Effects of Introducing Team-Based Learning for Developing Conceptual Understanding and Learning Motivation: An Action Research Study in University-Level English Language Education Courses

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Summary 1

Chapter 1 7

Introduction: Background and Procedure of Team-Based Learning 7

1.1 TBL Background 8

1.2 TBL Procedure 9

1.3 TBL's Four Principles 11

1.4 Chapter Summary 13

Chapter 2 14

Literature Review: TBL's Effects 14

2.1 Medical Field 14

2.2 Business Practice 16

2.3 Second Language Acquisition Research and English Language Education 17

2.4 Chapter Summary 17

Chapter 3 19

Research Methodology: Action Research 19

3.1 Definition of Action Research 19

3.2 Procedure of Action Research 21

3.3 Making Action Research "Scientific Research" 22

3.4 What Is a "Scientific" Research Design? 23

3.5 Research Design Adopted as Action Research 26

Chapter 4 31

TBL's Effects on Conceptual Understanding and Learning Motivation: Study 1 31

4.1 Study Purpose 31

4.2 Method 32

4.2.1 Participants 32

4.2.2 Course Overview 32

4.2.2.1 Lecture with Activities Group 34

4.2.2.2 TBL Group 36

4.2.3 Measurement of Variables 38

4.2.3.1 Conceptual Understanding 38

4.2.3.2 Anonymous Class Questionnaire 38

4.2.3.3 Open-Ended Class Questionnaire 39

4.2.3.4 Previous Year's GPA 40

4.3 Results 41

4.3.1 Conceptual Understanding 41

4.3.2 Anonymous Class Questionnaire 45

4.3.3 Open-Ended Questionnaire 45

4.4 Discussion 48

4.4.1 TBL's Effects on Conceptual Understanding 48

4.4.2 TBL's Effects on Learning Motivation 49

4.4.3 Study's Significance 51

4.4.4 Limitations and Implications for Future Research 51

Chapter 5 54

Process of Conceptual Understanding and Learning Motivation Development: Study 2 54

5.1 Study Purpose 55

5.2 Study 2a: Reexamining TBL's Effects on Learning 55

5.2.1 Method 55

5.2.1.1 Participants 55

5.2.1.2 Course Overview 56

5.2.1.3 Measurement of Variables 58

5.2.2 Results and Discussion 59

5.2.2.1 Conceptual Understanding 59

5.2.2.2 Study Time 61

5.3 Study 2b: Process of Enhancing TBL's Learning Effects 62

5.3.1 Study Purpose 62

5.3.2 Method 62

5.3.2.1 Participants 62

5.3.2.2 Ethical Considerations 64

5.3.2.3 Question Items 64

5.3.2.4 Analysis Method 65

5.3.2.5 Analysis Procedure 65

5.3.3 Results 66

5.3.3.1 Function of Group Work 68

5.3.3.2 Individual Factors Contributing to Proper Group Work Functioning 69

5.3.3.3 Impact of Others 70

5.3.3.4 Requests for Improvement 70

5.4 Discussion 71

5.4.1 Effects on Conceptual Understanding 72

5.4.2 Effect on Learning Motivation 73

5.4.3 Limitations and Future Research 74

Chapter 6 76

Addressing “Free Riders”: Study 3 76

6.1 Study Purpose 76

6.2 Class Practice 77

6.2.1 Participants 77

6.2.2 Course Overview 78

6.3 Quantitative Analysis of Class Practice: Analysis 1 80

6.3.1 Measurement of Each Variable 80

6.3.1.1 Conceptual Understanding 81

6.3.1.2 Study Time 81

6.3.1.3 Free Rider Questionnaire 81

6.3.2 Results and Discussion 82

6.3.2.1 Conceptual Understanding 82

6.3.2.2 Study Time 85

6.3.2.3 Free Rider Questionnaire 85

6.4 Qualitative Analysis of Class Practice: Analysis 2 85

6.4.1 Purpose 85

6.4.2 Method 86

6.4.2.1 Participants 86

6.4.2.2 Ethical Considerations 86

6.4.2.3 Question Items 87

6.4.2.4 Analysis Method 87

6.4.3 Results 88

6.4.3.1 Functions of Group Work That Promote Conceptual Understanding and Learning Motivation 91

6.4.3.2 Creating an Environment That Encourages Discussion 92

6.4.3.3 Individual Affective Factors 92

6.4.3.4 Within the Group 93

6.4.3.5 Requests for Improvement 94

6.4.3.6 Inhibiting the Emergence of Free Riders 94

6.5 Discussion 95

6.5.1 Effect of Role Assignment on Group Work Functioning 96

6.5.2 Significance and Future Prospects 98

Chapter 7 100

TBL's Effects on Different Types of Learning: Study 4 100

7.1 Study Purpose 100

7.2 Method 101

7.2.1 Participants 101

7.2.2 Course Overview 102

7.2.3 Measurement of Test Scores 105

7.2.3.1 Knowledge Check Questions 105

7.2.3.2 Comprehension Check Questions 105

7.2.3.3 Term Description Questions 106

7.2.4 Study Time 106

7.3 Results 107

7.3.1 Test Scores 107

7.3.2 Study Time 110

7.4 Discussion 110

7.4.1 Summary 110

7.4.2 Significance, Limitations, and Future Outlook for Research 110

Chapter 8 112

Reexamining the Effects of Assigning Roles During Group Work: Study 5 112

8.1 Study Purpose 113

8.2 Method 113

8.2.1 Participants 113

8.2.2 Course Overview 114

8.2.3 Measurement of Test Scores 115

8.2.4 Study Time 115

8.2.5 Quantitative Text Analysis: Free Description of Class Questionnaire 115

8.3 Results 117

8.3.1 Test Scores 117

8.3.2 Study Time 121

8.3.3 Quantitative Text Analysis 121

8.4 Discussion 124

Chapter 9 127

Conclusion: Summary and Future Prospects 127

9.1 Summary of the Studies 127

9.2 Future Prospects 131

References 133

Appendix A 140

Appendix B 141

Appendix C 142

Appendix D 143

Appendix E 144

Appendix F 145

Summary

Chapter 1. Introduction: Background and Procedure of Team-Based Learning

Accelerating computerization and internationalization rates have placed a greater emphasis on the acquisition of new competencies, such as skills and attitudes, rather than mere knowledge. As it is difficult to develop these competencies through a teaching method with which "teachers just deliver knowledge to students," a growing number of researchers have called for the introduction of active learning (Iwasaki, 2016, p. 39). Therefore, as a form of active learning, I applied the Team-Based Learning (TBL) method to undergraduate English language education courses. Developed in the late 1970s by Larry K. Michaelsen (see Michaelsen et al., 2007), TBL has mainly been incorporated in medical education. Students are divided into small groups and learn particular topics by following three steps: (a) studying the materials individually, (b) taking the individual readiness assessment test (iRAT) followed by the team readiness assessment test (tRAT), in which students hold discussions as a group to find answers to the problems tackled in the iRAT; and (c) working on applied exercises. For the purpose of this dissertation, I examined TBL's effects on students' conceptual understanding and learning motivation, analyzing their development process in the framework of action research.

