

## Enhancing Students' Logical Imagination: An Online Lesson Using a Literary Work<sup>1)</sup>

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### **Abstract**

The present study explores the use of literature for cultivating thinking skills, in particular, logical imagination, which differs from imagination in general and refers to the ability to deduce something based on evidence. A three-phase pilot lesson was conducted utilizing a short story by Isaac Asimov, “The Fun They Had.” Students majoring in science were first asked to complete an assignment before the lesson. In the actual lesson, which was conducted online via Zoom because of the COVID-19 pandemic, the students discussed the story in a group using a critical facilitation method. After the online group session, they were instructed to finalize their answers based on their discussion and to fill in an online questionnaire to reflect their learning experiences. This study examines whether and how the lesson helped students cultivate their logical imagination and contribute to better comprehension and interpretation of the text.

### **I. Introduction**

Imagination tends to be considered nearly equivalent to “fancy,” which describes something that is unlikely or untrue in reality. Ancient Hebrew culture used the word “yester” for imagination. Etymologically, this Hebrew word refers to creation and mimesis in art; thus, imagination was considered to be related to

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creation. In the 19th century, the term came to refer specifically to creation. This view of imagination culminated in Romanticism. The Romantic poet, Samuel Taylor Coleridge, conceives two levels of imagination: primary and secondary. The latter is closely connected to artistic creation. Thus, imagination is unlikely to be an agent for reasoning or critical thinking. However, although there is still a persistent view of imagination being the power of creation, as it is, imagination is a key to education (Egan, 1992); the more imaginative one is, the more critically one can reason (Fischer, 2011). The Course of Study Guidelines for Japanese in Senior High Schools (2010) states that one of the objectives of the course is to cultivate imagination. Imagination not only refers to the ability to form a picture or idea of something unknown or unexperienced. Instead, it is the ability to deduce something based on various texts and data as evidence, which shows that it is as an essential factor in logical thinking.

Imagination as defined above is henceforth referred to as “logical imagination” in this paper to distinguish it from imagination in general. Logical imagination is particularly necessary when reading literary texts because they contain “a system of gaps that must be filled in” by the reader (Sternberg, 1987, p186). In the course of reading a given literary text, the reader is confronted with various questions concerning characters, situations, and actions. To answer such questions, or to fill such textual gaps, the reader successively connects pieces of information provided in the text and continues to build and modify their understanding of the text by rereading it and reviewing their interpretation by identifying textual and extratextual evidence and evaluating each identification.

Taking advantage of the nature of literature, the authors conducted lessons utilizing the literary work “Cat in the Rain” (1925) to enhance students’ logical and critical thinking skills (Kudo & Sugimura, 2018; 2019). The lessons were well-received by the students and also contributed to developing students’ thinking skills. However, it was found that the students did not integrate their general knowledge as much as the authors had anticipated while reading and discussing the story with their peers, one reason for which might have been that the students were not able to relate to the story, as the main characters of the story are a married couple (Kudo & Sugimura, 2021).

In the current study, the authors focused on logical imagination; thus, selecting a suitable piece of literature that the students could more easily imagine and become immersed in the fictional world was crucial. The authors chose a science fiction story written by the American writer, Isaac Asimov, “The Fun They Had” (1951), as the main characters in the story are children and they talk about school. The story depicts a future school system that differs from that of the present; each child has a computer-like machine that carefully monitors their progress, and they study all

subjects following the directions and advice it provides. They do not have to go to school; instead, they stay at home and study independently. The situation in this story is quite similar to that of online classes, which are currently held for university students in Japan due to the COVID-19 pandemic. This is expected to spur students to activate their logical imagination even more.

## II. Purpose

The present study aimed: 1) to determine whether the lesson utilizing the literary work, “The Fun They Had” will develop students’ thinking skills, and in particular, their logical imagination, and 2) to explore whether and how online group discussions with a critical facilitation method contribute to students’ understanding and interpretation of the literary work and cultivating their logical imagination.

Additionally, it should be noted that the lesson was led by one of the authors who had been trained as a language teacher, but did not specialize in literature. The ultimate goal of this study is to create literary reading materials to improve students’ English competency in addition to their thinking skills and offer related class/group activities that could be readily available to different teachers, regardless of their specialization.

It is of special note that a part of this study was conducted online via the video conferencing software, Zoom, as all English classes were taught completely online in the spring semester of 2021 due to the COVID-19 pandemic.

