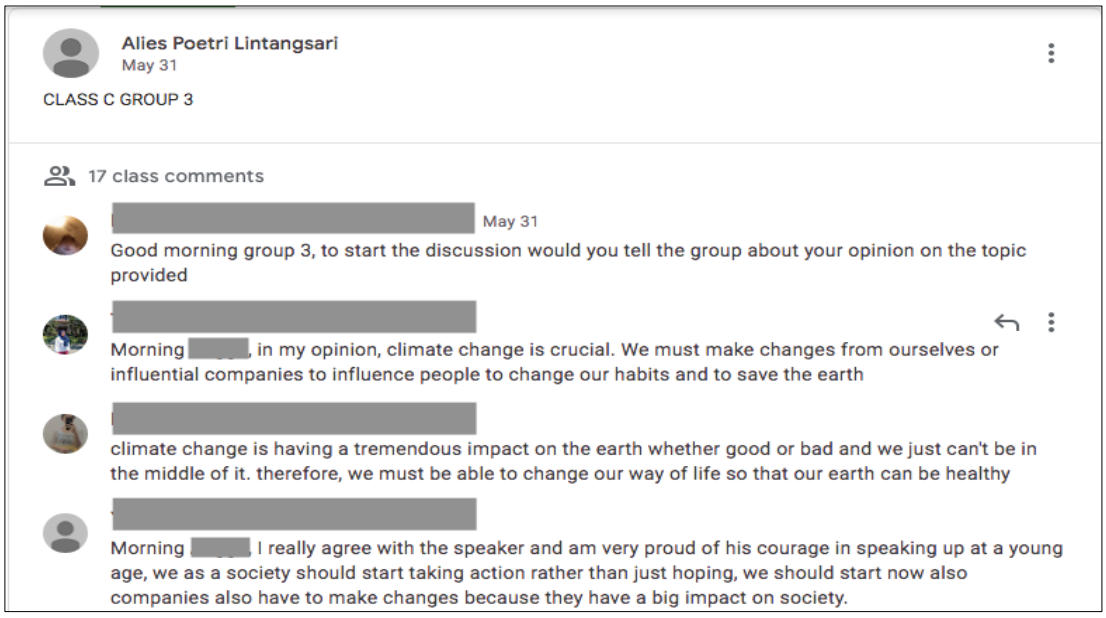


**Figure 2.** The example of silent idea generation in asynchronous sessions.

In this step, the student who facilitated the discussion invited each member of her/his group to share ideas or responses toward the topic of discussion and type those responses in a discussion report form. The discussion report form contained two parts, the first part was the report on the discussion that consisted of five parts representing the five steps of the NGT, and the second part is the self-evaluation report. The student who facilitated the discussion should write the response of the group members and wrote them in the discussion report form. The response should be in the form of arguments or assumptions that should be critically clarified in Step 2. In synchronous mode, some students preferred to share their ideas verbally, and some others preferred to share their ideas by writing through the chatbox. While in asynchronous mode, all of the responses were given in the written form as seen in Figure 2. This first step was the step that assured all of the members of the group contributed to the discussion.

### *4.1.2 Step 2: Series discussion of ideas*

The steps included asking for clarifications, probing assumptions, probing reasons and evidence, providing points of view, as well as providing implications and consequences. The lecturer provided guided questions that were adapted from Socratic Questioning of critical thinking (Lee et al., 2014). The guided questions helped the facilitator and the students to critically evaluate their ideas through the five steps as seen in Table 2. Each step was equipped with guided questions that helped the

facilitator invite the group members to evaluate their ideas that have been shared in step one through a critical thinking framework. In this step, every student could support or object to other arguments if they thought that the arguments were strong or otherwise. This step was the longest step of all because the students practiced their critical thinking skills by evaluating their own and other students' arguments based on the provided guided questions and steps of argument clarification.

**Table 2.** Guided questions based on Socratic Questionings (source: Lee et al., 2014).

| Steps | Guided Questions |
|---|---|
| Asking clarifications | Could you give me an example?<br>Could you explain that further?<br>Why do you say that? |
| Probing assumptions | What are you assuming?<br>Why have you based your reasoning on it?<br>Why do you think the assumption holds here? |
| Probing reasons and evidence | What led you to believe that?<br>What is your evidence?<br>What are your reasons for saying that? |
| Points of views | Can/did you see this another way?<br>What is an alternative? |
| Implications and consequences | What are you implying by that?<br>When you say (x), are you implying (y)?<br>What effect would that have?<br>What else must also be true? |

Figure 3 illustrates the implementation of the second step of the NGT (series discussion of ideas) in an asynchronous setting. In the asynchronous session, the facilitator invited members to share their clarification on their previous claims that they have shared in Step 1.