Chapter 2. Literature Review: TBL's Effects

I reviewed previous studies examining TBL's effects in various fields, such as medical (Cheng et al., 2014; Inoue et al., 2019; Mennenga, 2013), business (Tokoro, 2016), and general English as a second language contexts (Hosseini, 2014; Kodama et al., 2015). I summarized the effects as follows: (a) TBL increases learners' motivation to participate in their group and class activities; (b) it is not necessarily a linear process, because although uneasiness stemming from unfamiliar group members often initially translates into low motivation, the latter eventually increases; and (c) it can positively affect the cognitive aspects of academic abilities, such as conceptual understanding. However, little research and practice have been reported in the humanities, including English language education.

Chapter 3. Research Methodology: Action Research

I proposed a more scientific methodology for action research. Specifically, instead of the one-group posttest-only and one-group pretest–posttest design that most previous action research studies have adopted, I suggested a posttest-only design with nonequivalent groups. To solve the problem of comparing nonequivalent groups, I suggested an analysis of covariance (ANCOVA) model that can control for learners' general academic abilities.

Chapter 4. TBL's Effects on Conceptual Understanding and Learning Motivation: Study 1

This study examined the effects of introducing TBL on the development of conceptual understanding and learning motivation. A major subject of English language teaching, Second Language Acquisition Research, was taught in two different ways. In the academic year 2015, the course was taught to 28 students, based on the lecture and activity method, whereas in the academic year 2016, the subject was taught to 15 students, using TBL. The TBL group was examined in comparison to those who followed the lecture and activity method. The study's results indicated that TBL improved conceptual understanding more than the lecture and activity method, and had some positive effects on students' learning motivation.

Chapter 5. Process of Conceptual Understanding and Learning Motivation Development: Study 2

The purpose of this study was to reexamine the effects of introducing TBL on developing conceptual understanding (Study 2a), and reveal the process of how conceptual understanding and learning motivation are developed (Study 2b). Again, the topic of Second Language Acquisition Research was taught in two different ways, through the lecture and activity method, and through TBL. Study 2a confirmed that TBL had a greater effect on conceptual understanding improvements than the lecture and

activity method. In Study 2b, six students, taught through TBL, cooperated in a semi-structured interview and the resulting data were analyzed based on the Modified Grounded Theory Approach (M-GTA; Kinoshita, 2003). The results showed that in order to foster conceptual understanding and learning motivation in group work, “communication in small groups” and “learning from others’ different opinions” had an interacting relationship. Affective factors, such as the “desire to improve communication skills for the future,” “preparation for discussion,” and “care for group members” influenced the smooth functioning of group work. Group work was especially fostered when the group had a “leader who activates discussion and gives a sense of security,” whereas the presence of an “uncooperative other” was inhibitive and triggered “demands for improvement.”

Chapter 6. Addressing “Free Riders”: Study 3

This chapter represents my attempt to further improve learners’ conceptual understanding and motivation in Second Language Acquisition Research classes. Although the introduction of TBL was found to be effective, the presence of an “uncooperative other” or a “free rider” in group work remained an issue. To resolve this, each member in the group was assigned roles, such as the moderator, first presenter, or second presenter. The quantitative analysis revealed that learners become more motivated and understand concepts better when assigned a certain role in group work.

Also, the qualitative analysis suggested that if a learner accepted their given role, they acted with a higher awareness as a contributor to group work, thus inhibiting the emergence of an "uncooperative other." A new version of the paradigm model was proposed to explain the process of how learners foster conceptual understanding and motivation.

Chapter 7. TBL's Effects on Different Types of Learning: Study 4

This study aimed to examine how introducing TBL affected students' abilities to acquire knowledge and understand concepts in English Linguistics classes (Phonology and Morphology). Once more, the subject was taught in two different ways, through a lecture method in 2016 and through TBL in 2017. The TBL effects were compared to those of the lecture method. The results showed that TBL had a greater influence on knowledge acquisition and comprehension than the lecture method. The findings, in combination with the amount of time the students spent on the subject, implied that although TBL did not necessarily influence learning quantity, it did improve learning efficiency.

Chapter 8. Reexamining the Effects of Assigning Roles During Group Work: Study 5

This study reexamined the effects of role assignment during group work on

acquiring knowledge and understanding concepts in English Linguistics classes applying TBL (Phonology and Morphology). Each member was assigned a role (e.g., moderator, first presenter, or second presenter), and at the end of the course, their test scores were compared to those following the lecture method taught in 2016 and the TBL without role assignment taught in 2017. The results showed that TBL had a greater influence on knowledge acquisition, comprehension, and conceptual understanding than the lecture method, and that learners understood concepts even more when assigned a role. Additionally, a quantitative text analysis suggested that with role assignment, learners found more purpose in collaborating and recognized the importance of preparation.

Chapter 9. Conclusion: Summary and Future Prospects

The studies in this dissertation show that TBL has a greater influence on conceptual understanding and learning motivation development than the lecture method, and that TBL functions even better when each learner is assigned a role. The studies imply a paradigm model that describes how learners develop conceptual understanding and motivation. Although this study proposes an action research framework and a more valid methodology, further action research studies are needed to improve the quality of English language education courses.

Chapter 1

Introduction: Background and Procedure of TBL

Accelerating computerization and internationalization rates have placed a greater emphasis on the acquisition of new competencies (Matsushita, 2010), such as skills and attitudes, rather than mere knowledge. As it is difficult to develop such competencies through teaching methods with which "teachers just deliver knowledge to students," studies have increasingly called for the introduction of active learning (Iwasaki, 2016, p. 39). According to the glossary released by Japan's Central Council for Education (2012), active learning is defined as follows (throughout this dissertation, all Japanese quotations were translated into English as needed):

> Active learning is a general term for teaching and learning methods that incorporates the active participation of learners in learning, unlike one-sided lectures by teachers. Through active learning, we aim to develop general abilities, including cognitive, ethical, and social abilities, and culture, knowledge, and experience. Its methods include learning through discovery, learning through problem solving, experiential learning, survey learning, etc. Group discussions, debates, and group work in the classroom are also effective methods of active learning. (p. 37)

As implementing classes that incorporate active learning is expected to attract more

attention in university education as well, I incorporated Team-Based Learning (TBL) into university-level English language education courses, as a form of active learning.

1.1 TBL Background

In 1979, Larry K. Michaelsen, a faculty member of the University of Oklahoma Business School, developed TBL to cope with the sudden increases in class sizes from 40 to more than 100 students (Igarashi, 2016b; Michaelsen et al., 2007). Michaelsen believed that working on tasks in small groups was an effective learning method and came up with the idea of introducing group work in large classes. Specifically, students were to have discussions with their team members and other teams. When introduced in practice, he saw that it encouraged preclass preparations and more active student interaction, finding that a method based on group activities was effective in promoting learning (see Chapter 2 for previous works examining TBL's specific effects). Michaelsen later conducted faculty development workshops at many higher education institutions to introduce TBL, resulting in its gradual acceptance and adoption across disciplines, especially in medical education.

Igarashi (2016b) believed that TBL was adopted, because it requires students to thoroughly prepare before the class and be responsible for their team, besides fostering knowledge, attitude, and skill integration. These are essential qualities for medical professionals who have life-threatening jobs and team up with a variety of occupations.