## III. Methodology

### 1. Participants

The online lesson utilizing “The Fun They Had” was conducted in five reading courses offered for second-year students in the spring of 2021. The reading course is a required unified class, and students mostly read science-content-based texts intensively in class. The number of students in each class ranged from 16 to 23, and one class was non-advanced, in which the students’ English proficiency was considered lower than that of the students in the other four classes. A total of 93 students participated in this study; however, online group discussion sessions were not conducted in one class because of schedule conflicts. Thus, the participants could be divided into the following three groups: 1) a non-advanced group that conducted group discussions ( $n = 15$ , hereafter Group 01), 2) an advanced group that conducted group discussions ( $n = 56$ , hereafter Group 02), and 3) an advanced group that did not engage in group discussions ( $n = 22$ , hereafter Group 03).

## 2. Instruments

### 2. 1. Online Questionnaire

In order to determine whether the lesson helped the students develop their logical imagination, an online questionnaire was administered after the lesson. Using a Likert scale ranging from 1 through 6, the students were asked to rank the extent to which they agreed or disagreed with each statement when they had examined and discussed their answers on a provided worksheet. Additional free space was also provided to the respondents to explore the skills and/or abilities they thought were necessary to complete the worksheet and join the group discussion successfully.

### 2. 2. Students' Assignments

The authors have incorporated literary works in one or two 90-minute lesson(s) each semester since 2015 in order to enhance students' logical thinking skills. A typical lesson format utilizing a piece of literature has three phases: 1) pre-lesson; in other words, the assignment in which students are required to read a literary text and respond to a list of questions before the class, 2) the actual lesson, in which students discuss their interpretation and evaluation of the story based on the assignment, and 3) post-lesson, in which students reflect on their reading and discussion experiences with their classmates.

Four inferential questions that could encourage students to read the text multiple times from different aspects (Tanaka, Shimada, & Kondo, 2011) were included in the pre-lesson assignment. A worksheet developed for critical facilitation and created by Takami and Kinoshita (2017) (see Figure 1) was utilized to allow the authors to evaluate whether and/or how students' understanding and interpretation of the text changed through group discussion.

As shown in Figure 1, the worksheet consists of three boxes: left, middle, and right. The students filled the left box with their ideas before the lesson as

1) Who said "Gee," and what do you think he/she was feeling then? Based on specific evidence, write your answer.

<p>Write your answer here deleting this message.</p>	<p>You'll take notes during the Zoom Session. Leave it blank for now.</p>	<p>Based on the discussion via Zoom, you'll reexamine your answers later. Leave it blank for now.</p>
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Figure 1 Excerpt from the worksheet. The actual worksheet distributed to the students provided instructions in Japanese.

homework. During the group discussion, the presenter first stated their answers, and the facilitator led the group discussion and encouraged other members to share as many critical remarks as possible, which were written down by the presenter in the middle, dotted box. Finally, after the group discussion, the students were asked to reexamine their answers reflecting on the speech of the group members and fill in their conclusions in the right, bolded box.

Each student's worksheet was carefully examined by the authors and evaluated using a three-letter scale (A, B, or C) based on whether their final answer described in the right, bolded box was supported by the evidence within and/or outside of the text (see Table 1). When reviewing the students' final answers, the authors made sure to read the students' answers before the lesson in order to compare any changes made to their final version, referring to their notes described in the middle, dotted box.

**Table 1 Evaluation criteria of the worksheet**

Evaluation	Evaluation Criteria
A	Supported by the evidence thoroughly within and/or outside of the text and interpreted successfully
B	Supported by the evidence partially within and/or outside of the text and interpreted somewhat successfully
C	Not supported by the evidence at all or interpreted successfully

### 3. Procedure

As noted earlier, the lesson consisted of three phases: 1) the pre-lesson, 2) the actual lesson, and 3) the post-lesson. Approximately one month before the actual lesson, the students were given access to a literary text, "The Fun They Had" with the title and author's name intentionally removed with a note of English words and their Japanese translations, and assignment worksheets including the four inferential questions defined above. The students were instructed to bring their own ideas to class, as many of the questions did not warrant a single answer, but allowed for a variety of interpretations. Additionally, they were reminded to provide some evidence supporting their answers to prepare for small group discussions.

The lesson was conducted online, and while phases 1) and 3) were easy to implement online as on-demand work, the second phase, that is, the actual lesson and especially the group discussion sessions, needed to be adjusted because it was difficult for one instructor to monitor multiple ongoing group discussions at once. The students were divided into the same small groups of three to four that they had been working with every week so that they would feel comfortable sharing their findings and insights. However, during the semester, the students had fewer

opportunities to see each other online. Thus, they were instructed to take the role of the facilitator in turns so that everyone would have a chance to be a facilitator at least once during their group session. The flowchart to help smooth facilitation was displayed on the teacher's shared screen, which was referred to by all the students, making their own progress clear to them.