**Figure 3.** Example of series discussion of ideas in asynchronous mode.

### *4.1.3 Step 3: Voting and ranking*

In this step, the facilitator summarized the result of the discussion into some agreed ideas and then put it on a list to be voted on and scored by all of the group members. Each member was allowed to score every idea based on their own consideration. After all of the members gave their scores for each idea, the facilitator summed up the score of each idea and ranked them from the most to the least scored ideas. The example of Step 3 is illustrated in Figure 4. It shows that the facilitator condensed the discussion in Step 2 into three ideas, and he invited all members of the group to score each idea.

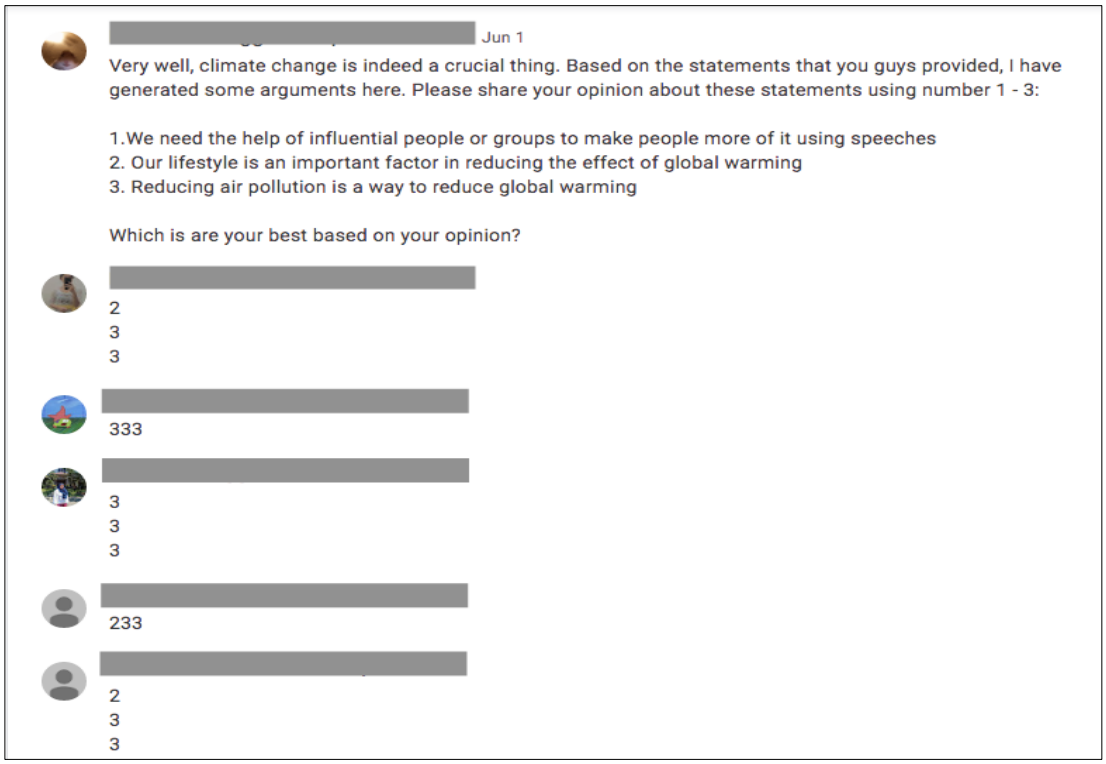


**Figure 4.** Example of voting and ranking in asynchronous mode.

### *4.1.4 Step 4: Concluding based on final voting result*

The facilitator then concluded the discussion based on the final ranking (the most voted ideas) as their final group decision. Figure 5 is an example of Step 4 in asynchronous mode.

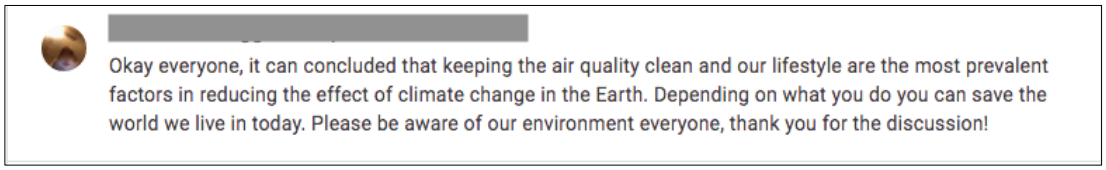


**Figure 5.** The example of concluding based on the final voting result in asynchronous discussion.

#### *4.1.5 Step 5: Report writing*

The facilitator was given sometimes to write the report based on the provided format. The report writing illustrated the steps of discussion and consisted of the students' responses to the topic of discussion. At the end of the report, the lecturer also provided some questions to the facilitator related to her/his response to the discussion and group decision. After the facilitator finished her/his report writing, she/he gave a presentation to the class to reflect on the group discussion activities and to report the group's final decision. In this part, the lecturer became the facilitator to facilitate the discussion represented by the facilitators of each group. Although the lecturer provided the same topic, the same source, and the same instruction, each group had a different final decision. The lecturer facilitated the discussion by also using the NGT, she collected the final decisions of each group and let the class decide which one they thought most appropriate by applying voting and ranking in Step 3.