In 2006, with the aim of creating a useful resource for medical education, Michaelsen's research group conceived the related ideas and later published them in their book *Team-Based Learning for Health Professions Education* (Michaelsen et al., 2007). In Japan, TBL became widely known in 2009, after the book was translated into Japanese under the supervision of Hiromi Seo of the Kochi University School of Medicine. At present, TBL is also mainly prevalent in medical departments. Another book was later published to introduce the basic TBL concept and implementation method to beginners through abundant concrete examples (Igarashi et al., 2016).

1.2 TBL Procedure

This section describes the general procedure for implementing TBL in three stages based on Michaelsen and Sweet (2008), Michaelsen et al. (2004), Suno et al. (2013), and Igarashi (2016b). The procedure is summarized in Table 1.1 as well.

1. Create a team of five to seven students.
2. In the first stage of the lesson, give students the learning materials in advance to allow them to acquire the basic knowledge needed for the class.
3. In the second stage, conduct two tests to confirm students' preparation. The first is an individual readiness assessment test (iRAT), consisting of several multiple-choice questions. Collect the tests when each student is done answering. Then, the team discusses the same questions and completes the second test, a

team readiness assessment test (tRAT), that ultimately determines their answers as a team. When the team finishes answering, collect the tests and check their work. Provide supplementary explanations for questions in areas that suggest a lack of understanding. At this time, if their answer is wrong, give them the opportunity to defend themselves (appeal). If the appeal is deemed sufficient, it will be treated as the correct answer.

4. In the third stage, provide applied exercises that will deepen students' knowledge and ensure they work as a team.
5. Finally, tell them the purpose of giving the exercises and summarize the essence of the learning goal.

Table 1.1

TBL Procedure

Stage	Instrument	Explanation
First stage		Self-learning based on preparation materials
	⇓	
Second stage	iRAT	Questions from preparation materials
	⇓	
	tRAT	Answer the same questions as a team without checking iRAT answers
	⇓	
	Appeal	Opportunity for learners to question and object to presented answers
	⇓	
	Feedback	Supplementary explanations for questions with a low correct answer rate
	⇓	
Third stage	Applied exercises	Work on applied tasks that deepen the knowledge gained through preparation Discuss with teams Tell the learners the learning objectives as a summary

Note. This table was recreated based on Igarashi (2016b). iRAT = individual Readiness Assessment Test. tRAT = team Readiness Assessment Test.

1. 3 TBL's Four Principles

When introducing TBL, it is essential to understand the following four principles (Igarashi, 2016a). The first is *personal and team responsibility*. For TBL to work well, each and every student must prepare thoroughly. As a result, it is important to implement tests that cannot be solved without preparation (iRAT and tRAT). Furthermore, the test scores should be incorporated as a part of the grade evaluation.

Thus, both the iRAT and tRAT should be included in the evaluation to ensure that the students take responsibility for themselves and their team.

The second principle is *providing immediate and frequent feedback*. Immediate feedback is crucial for encouraging learning (Ichikawa, 1995), and TBL provides many opportunities for immediate and frequent feedback between students through the tRAT discussions. After the tRAT is collected, the correct answers are presented immediately. Then, the instructor offers supplementary explanations to give students the opportunity to quickly check and correct their understanding.

The third principle is *considering team formation and management*. The appropriate number of students per team is five to seven. It is important to form teams with diverse backgrounds, rather than have members with the same knowledge and skills or students who are friends within the same team. There are several ways to determine the teams, such as randomly deciding using a roster or having students stand side by side in the classroom and giving the team numbers in order. The most important factor is that the process for determining the teams remains transparent. Additionally, to encourage growth as a team, its members should stay the same until the last class.

Finally, the fourth principle involves *creating tasks that promote both individual learning motivation and team growth*. The test should be based on the preparation materials to ensure that the students are aware of the need for preparation. One should pay close attention to the difficulty of the test questions: if they are too difficult,

students' motivation might lower and if they are too easy, students might stop preparing. It is also important to generate questions that require team discussions, not ones that can be solved by individuals or answered simply by memorizing relevant knowledge.

1.4 Chapter Summary

Chapter 1 outlines the background of TBL's development and its basic implementation procedures. Developed in the 1970s by an American academic, Larry Michaelsen, TBL was widely accepted in the medical field, because of its high affinity with the medical learning context, where working in teams is important. The process involves forming small groups and dividing the basic lesson procedure into three stages. In addition, I listed the four principles that should be considered during implementation. Chapter 2 will provide an overview of previous studies that have examined the effects of introducing TBL into classrooms.

Chapter 2

Literature Review: TBL's Effects

TBL has been used extensively in the fields of business administration and natural sciences, but especially in medicine. One of its prominent effects is that it enhances learners' intrinsic learning motivation, encouraging preclass preparation and active participation in discussions (Thompson et al., 2007). This chapter will review previous studies that introduced TBL into classrooms and examined its specific effects.

2.1 Medical Field

Mennenga (2013) developed a questionnaire to measure the degree of class participation in nursing classes and compared a group that was introduced to TBL with one taught via the regular teaching method. The TBL group showed significantly higher class participation, but the author found no significant difference between the examination results. He further reported that the correlation between class participation and examination results was weak. Cheng et al. (2014) added that introducing TBL in nursing classes improved not only class participation, but also team value and self-directed learning. Examining clinical pharmacy classes taught with TBL, Suno et al. (2013) also insisted that TBL encouraged active learning, based on the fact that the tRAT scores were always higher than those of the iRAT. The authors also reported that

the students were highly satisfied with the classes that introduced TBL.

On the other hand, Inoue et al. (2019) examined the effect of a modified TBL on the academic achievements of pharmacy students. The TBL group's team test score was significantly higher than the members' individual test scores, and this group showed a significantly higher score improvement rate before and after the learning period compared to the control group (self-learning the same materials). The authors also reported that according to the questionnaire satisfaction analysis, each test's difficulty was equivalent. Finally, the factor analysis and test results revealed that students with higher expectations for TBL had higher levels of achievement.

Furthermore, in a series of studies, Shimpuku et al. (2014) collected TBL opinions and impressions from students who had completed their nursing training. Specifically, the authors administered open-ended questionnaires and qualitatively analyzed the process of how the students had changed over the training period. In the initial stage after TBL's introduction, the learners were confused with the unfamiliar learning method, but gradually felt the need to review their opinions as they experienced increasing levels of fulfillment. This culminated into a sense of accomplishment with regard to having improved one another within the team. Finally, Fujii et al. (2018), who introduced TBL into organic chemistry classes consisting of pharmaceutical science students, reported a similar process based on the analysis of questionnaire results.

These studies are valuable, as they carefully analyzed and succeeded in reporting

how learners' affective aspects changed with the use of these qualitative methods. In the field of medical science, reports of class activities incorporating TBL are abundant, with favorable effects mainly pertaining to learners' emotional factors. As it is necessary to work as a team in medical practice, the usefulness of TBL seems to be relatively easily recognized. In addition, many studies have focused on emotional growth rather than the understanding of specialized concepts, perhaps because students in the medical field value working in a team in the future. As such, it is important to determine TBL's effects on learning in fields that do not always require working in a team.