Prior to the group discussion session, the facilitator was again instructed to ask not only follow-up questions but also possibly critical questions. All students were also reminded to write down their fellow members' ideas and/or questions, as they would have a chance to examine their own answers after the session. About 60 minutes were spent on group discussions using a Zoom breakout room, which allowed the students to meet in small groups; the instructor remained accessible and ready to provide support when necessary by using multiple devices to monitor all the group discussions simultaneously. In addition, the students occasionally tapped the "ask-for-help" button on Zoom, which allowed the instructor to offer help in a timely manner.

Following the group session, the instructor briefly wrapped up the online lesson and gave two post-lesson tasks as on-demand homework: 1) to complete an online questionnaire to reflect their experience and 2) to fill in the right bolded box with the four inferential questions.

## **IV. Results**

### **1. Online Questionnaire**

Of the 99 students enrolled in the five reading classes in which the trial lesson was conducted, there were three different groups of participants, as described earlier. A total of 71 students in Groups 01 and 02 participated in the three-phase lesson, while 22 students in Group 03 completed the first and third phases of the lesson. The remaining six students did not submit the assignments or participate in the lesson.

There were eight questions evaluated on a Likert scale ranging from 1 to 6. The first two questions concerned the level and content of the story, "The Fun They Had," and the other six questions were related to the students' logical imagination.

First, regarding the level of the text, only 1 out of 93 participants chose "very easy," and 5 students found it "very difficult." The majority of the students chose either "slightly difficult" or "difficult" (33 and 35 respondents, respectively; see Table 2).

**Table 2** Students' perception of the level of the text ( $N=93$ )

Group	Very easy	Easy	Slightly easy	Slightly difficult	Difficult	Very difficult
01	0	0	2	4	8	1
02	1	1	10	23	20	1
03	0	1	5	6	7	3

Note. Group 01 ( $n = 15$ ), Group 02 ( $n = 56$ ), and Group 03 ( $n = 22$ ).

As shown in Table 3, regarding the content of the story, no one from the three groups chose "very boring" or "boring," and four students selected "slightly boring" while nearly 60.0 percent of the students found the story either "interesting" or "very interesting," while the rest chose "slightly interesting."

**Table 3** Students' perception of the content of the text ( $N=93$ )

Group	Very boring	boring	Slightly boring	Slightly interesting	Interesting	Very interesting
01	0	0	1	7	5	2
02	0	0	1	19	22	14
03	0	0	2	8	7	5

Note. Group 01 ( $n = 15$ ), Group 02 ( $n = 56$ ), and Group 03 ( $n = 22$ ).

Next, the following six questions used in the survey slightly differed between the two groups, one that had an online group discussion session (Groups 01 and 02) and the other that did not due to schedule conflicts (Group 03). Thus, the phrase in parenthesis "and joined the online group discussion" does not apply to the students in Group 03. For the same reason, the final question was omitted because they had no experience in having discussions with other students as part of the class work. The statements are as follows, and the results are presented in Table 4. The questionnaire was administered in Japanese.

1. I deduced the answers (and joined the online group discussion) using the information in the text.
2. I deduced the answers (and joined the online group discussion) using information outside of the text and my own knowledge in general.
3. I deduced answers (and joined the online group discussion) by thinking about my personal experiences.
4. I examined my own answers and interpretations rereading the text to ensure that there were no contradictions and leaps in logic.
5. I understood the story.
6. The online group discussion was helpful in understanding and interpreting the text better.

**Table 4** Students' perceptions of the lesson ( $N=93$ )

Statement	Group	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
1	01	0	0	0	0	6	9
	02	0	0	2	4	17	33
	03	0	0	0	9	9	4
2	01	0	0	2	4	8	1
	02	0	3	4	15	16	18
	03	1	0	9	7	5	0
3	01	0	1	1	5	5	3
	02	0	4	11	10	19	12
	03	2	3	3	7	6	1
4	01	0	0	1	2	5	7
	02	0	0	4	12	25	15
	03	0	0	3	7	8	4
5	01	0	0	1	1	8	5
	02	0	0	0	8	20	28
	03	0	0	1	11	7	3
6	01	0	0	0	0	3	12
	02	0	0	1	7	13	35

Note. Group 01 ( $n = 15$ ), Group 02 ( $n = 56$ ), and Group 03 ( $n = 22$ ).