### 4.2 Students' Critical Thinking Skill

The first measurement to validate the effectiveness of the NGT was the students' critical thinking test. The test of critical thinking skills which measured the students' skills in evaluating arguments (6 questions), assumptions (9 questions), deduction (7 questions), inferences (10 questions), and interpreting information (7 questions) was conducted through the pre-and post-tests that was implemented before and after the implementation of the NGT. The test had been statistically validated, and based on the validity result, it was found that there were some invalid items, yet all of the items were reliable with the Cronbach alpha score of .65, which is considered an acceptable level of reliability.

The test of normality on students' critical thinking test showed that the assumption of normality is violated as the p .0.038 < .05 (see Table 3). Therefore, the non-parametric equivalent Wilcoxon's rank test was applied to see the significant difference between the pre-and post-tests.

**Table 3.** Test of Normality (Shapiro-Wilk) of students' critical thinking test.

| | | W | p |
|---|---|---|---|
| Post-test | Pre-test | .95 | .038 |

Note: Significant results suggest a deviation from normality.

The Wilcoxon's signed-ranked test confirmed that the implementation of the NGT with the integration of Socratic Questioning had successfully increased the students critical thinking skills as the p<.001.

**Table 4.** Paired samples t-test.

| Measure 1 | Measure 2 | W | df | p |
|---|---|---|---|---|
| Pre | Post | 97.500 | | < .001 |

Note: Wilcoxon signed-rank test.

The descriptive statistics of students' critical thinking scores showed a significant improvement between the pre-and the post-tests. As shown in Table 5, the mean score of the post-test was highly improved (M=28.019) from the pre-test result (M=21.288).

**Table 5.** Descriptive statistics of critical thinking score.

| | N | Mean | SD | SE |
|---|---|---|---|---|
| Post-test | 52 | 28.02 | 6.83 | .95 |
| Pre-test | 52 | 21.29 | 5.54 | .77 |

### 4.3 Students' Engagement in Online Discussion

The second measurement to validate the effectiveness of the NGT implementation was the survey on students' engagement in online discussion. The survey invited the students to give 5 Likert scale responses to six questions on their engagement during the NGT implementation. The test of normality (Shapiro-Wilk) was administered to test the data distribution, it showed that the p .041 < .05 (see Table 6) indicating that the normality assumption is violated, therefore, the Wilcoxon's signed-rank test was administered to test the hypothesis (Goss-Sampson, 2019).

**Table 6.** Test of Normality (Shapiro-Wilk).

| | | W | p |
|---|---|---|---|
| Post-survey | Pre-survey | .95 | .041 |

Note: Significant results suggest a deviation from normality.

The Wilcoxon's signed-rank test result showed that p .140 > .05, indicating that there were no statistically significant differences in the students' perception toward the use of the NGT in supporting them to be more engaged in online discussion (as shown in Table 7).

**Table 7.** Paired samples t-test.

| Measure 1 | Measure 2 | W | df | p |
|---|---|---|---|---|
| Pre-survey | Post-survey | 424.500 | | 0.140 |

Note: Wilcoxon signed-rank test.

Based on the comparison of the pre-and post-surveys on students' engagement in the online discussion, it is reported that the students' perceptions toward their engagement in the online discussion did not have any significant differences before and after the implementation of the NGT as shown in Table 8. The descriptive result between pre-and post-surveys shows a slight improvement from the M=3.0 in the pre-survey result to M=3.2 in the post-survey result.

**Table 8.** Descriptive statistics of the pre-survey and post-survey on online discussion engagement.

| | N | Mean | SD | SE |
|---|---|---|---|---|
| Post-survey | 52 | 3.22 | .57 | .08 |
| Pre-survey | 52 | 3.09 | .52 | .07 |

## 5. DISCUSSION

Fostering critical thinking skills has drawn the attention of educators at every level specifically at a higher level of education. Some methods have been previously proposed to promote students' critical thinking skill which focuses on active learning

such as debate and discussion (Greenlaw & DeLoach, 2003; Lee et al., 2014). Although the discussion has been argued as one of the effective ways in fostering students' critical thinking, it faces challenges when it comes to the online setting.