2.2 Business Practice

Tokoro (2016) taught a class incorporating TBL in the field of business practice education and found that the secretarial certification's pass rate improved significantly, from 43.9% before TBL's introduction to 97.4%. He also reported improvements in students' attitudes toward learning independently, increases in their amount of preparation for each session, and more active questions and discussions. These results are noteworthy given the few reports addressing the cognitive effects of academic achievement, such as conceptual understanding. The author provided specific case examples of how team and class discussions, both of which are central to TBL, can be useful in the business setting, in addition to personalized feedback for all teams and assigning tasks for future meetings.

2.3 Second Language Acquisition Research and English Language Education

There have not been many TBL-related studies in the fields of second language acquisition and English language education. Hosseini (2014) introduced TBL into English as a foreign language classes in Iran, reporting that although TBL was incorporated in a way that allowed the teams to compete, their own English proficiency was more effective than the lessons conducted in the collaborative learning approach. On the other hand, Samad et al. (2015) incorporated TBL in a teaching English as a second language program at a university in Malaysia. They found that students viewing TBL positively as a whole led to quality improvement in the mock class assigned as their final work. Finally, Kodama et al. (2015) introduced TBL in English pharmacy classes in Japan and argued that although it could promote learning motivation, the effect was more susceptible to interpersonal relationships.

2.4 Chapter Summary

Based on this review, the effects can be summarized as follows: (a) TBL increases learners' motivation to participate in their group and class; (b) it is not necessarily a linear process, as uneasiness stemming from unfamiliar group members often translates into an initial low motivation that eventually increases; and (c) it can positively affect the cognitive aspects of academic abilities, such as conceptual understanding. However, little related research and practice have been reported in the

humanities, including English language education. In those fields, instructors tend to adopt a teaching method that simply involves delivering knowledge to students. As a result, the following question remains: is it possible to improve lessons through TBL even in subjects that focus on conceptual understanding? Thus, the purpose of this dissertation is to suggest a way to improve students' learning with scientific evidence. Before conducting and reporting on each original study, I will introduce and explain the research methodology adopted in this dissertation, namely, action research.

Chapter 3

Research Methodology: Action Research

Here, I will discuss action research, the research paradigm that each reported study in the following chapters is based on. I begin by outlining its general definition and explaining its historical background. Then, I propose a more scientific methodology for action research.

3.1 Definition of Action Research

Kurt Lewin (1951), an American sociologist active in the 1940s, first used the term action research. He argued that one should conduct research on social issues based on an awareness of the party directly involved in the issues and that the benefits of the work should be passed on to those parties. The claim gained attention in the UK in the 1970s, and spread to the United States and Australia. Presently, it is also used for research in various fields, such as nursing and welfare (Sano, 2005).

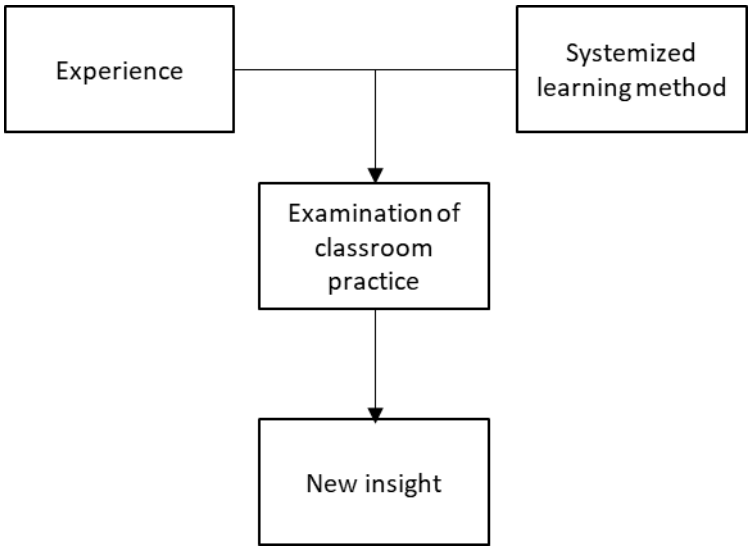
There have been several trends in action research, with three basic positions in the context of education. According to Sano (2000, 2005), the first is the educational reform movement that involves both parents and educators, and attempts to reflect the research results within the administration. The second is examining theoretical research results in classroom practice. The third is for teachers to aim to improve their classes

and teaching skills. However, as Sano pointed out, these three positions actually overlap in many cases.

With this dissertation, I aimed to introduce TBL into university-level classes and examine its effects, with the original motivation being to improve my own lessons. Therefore, based on Sano's (2000, 2005) classification, the studies in this paper adhere to the third position (teachers aiming to improve their classes and teaching skills). Nonetheless, this dissertation also includes the second position, examining the results of theoretical research in classroom practice. Strictly speaking, TBL is a teaching method that has been practiced in a regularized and procedural manner, rather than a form of theoretical research. In that sense, it is closer to the second position. Overall, the definition of action research in this dissertation is as follows: the teachers aim to improve their classes and teaching skills, while examining the effects of a teaching method in a regularized and procedural manner in classroom practice (Figure 3.1). The next section will explain the process of conducting action research.

Figure 3.1

Definition of Action Research



Note. This figure was recreated based on Sano (2000).

3.2 Procedure of Action Research

From the three main positions of action research, Sano (2000, 2005) mainly held the third (for teachers to aim to improve their classes and teaching skills), a perspective that has been long present in junior and senior high school English education classes in Japan. Based on Nunan (1989), Sano (2005) described the procedure of action research as follows:

1. Discovery of the problem: Discover the problem that must be addressed with regard to the situation you are facing.
2. Preliminary investigation: Investigate the problem's actual situation.

3. Research questions setting: Direct the research based on the investigation's results.
4. Hypothesis setting: Develop concrete measures to solve the related problems.
5. Implementation of the plan: Implement the measures and record the changes.
6. Examination of the results: Examine the effects of the measures and modify them if necessary.
7. Report: Reflect on the practice and draw a conclusion.

3.3 Making Action Research "Scientific Research"

Sano (2005) described the aforementioned procedure as follows:

> AR [action research] is sometimes mistaken for scientific research because of the word "research." However, AR is not scientific research that seeks the general truth. It is practical research that is conducted in class (in action). In other words, instead of doing research in addition to the lesson, you are implementing the measures while teaching. This means that AR is just a step-by-step implementation of what teachers, if they are conscientious, do unconsciously. (p. 7)

Although I agree that action research is a practical form of study conducted in classrooms and that one implements the measures while teaching, I propose making it scientific. I believe that Sano (2005) considered action research as non-scientific and

not aimed toward seeking the general truth, because this statement and his entire book for that matter are directed toward junior and high school teachers who are struggling with everyday on-site practice. In other words, the message takes into consideration the reasons for not raising the action research threshold.

While accepting Sano's (2005) stance, this dissertation explores creative ways to infuse "scientificness" into action research. I suggest devising the above procedures 5 (plan implementation) and 6 (results examination). Specifically, this involves comparing the effects of the implemented measures with the previous year's context, before those measures were adopted, in addition to simply examining the changes before and after measure implementation for problem solving. The following sections will discuss this matter in detail.