Almost all the students who participated in the study finalized their answers based on the information in the text. Nearly half of the respondents strongly agreed with the first statement, with 34.4 percent marking “agree.” Next, the students in Groups 01 and 02 tended to agree with the second statement because 9 out of 15 students in Group 01, 34 out of 56 in Group 02, and 5 out of 22 in Group 3 had either strongly agreed or agreed. The third statement had a similar tendency; 8 students out of 15 in Group 01, 31 out of 56 in Group 02, and 7 out of 22 students in Group 03 had either strongly agreed or agreed. The fourth question, as to whether the students examined their answers attentively or not, no one strongly disagreed or disagreed. In fact, 68.8 percent of the students strongly agreed or agreed, which indicates that everyone reread the text for exploring their answers. As for the comprehension of the story, it seems that the students understood the story well overall; however, half of the students in Group 03 chose “slightly agree,” while half of the students in Group 02 chose “strongly agree” and slightly more than half of the students in Group 01 chose “agree.” Considering that the students’ English proficiency in Groups 02 and 03 is higher than that in Group 01, the result should be noted carefully. Finally, almost everyone in both Groups 01 and 02 found the group discussion useful for better comprehension and interpretation of the story.

At the end of the form, the students were encouraged to share the skills or

abilities they found necessary to complete the worksheet (and join the group discussion successfully). As could be expected, answers varied greatly and need to be analyzed precisely on another occasion. One of the important keywords in this study, "imagination," was listed by 31 students, or nearly one-third of the participants. The majority of the students mentioned "communication abilities" and "abilities to express yourself." The results of the analysis revealed that there are a variety of abilities and skills that students thought necessary for this particular lesson.

## 2. Students' Assignments

A total of 93 students submitted worksheets, and the answers to the following four inferential questions were carefully reviewed and evaluated by the authors:

1. Who said "Gee," and what do you think he/she was feeling then?
2. Who said, "I didn't say I didn't like it," and what do you think he/she was feeling then?
3. Why do you think Margie was disappointed?
4. Why do you think Tommy screamed with laughter?

Additionally, the students were instructed to provide specific evidence and reasons for their answers.

The results are presented in Tables 5-7. As for Group 01, the non-advanced group, "A" was the most popular evaluation for the second and fourth questions, and for the third question, a total of 9 out of 11 valid answers were marked with an "A" (4 students) or a "B" (5 students). However, only 2 students received an "A" for the first question.

For the students in Group 02, the advanced group, which had an online group discussion session, of all four questions on the assignment, more than half of the students earned an "A," which proves that their answers were very well-supported by the evidence.

The students in Group 03, who were considered to have the same English proficiency as those in Group 02 but did not have the opportunity for the online group discussion, did not get as many "As" as those in Group 02. For the first question, 65.0 percent of the students in Group 03 with valid answers received a "C," which means that their answers did not include any evidence, or they greatly misinterpreted the story, while half of the valid answers were given an "A" for the second question. For the other two questions, 55.0 percent and 70.0 percent of the valid answers, respectively, received a "B."

As can be seen from Tables 5 and 6, it should be noted that some students in Groups 01 and 02, indicated in parentheses, did not make any changes to their final answers after the group discussion, while most of the students made additions and revisions, explaining their answers in more detail to their final answers.

**Table 5 Evaluation for Group 01 ( $n=15$ )**

Question	Evaluation	Number	Question	Evaluation	Number
1)	A	2	3)	A	4 (2)
	B	6		B	5 (2)
	C	6		C	2
	Invalid	1		Invalid	4
2)	A	9 (5)	4)	A	7 (2)
	B	1		B	3 (1)
	C	4		C	2
	Invalid	1		Invalid	3

Note. The numbers in parentheses indicate the number of students whose answers did not change after the group discussion. Invalid answers included missing or incomplete answers.

**Table 6 Evaluation for Group 02 ( $n=56$ )**

Question	Evaluation	Number	Question	Evaluation	Number
1)	A	30 (9)	3)	A	36 (10)
	B	15 (4)		B	11 (4)
	C	6		C	3 (1)
	Invalid	5		Invalid	6
2)	A	34 (9)	4)	A	36 (7)
	B	11 (1)		B	13 (1)
	C	5		C	3
	Invalid	6		Invalid	4

Note. The numbers in parentheses indicate the number of students whose answers did not change after the group discussion. Invalid answers included missing or incomplete answers.