One of the promising techniques that are the potential to be implemented in improving students' engagement in online learning that can indirectly foster their critical thinking skills is the Nominal Group Technique (NGT). With the integration of Socratic Questioning, the use of the NGT in the Critical Reading classes had successfully improved the students' critical thinking skills as the $p < .001$ and Cohen's *d* also confirmed that the NGT had a large effect on the improvement of students' critical thinking skill (see Table 5). Yet, the result of the students' perception toward their engagement after the NGT implementation showed insignificant improvement ($p (0.12) > 0.05$), this result also reported similar results to other previous research. Some studies have testified that students had low engagement during online learning. As reported by Ubu et al. (2021), who invited 255 Indonesian EFL learners in a survey study, revealed that the learners had low attention, had less commitment to learning especially in the online discussion, were academically engaged only for the sake of compliance, and set up their achievement on the minimum requirement. Additionally, studies carried out by Mulia (2020) and Suhaimah and Setyowati (2021) also elaborated that the online learning contexts hinder the students' participation in online discussion and make the English learning less interesting.

Given the fact that many studies have reported the effectiveness of the NGT to improve the students' participation in discussion (Chapple & Murphy, 1996; Macphail, 2001; Madar, 1982; Miller, 2009; Zastrow & Navarre, 1977), this research offers the potential use of the NGT as the pedagogical instruction by combining the procedures in the NGT that ensure the participation of all students with the Socratic Questioning method in the form of guided questions that helped the students to be on track to the discussion's process and to trigger their critical thinking skill. Socratic Questioning has been proved to be effective in enhancing the students' collaborative learning, particularly by provoking the students' intellectual curiosity that triggers the development of their critical thinking skills (Elder & Paul, 1998; Yang et al., 2005). The use of Socratic Questioning is also effective to support the students to be more explorative in finding the novel, justified, and critical ideas for the discussion compared to those who are not treated with Socratic Questioning (Lee et al., 2014).

To ensure the optimal benefits of the NGT use in improving the students' critical thinking skills in the Critical Reading course, some considerations must be taken. As proposed by Lee and Martin (2017), an effective discussion should be able to improve peer interaction, have more focus on quality rather than quantity that is by keeping a smaller number of students in one group, provide a clear, specific, and directed instruction, as well as provide supportive and constructive feedback. With the proposed scenario offered by this research, all of the aforementioned considerations to create an optimal and effective online discussion environment can be well obtained.

### 5.1 Implication of Study

English as the global language has a significant influence on education in Indonesia since most of the information and knowledge is delivered in English. It makes the position of the English language in Indonesia crucial. The practices of English language teaching should be responsive in accommodating the needs of

English literacy, yet, being English literate is not sufficient without being critical. Therefore, critical thinking skill needs to be integrated into the curriculum and the learning process. A students-centered and collaborative learning approach should be well navigated to provoke the students to be more critical, brave, yet evaluative in responsible and scientific ways.

This research offers two insights to improve students' critical thinking skills in an ELT setting, first is ensuring the full and optimal participation of all students through a structured discussion technique and the second is providing the vivid and specific discussion instruction completed by the thought-provoking guided questions, time, and space for the students to prepare. Improving critical thinking skills is not merely done by inviting the students to be critical, but more importantly by training them to be evaluative, responsible, scientific, and analytical. Before having the ability to think critically, students need to feel safe, comfortable, and happy in sharing their ideas. Appreciating students' preferences in selecting a medium to share their opinions is also one of the important things to implement in all teaching environments.

The integration of Socratic questioning and Nominal Group Technique in Critical Reading class is influential to enhance the students' critical thinking as well as their engagement in the discussion process. Nominal Group Technique ensures the students' active participation with a structured discussion technique, while Socratic questioning helps students to think critically through a structured way of thinking. With careful design and implementation, this technique is predicted to offer a significant and comparable result for future implementation.

## 6. CONCLUSION

The Nominal Group Technique (NGT), which is deemed potential in improving students' participation and their critical thinking in an online discussion, was integrated with Socratic Questioning in this research. The study which involved 52 students in six meetings of two Critical Reading classes at a state university in Malang, Indonesia, revealed that there was a significant improvement in students' critical thinking skills at $p<0.001$. This confirmed that the NGT with the integration of Socratic Questioning had a significant effect on the improvement of students' critical thinking skills in an online context.

Although the researchers have explained the use of the NGT with Socratic Questioning in Critical Reading classes to improve the students' critical thinking and participation in discussions, this research further suggests more participants be involved in future related studies. Qualitative data through observations and interviews are recommended to be done as well with the participants. By covering these limitations, it is expected that more comprehensive results can be obtained.

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