3.4 What Is a "Scientific" Research Design?

The Cambridge Dictionary defines "science" as "the careful study of the structure and behaviour of the physical world, especially by watching, measuring, and doing experiments, and the development of theories to describe the results of these activities." Therefore, as I am attempting to introduce the TBL method and demonstrate its effectiveness, the condition is whether or not the study has successfully developed theories demonstrating TBL's effects on learning, and how and why it can be effective based on observations, experiments, and measurements. Although there are many ways

to define “successfully,” this dissertation considers a successful scientific study, as one with high internal validity. The latter represents the degree to which one can be convinced of the study’s claim regarding the treatment's effectiveness (Haebara, 2001). Thus, the next question would be what kind of research design would ensure high internal validity.

In the context of this dissertation, if one wanted to know whether adding new ideas to the class would enhance the learning effects, the following research designs could be potential options:

1. Teach classes in a new way and conduct a posttest to check the learning effects.
2. Conduct a pretest, teach classes in a new way, and conduct a posttest to check the learning effects based on the improved test scores.
3. Teach classes in a new way and conduct a posttest to check the learning effects. Then, compare the effects with the posttest results of a class that was not taught with the new method.

Option 1, termed the *one-group posttest-only design*, cannot guarantee that the new teaching method is effective if most of the students’ scores are high in the posttest. This is because we cannot know how well the students would learn if the class was taught without the new method. In other words, there is no standard for comparing and judging the effectiveness of the new method from the posttest scores alone. In option 2, the *one-group pretest–posttest design*, a pretest is conducted before starting the class

(unlike option 1). Thus, if the posttest results are higher than those of the pretest, one can conclude that the new teaching method promoted learning. However, it is still difficult to determine whether the design has a sufficiently high internal validity, because even if the scores improve between the two tests, there is still a possibility that the new way of teaching did not cause the improvements. For example, the performance gains might not have stemmed from the new approach, but from the knowledge and experience the students gained through other classes and/or various learning activities outside of class.

Finally, option 3 compares the posttest results of the classes taught through the new approach to those stemming from a class that did not follow the new method. In this way, a comparison reference is available, seemingly resolving the problems of options 1 and 2. However, this approach still cannot guarantee high internal validity, because one cannot clearly determine whether or not the students in the two groups have equal learning abilities. For instance, even if the posttest results are better in the class taught with the new approach, it is still possible that the learners in that class originally had higher academic abilities.

To eliminate this possibility, one must guarantee equality between the two compared groups. One way to do this is to adopt random assignment, as preparing two classes in advance and randomly assigning learners could help ensure stochastic homogeneity. Although the academic ability of the groups is not always equal, a

statistical analysis can inference the effects of the teaching approach, because the variability of the learning ability is random (Takano, 2000). Although this design is generally recommended and seen as ideal, it is rarely realized in university contexts, due to numerous restrictions. First, the same teacher does not often teach the same specialized subject in multiple classes. Even if this was the case, it is almost impossible to obtain a list of students who plan to take the course in advance and randomly assign them to classes based on academic ability. In addition, if the course is an elective subject, the student list cannot be obtained until after the first few classes.

Second, random assignment has a problem related to educational ethics. Even if two equivalent classes were prepared, it would not be ethical to teach using the new approach that the teacher believes to be effective in only one class. Third, such experimental designs would no longer be called action research or would not reflect the teacher's practice to improve classes and teaching skills, while examining a teaching method's effects in a regularized and procedural manner in classroom practice. In other words, if an experimental design is adopted, teachers would not be able to implement the process of finding problems while teaching, determining ways to improve them, and examining the effects.

3.5 Research Design Adopted as Action Research

Based on the discussions above, this dissertation adopts a *posttest-only design*

with nonequivalent groups, classified as a quasi-experimental design, instead of an experimental design involving random assignment. Although this design has less internal validity than the experimental design, as denoted by "quasi-," I will explain the specific measures needed to reinforce its internal validity. The first question involves determining which two classes to use for the nonequivalent groups. The first group would be a class that has been taught or is being taught with the new method. The second group would be the same class taught the previous year without the new method (before coming up with the idea).

Then, the second question requires deciding what posttest to use and how to use it. My proposal is to prepare nothing special for the posttest and simply use the final examinations conducted in class. However, it is not advisable to use completely identical final examinations with the same questions for the two groups. Besides the inherent ethical issue here, this information may leak from those who have completed the course the previous year, resulting in unreasonably high scores in the current year and making comparisons difficult. The solution is to use some of the question items from the previous year's final examination for the current year and compare the results.

Finally, the issue of nonequivalent groups must be resolved. As mentioned earlier, "nonequivalent" means that one of the classes could have higher levels of academic ability or learning motivation, preventing a correct evaluation of the posttest scores for comparison. Thus, I suggest using the previous year's grade point average

(GPA) as the learning ability and as a covariate in the analysis of covariance (ANCOVA) model to control for this variable. In other words, this removes the GPA effects, a covariate, and permits a data analysis that assumes equal learning abilities across groups. In this way, action research with higher internal validity can be realized. Unlike in junior and high schools, where teachers tend to teach different courses each year, my proposal would not be too difficult for university teachers to adopt, whose department heads do not change their courses frequently from year to year. Thus, the posttest-only design with nonequivalent groups would be a convenient innovation for university teachers to make action research more "scientific."

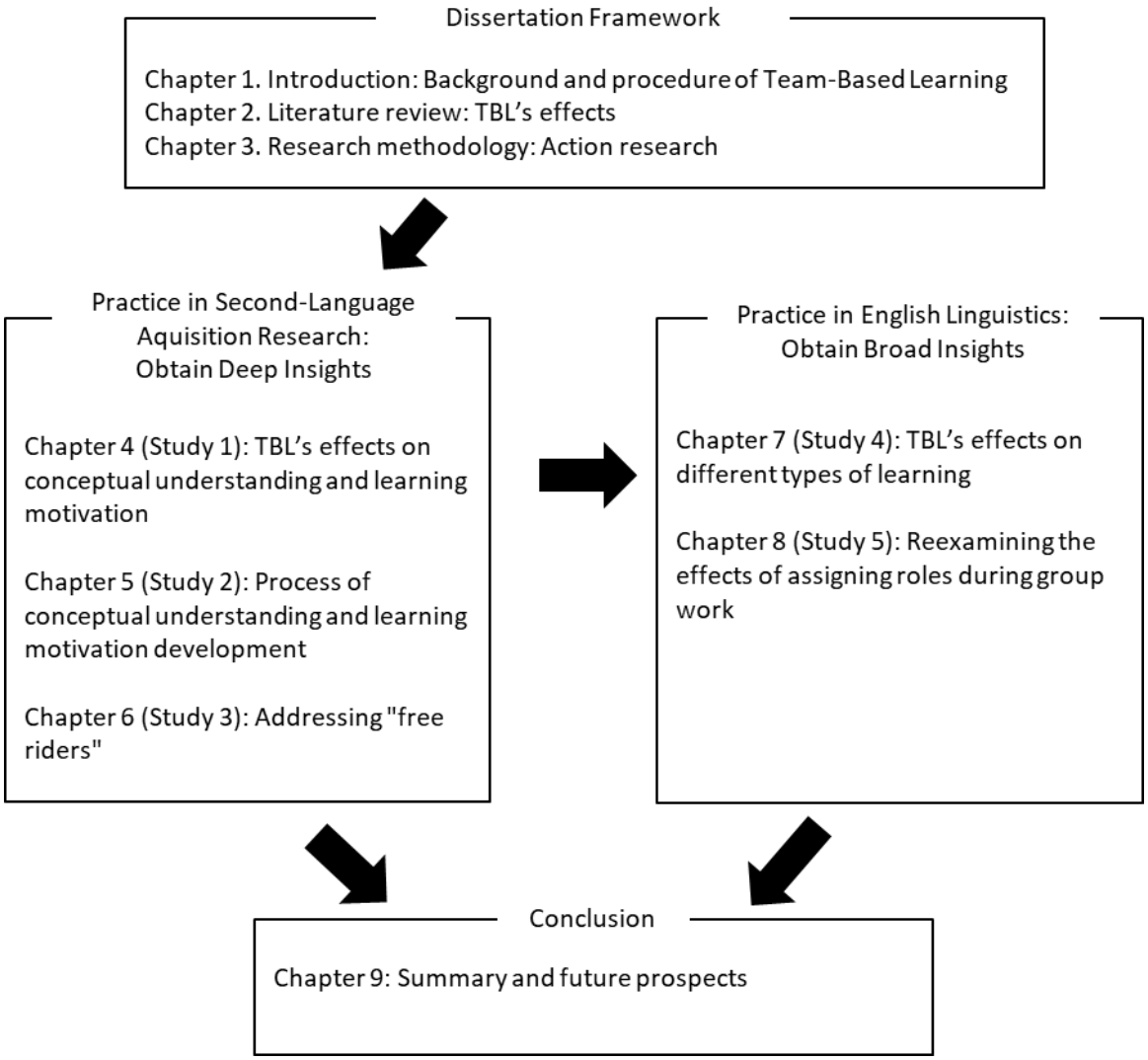
Overall, the action research procedure in the context of this dissertation can be described as follows. Additionally, Figure 3.2 below illustrates the dissertation's overall framework.