**Table 7 Evaluation for Group 03 ( $n=22$ )**

Question	Evaluation	Number	Question	Evaluation	Number
1)	A	7	3)	A	3
	B	0		B	11
	C	13		C	6
	Invalid	2		Invalid	2
2)	A	10	4)	A	5
	B	7		B	14
	C	3		C	1
	Invalid	2		Invalid	2

Note. Invalid answers included missing or incomplete answers.

## V. Discussion

### 1. Online Questionnaire

The objective of the current study was twofold: 1) to determine whether the lesson utilizing “The Fun They Had” would enhance students’ thinking skills, specifically their logical imagination, and 2) to explore whether and how online group discussions with a critical facilitation method would improve students’ comprehension and interpretation of the piece of literature and their logical imagination.

From the results of the online questionnaire, the readability seems adequate since 73.1 percent of the respondents found it either slightly difficult or difficult, which indicates that it presents some challenges, but is still comprehensible. It also became apparent that the students read the story with interest, as 95.7 percent of all participants chose favorable responses. It can thus be said that the literary work selected for this particular lesson was appropriate. One of the reasons the students were highly interested might have been attributed to the current online classes the students were taking. In the story, children are studying individually at home, taught by a “mechanical teacher.” Prior to the COVID-19 pandemic, some students thought this “mechanical teacher” was a human instructor who taught robotics. In the present study, everyone interpreted this mechanical teacher as a computer-like machine, which taught subjects and gave assignments and tests at home. It might have been easier for students to relate to the story in an online learning format.

Now, the first issue addressed in the present study is whether this pilot lesson utilizing “The Fun They Had” would stimulate students’ logical imagination. As mentioned earlier, “logical information” in this research is defined as the ability to deduce something based on evidence. From the results of the survey, there is no doubt that almost all the participants deduced answers based on the evidence in the text, and it was indicated that all students read the text multiple times to examine their answers to ensure that their answers did not include any contradictions or leaps in logic. The students’ responses at the end of the worksheet also indicated this, as they were asked how many times they read the text (see Table 8).

**Table 8** Number of times the students read the text ( $N=91$ )

Group	Times	Number	Group	Times	Number	Group	Times	Number
01	2	4	02	2	13	03	2	4
( $n=14$ )	3	4	( $n=56$ )	3	15	( $n=21$ )	3	10
	4	0		4	1		4	1
	4+	6		4+	27		4+	6

However, the students did not rely on information outside of the text as much as the authors had anticipated. It should be noted that the students in Group 03 did not seem to have used information outside of the text as much as those in Groups 01 and 02 when they examined their answers. Similarly, the students in Group 03 did not reflect on their personal experiences as much as those in Groups 01 and 02. The reason why it seems the students in Group 03 might not have used their own knowledge or personal experiences may be because they did not have an opportunity to discuss their answers with their friends. When students do homework at home, they focus on the text and worksheet, which might make it difficult for them to remember that they could use their own knowledge or experiences to answer inferential questions. In addition, in the regular reading course, students usually read non-fictional, science-related materials, answering questions usually based solely on the information in the text, and this might be another reason why the students in Group 03 did not depend on the information outside of the text. However, those in Groups 01 and 02 had an online group discussion with a facilitator making comments and asking questions. From the results, it is suggested that a group discussion, especially using a critical facilitation method, stimulates students' logical imagination as they are more likely to receive feedback and input from their peers and have a chance to modify their answers. This might explain why the majority of the students in Groups 01 and 02 found the group discussion very useful or useful.

Group discussion might have contributed to a better comprehension of the story as well, since the students in Group 03 did not think they understood the story as well as the students in Group 02, although their English proficiency was supposed to be at about the same level. It was confirmed that the students in Group 01, whose English proficiency is lower than the other two groups, seem to have understood the text better than Group 03.

## **2. Students' Assignments**

Next, the second objective of this study is to explore whether and how online group discussions that employ a critical facilitation method contributed to the development of students' logical imagination as well as to an improved understanding and interpretation of the literary text.

As Table 6 shows, more than half of the students in Group 02 received an "A" for all four questions. Among them, some students' answers would have been marked "A" before having participated in the group discussion. In fact, the following numbers of students did not make any changes to their answers after the group discussion: 9 out of 30 for the first question, 9 out of 34 for the second, 10 out of 36 for the third, and 7 out of 36 for the last question. This confirms that the

online group discussion helped the students produce more precise, rich answers with more detailed evidence; however, it also indicates that the assignment was not sufficiently challenging for those who already had a very good comprehension and interpretation of the text.