1. Discovery of the problem: I noted students' insufficient understandings of key concepts and passive learning attitudes in my class as problems.
2. Preliminary investigation: The class evaluation questionnaires determined that the students did not spend enough time preparing and reviewing classes. Also, their overall satisfaction with my courses was average or slightly below average.
3. Research question setting: I set the general research question, would introducing TBL into my English language education courses help develop students' conceptual understanding and learning motivation?

4. Hypothesis setting: I hypothesized that students' conceptual understanding and learning motivation would improve if TBL was incorporated into my courses.
5. Implementation of the plan: I adopted TBL while flexibly responding to the nature and objectives of my classes.
6. Examination of the results: I adopted a posttest-only design with nonequivalent groups and analyzed the results with an ANCOVA model. I compared the outcomes, such as final examination scores and questionnaire results, with those of the same course that I had taught the previous year, taking the students' GPA as a covariate to ensure that all students' learning abilities could be assumed as equal across groups
7. Report: I reported the results and future prospects in the form of oral presentations or treatises. I reflected on the comments I received from the audience and reviewers, and obtained ideas for further improvement.

Figure 3.2

Dissertation Structure



The following chapter 4 will report my attempt to introduce TBL into the university-level course named Second Language Acquisition Research. I examine its effects by comparing it with the previous year's class taught in the lecture style.

Chapter 4

TBL's Effects on Conceptual Understanding and Learning Motivation: Study 1

Despite the numerous studies on TBL in the fields of medicine and business, little research and practice have been reported in the humanities, including in English language education. Instead, instructors tend to adopt a teaching method with which they simply deliver knowledge to students. Therefore, a greater volume of TBL practice publications verifying its effects are urgently required in these fields.

4.1 Study Purpose

This study aims to introduce TBL into a university-level English language education course and examine its effects on the development of conceptual understanding and learning motivation. If positive effects are observed, the study will be able to provide new insights for the previously unexamined discipline of English language education. Moreover, it will offer instructors practical information on how to teach in similar classes.

4.2 Method

4.2.1 Participants

The participants in this study were 43 undergraduate students from the Faculty of Liberal Arts at a private women's university, who had opted to take an elective course titled Second Language Acquisition Research (Learning English as a Foreign Language, two credits). This was one of the major subjects offered to students in English Language Education from the second year onward. The students belonged to two separate groups: the lecture with activities group, who took the course in the academic year 2015 (28 participants), and the TBL group, who took the course in 2016 (15 participants).

4.2.2 Course Overview

As the teacher in charge, I taught the two groups with different teaching methods. I used Japanese for class instruction, materials, quizzes, and examinations; and all kinds of mediums for research analyses, including questionnaires and interviews. For the purpose of this dissertation, I have translated all contents for all studies from Japanese to English. The textbook I used for both groups was 『英語教師のための第二言語習得論入門』 [*Introduction to Second Language Acquisition Theory for English Teachers*] by Shirai (2012). Table 4.1 presents the syllabi for each group.

Table 4.1

Course Syllabi

Group	Lecture with activities group		TBL group	
Class time	Content	Textbook page	Content	Textbook page
1st	Guidance		Guidance	
2nd	SLA and English language education	p. 7	Advantages of bilingual, individual differences, and motivations	～p. 12
3rd	Age factors and filter by L1	～p. 12	Effective learning methods based on SLA research	～p. 28
4th	Individual differences and aptitude in foreign language learning	～p. 20	What is the essence of language acquisition?	～p. 50
5th	Relationship between motivation and learning	～p. 26	Effective learning/teaching methods for foreign languages	～p. 64
6th	Effective learning methods based on SLA research	～p. 29	Current situation in Japan	～p. 78
7th	Krashen's input hypothesis ①	～p. 36	Review	
8th	Krashen's input hypothesis ②	～p. 44	**Mid-term examination**	
9th	Summary (from SLA research to English language education in Japan)	～p. 50	Return of mid-term exam papers and the future of elementary school English education	～p. 96
10th	Effective learning/teaching methods for foreign language ①	～p. 52	The future of junior high school English education	～p. 108
11th	Effective learning/teaching methods for foreign language ②	～p. 60	The future of senior high school English education	～p. 128
12th	Combination of input and output	～p. 64	English education for college students and adults ①	～p. 136
13th	Think micro: Application of SLA research in class	～p. 69	English education for college students and adults ② and review	～p. 145
14th	Thinking macro: Teacher training and entrance examinations	～p. 78	Final examination	
15th	**Final examination**		Summary: Return of final exam papers and explanation of final assignment	

Note. SLA = Second Language Acquisition. The content and page numbers refer to Shirai (2012).

There were two major differences in the teaching methods between the two groups. First, the examination was conducted only once, in the 15th class, in the lecture

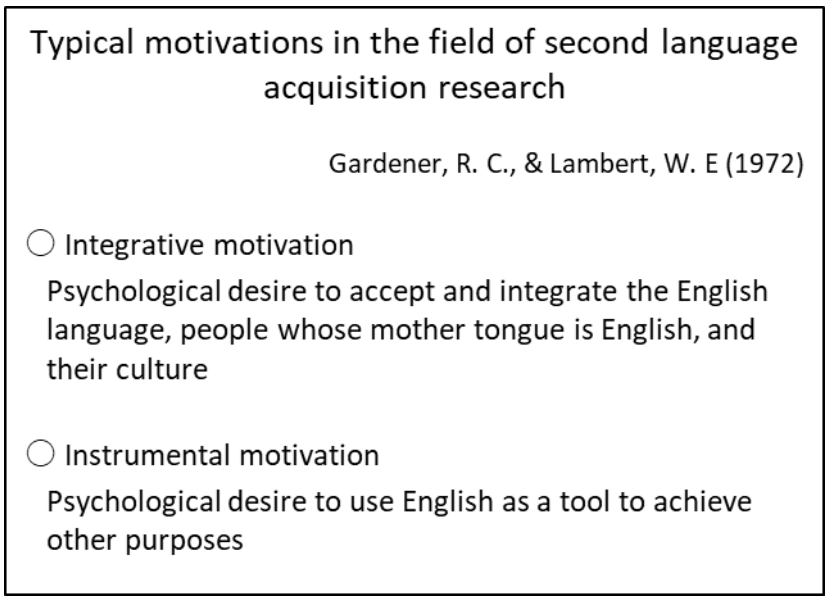
with activities group, whereas in the TBL group, two examinations were conducted, one in the 8th and the other in the 14th class. Second, the teaching progress speed was different. In the lecture with activities group, Shirai's (2012) first 78 pages were covered by the 14th class, whereas in the TBL group, the same number of pages were completed by the 6th class and the whole textbook (145 pages) by the 13th class. Therefore, the final examination in the lecture with activities group and the midterm examination in the TBL group covered the same range of information.

4.2.2.1 Lecture with Activities Group

Except for the course guidance (1st class) and the final examination (15th class), each class was conducted in the form of lectures and activities were introduced as necessary. The lecture contents were summarized in advance with slides, using presentation software, based on the textbook and I explained the contents while projecting the slides on a screen at the front of the classroom. The students took notes in their notebooks while watching the slides. Figure 4.1 is an example of a slide used in the lecture with activities group.

Figure 4.1

Lecture with Activities Group: Sample Slide



For the activities, the students formed pairs and groups, mainly to experience the teaching methods covered in the lectures and to discuss how they could be explained from the theory learned in the lectures. For example, to experience the audio-lingual method covered in the lecture, one student in the formed pair read out a declarative sentence printed on the handout and the other converted it into a question. In another example, I showed a video of a child being taught via Total Physical Response and asked related questions, such as “Is this teaching activity based on Krashen’s input hypothesis?” or “Would Swain’s comprehensible output hypothesis support this activity?” In preparation for the next class, the students were asked to read designated pages from the textbook and handouts, and for a review task, they were asked to be able

to explain the keywords covered in class.

4.2.2.2 TBL Group

As mentioned earlier, TBL consists of three stages (Michaelsen & Sweet, 2008; Suno et al., 2013): Preparation, testing (iRAT and tRAT), and applied exercises. The classes in this study were taught based on these three stages. In addition, the students were asked to describe important concepts that had been covered in the class as review tasks. Specifically, the goal was for them to be able to give a definition and specific examples or detailed explanations for each important concept. A quiz was conducted at the beginning of the next class to verify their work.

Aside from the course guidance (1st class), the midterm examination (8th class), and the final examination (14th class), the classes were taught in the following manner.

1. Prior to the class, the students review and prepare for the class.
2. They take a short-essay test asking them to give definitions and specific examples or detailed explanations about two or three concepts (Appendix A).
3. They exchange their answers with the students next to them and score them while referring to the rubric (Appendix B).
4. iRAT: The teacher distributes the handout (Appendix C) and the students work on multiple-choice questions to check their understanding of the designated part of the textbook based on their preparation prior to the lesson (I explain this in

detail later on).

5. tRAT: In teams of four to five, they discuss and determine the answers for the multiple-choice questions as a team.
6. Each team presents their answers in class. If their answers are different from other teams', a discussion on which answers are correct ensues.
7. The teacher displays the correct answers and gives supplementary explanations.
8. The students work on applied exercises as a team. For example, they experience the pedagogy covered in class and discuss how it can be explained with the theory. The content and procedure are the same as those covered in the activities in the lecture with activities group.
9. The teacher discusses the review and preparation tasks for next class.

Step 1 corresponds to the first stage of the general TBL procedure (Table 1.1), 4–7 to the second, and 8 to the third. I added steps 2 and 3 as review tasks, and step 9 after the end of the third stage to ensure that the students clearly understood the review and preparation tasks for the next class. The latter task involved reading a designated part of the textbook. While working on steps 4 to 6, the students were not allowed to open their textbooks. Therefore, a certain level of understanding was required for each individual student to answer the multiple-choice questions and participate in the subsequent group discussions.

4.2.3 Measurement of Variables

4.2.3.1 Conceptual Understanding

In order to measure the degree of conceptual understanding, I prepared six questions that asked the students to provide a particular concept's definition and specific examples or detailed explanations. These questions were on the final examination in the lecture with activities group (15th class) and on the midterm examination in the TBL group (8th class). The concepts for the six questions were as follows:

1. Negative transfer in language
2. Critical period hypothesis
3. Aptitude treatment interaction
4. Integrated and instrumental motivations
5. Input hypothesis
6. Automation theory

4.2.3.2 Anonymous Class Questionnaire

I used question items related to learning motivation from the anonymous class questionnaires conducted by our university. The participants answered this questionnaire on the university portal site within about eight weeks of the 13th class being finished in both groups. In the lecture with activities group, 21 participants responded (75% response rate), and in the TBL group, 12 participants responded (80%

response rate). Specifically, the items covered preparation and review time, class manners, note-taking behavior, and concentration in the class.

For the preparation and review time, the participants were asked to respond to the prompt, “I did the preparation/review when taking this class (average per class),” by selecting from (a) 1 hour or less, (b) 1 to 2 hours, (c) 2 to 3 hours, (d) 3 to 4 hours, or (e) 4 hours or more. The questionnaire allotted 0 points for 1 hour or less and 4 points for 4 hours or more. This way, the number of options could directly indicate the minimum number of hours for preparation and review. For the class manners, they were given the prompt: “I was able to follow the class manners (I was not late for class, I did not fall asleep during class, I did not speak my language during class, etc.).” For the note-taking behavior, they were given the prompt: “I summarized the lesson contents in notebooks and handouts in an easy-to-understand manner.” For concentration, they were given the prompt: “I concentrated on the class.” For these three questions, the participants were asked to answer on a five-point scale: 1 = *strongly disagree*, 2 = *disagree*, 3 = *neither agree nor disagree*, 4 = *agree*, and 5 = *strongly agree*.

4.2.3.3 Open-Ended Class Questionnaire

In the TBL group, an open-ended questionnaire survey was conducted during the 15th class to analyze the changes in participants’ conceptual understanding and learning motivation. Aside from one question, (If the average amount of study time spent for

other courses is 10, what is the amount of study time spent for this course?), the other five were open-ended and involved the following: Textbooks, handouts, and equipment used in class; study environment (classroom, seats, classroom rules, other students, etc.) in class; learning procedures to achieve the course objectives (quiz → individual test checking the preparation's resulting degree of understanding → discussions conducted in a team and then in class); appropriateness of the rubrics; and other.

I interpreted the concepts that emerged from the responses to these five items within the framework of an analysis theme to clarify TBL's effects on conceptual understanding and learning motivation, using syntactic breaks as the unit of analysis. In the interpretation, I generated further concepts while considering the main concepts in relation to the analysis theme. Next, I examined the validity of the concept names in relation to the other data from which the concepts were examined, and modified them as necessary. Then, I generated the categories and examined their relationship once the concepts were clarified to some extent.