As for Group 01, more than half of the students' valid answers were marked an "A" for the second and fourth questions; however, for the first question, 2 out of 14 obtained an "A," and 6 students each obtained a "B" and "C" (see Table 5). Some of the misinterpretations were not modified during the group discussion. The authors carefully read the students' notes while evaluating their final answers and noticed that in some cases, the notes contained correct interpretations and/or more details, but these were not reflected in the students' final answers; thus, they were evaluated as "B" or "C." This shows that even if the students were encouraged to engage in critical discussions, it did not always lead to "logical" answers.

Finally, the results of Group 03 need to be carefully observed, as they did not engage in a group discussion. As can be seen from Table 7, half of the students received an "A" for the second question. For the first question, a "C" was given to more than half of the students, who misunderstood the story or misinterpreted the context. This indicates that they might have been able to modify their answers if there had been a group discussion session. Regarding the third and fourth questions, the most common answer was "B" for 11 and 14 out of 20 valid answers, respectively. Despite the fact that their English proficiency was similar to that of Group 02, there are some notable differences between these two groups, which again shows that group discussions using a critical facilitation method contributed to better comprehension and interpretation of the story.

Negative effects were also observed: there were 20 groups of three to four students in one group participating in the group discussion, and in one particular group, all students' final answers were different, but they all noted that their answers were the "same" as their peers in their notes. If their notes had been correct, their final answers would have been the same, or at least somewhat similar, but they were completely different for all four questions. The instructor made herself accessible to every group during the group session and ensured that she offered support whenever the students needed it. She also visited each group even when no students had asked her to. This group seemed to have been quiet every time she visited, and never asked the instructor questions. Because it was an online session, it was not possible to monitor all groups at one time. It would have been easier to recognize an "inactive" group if all had been in the regular classroom. In group work conducted in a regular classroom before the pandemic, there was always a quiet group in which students engaged in group work, but grading their work indicated that there were no extreme differences among groups. However, this time,

the quality and quantity of the answers in this specific group were highly different from those of the other students.

Another drawback was that there were several cases in which the students revised their correct, insightful answers in response to the facilitator's or other members' "critical" comments. Their original answers were very well-written and well-supported by evidence, but they did not challenge other students' remarks but reflected their ideas in the final answer and ended up receiving a lower grade. Because of the group discussion, three students in Group 02 for the first question and two students each from Groups 01 and 02 for the second and third questions received lower evaluations. Please note that this letter grade was for the sake of the present study; thus, it is not included in the actual students' grades.

## VI. Conclusion

This study was conducted to explore 1) whether the lesson utilizing "The Fun They Had" would stimulate students' logical imagination, and 2) whether and how online group discussions utilizing a critical facilitation method would boost students' comprehension and interpretation of the literary text and cultivate their logical imagination.

Regarding the first objective, the results of the online questionnaire and the students' worksheets indicated that this literary work enhanced students' logical imagination. As previously mentioned, the students were provided with free space to write the skills and/or abilities they thought were necessary to successfully work on this particular task, and they presented many ideas. The authors have not yet had a chance to examine all of the information, but plan to analyze the students' comments to determine what potential skills and/or abilities could be cultivated, or might help develop students' logical imagination. As for the second objective, it became apparent that the group discussions made a difference in the comprehension of the literary work, and also contributed to a rich, deep interpretation of the story.

Finally, this study has three limitations that should be addressed. First, the authors utilized two instruments, an online questionnaire and students' worksheets; however, these are not sufficiently objective to measure or assess the logical imagination. Further, no test was available to evaluate students' thinking skills. The authors would like to find a method to assess students' thinking skills and help them improve these skills, especially their logical imagination. The second issue is that students should have been instructed using a critical facilitation method before they actually engaged in the group discussion, in the same manner that Takami and Kinoshita (2017) required students to practice the method before the pilot classes. It is possible that some of the students in this study might not have sufficiently

understood the concept of the group discussion, and this could be one of the reasons why one group failed to engage in a more constructive discussion and instead remained quiet. Finally, the list of questions and/or tasks should have been amended, especially for advanced students, as a certain number of the students in Group 02 had well-supported answers prior to the group discussion session. Alternatively, a more challenging literary work might be appropriate for them. Considering the results of this lesson, the authors would like to conclude that it would be useful to develop literary reading materials that will cultivate thinking skills, which is the ultimate goal of our research.

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