4.2.3.4 Previous Year's GPA

I calculated the GPAs for all subjects that the participants took the previous year. The average GPA was 2.69 for the lecture with activities group and 2.84 for the TBL group, $t(38) = .62$, $p = .54$. Three students who had no grades in the previous year, due to transference or leave of absence, were excluded from the analysis. As this study's

design was not completely randomized, it is possible that the results of the between-group comparison of the dependent variables mentioned below only reflect the participants' pre-existing academic achievement differences. Therefore, to control the conditions and ensure that all participants had the same academic ability, ANCOVAs were performed using the GPA as a covariate in the quantitative group comparison of the dependent variables (see Chapter 3).

4.3 Results

4.3.1 Conceptual Understanding

After excluding the participants who did not take the test, the sample consisted of 27 individuals in the lecture with activities group and 15 in the TBL group. I calculated the scores of the six questions on the technical concepts that were commonly used in the mid-term and final examinations for both groups. In the measurement, all six questions were further divided into three categories, definition (3 points), specific examples or detailed explanations (3 points), and Japanese expression (2 points), with a maximum of 8 points per question. Table 4.2 shows the means of each group for each question.

A graduate student majoring in English language education and I both independently performed the measurement based on the same rubrics used for scoring the quizzes in the regular classes. The κ coefficients were calculated for the match rates

between the two. Of the total 18 questions (six questions with three categories each), six were considered to have a fairly high degree of coincidence, with values of .60 or higher. Nine showed a value of .40 or more, but less than .60. The remaining three did not show a sufficient degree of agreement, but the correlation coefficient between the raters was calculated to be .92 for the total score of all the categories in all six questions. Judging that sufficient inter-rater reliability was obtained for the entire test, the average scores of the two raters were used for analysis.

Table 4.2

Mean Scores and Standard Deviations for Each Question and Category

Term	Category	Score		
		Lecture with activities group (n = 27)	TBL group (n = 15)	
		M (SD)	*M (SD)*	κ coefficient
1. Negative transfer in language	Definition	1.78 (1.12)	2.10 (0.97)	.44
	Example/explanation	1.93 (1.31)	2.37 (0.95)	.60
	Japanese expression	1.44 (0.78)	1.87 (0.52)	.77
2. Critical period hypothesis	Definition	2.56 (0.98)	2.57 (0.84)	.69
	Example/explanation	1.28 (0.49)	1.63 (1.30)	.09
	Japanese expression	1.69 (0.65)	1.57 (0.59)	.66
3. Aptitude treatment interaction	Definition	2.04 (1.16)	2.37 (1.03)	.57
	Example/explanation	1.39 (1.07)	2.30 (1.11)	.42
	Japanese expression	1.44 (0.76)	1.70 (0.70)	.64
4. Integrated and instrumental motivations	Definition	2.56 (0.81)	2.53 (1.04)	.56
	Example/explanation	2.26 (0.94)	2.53 (0.81)	.51
	Japanese expression	1.78 (0.56)	1.83 (0.45)	.72
5. Input hypothesis	Definition	2.04 (1.25)	2.40 (0.69)	.57
	Example/explanation	1.67 (1.17)	2.10 (1.21)	.45
	Japanese expression	1.41 (0.77)	1.80 (0.41)	.56
6. Automation theory	Definition	2.17 (1.16)	2.37 (0.88)	.54
	Example/explanation	0.94 (0.61)	2.43 (1.03)	.27
	Japanese expression	1.15 (0.59)	1.73 (0.53)	.16

While interpreting the results, it is important to note that the number of classes before the examinations was different. In other words, it would be natural to assume that the number of classes as well as the teaching method influenced the results. If the lecture with activities group, which had more classes before the examination, had better scores, it would be difficult to specify the cause as either the teaching method or the number of classes. On the other hand, if the TBL group performed better on the examination, the results would be attributed to the teaching method.

Table 4.3 and Figure 4.2 show the adjusted means of the scores for each group. ANCOVAs were performed using the previous year's GPA as a covariate and the class method as an independent variable for the definitions, specific examples or detailed explanations, total points of Japanese expressions, and total scores for all six questions. In the total score, the main effects between groups was significant, indicating that the TBL group had a higher score than the lecture with activities group. Among the three categories, only definition showed no significant differences. It was confirmed in advance that no interaction with the covariate was observed.

Table 4.3

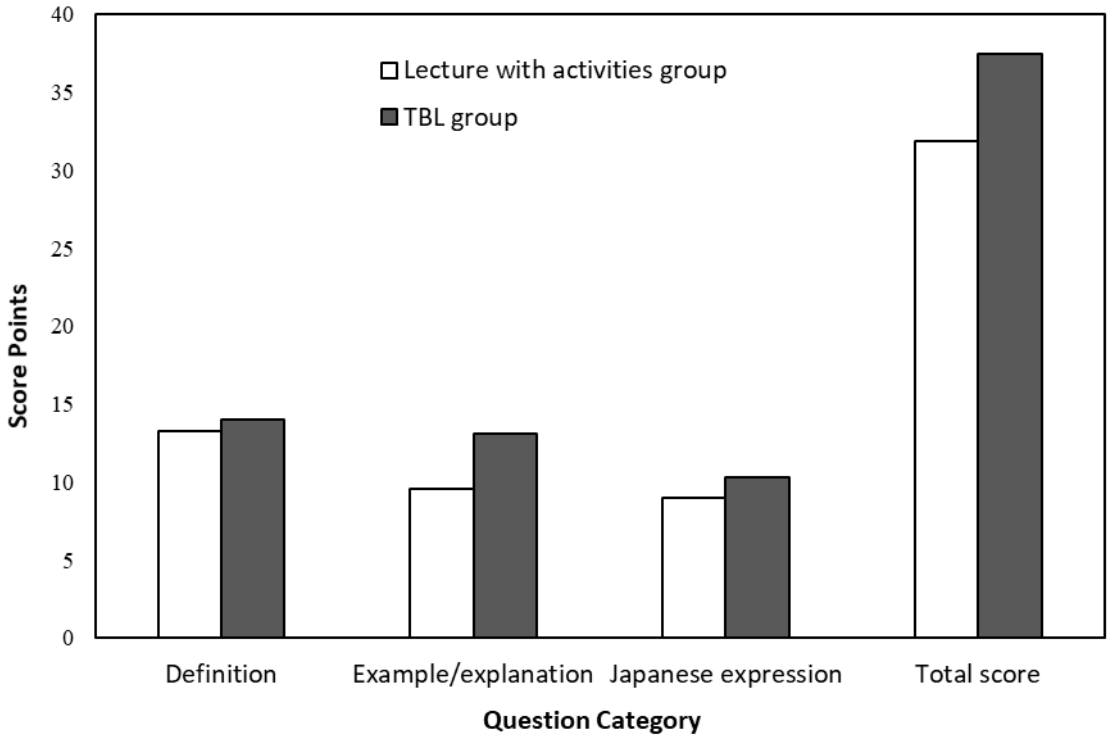
Adjusted Means and Standard Errors for Each Question and Category

Category	Lecture with activities group	TBL group	*F* value (*df*)
	AM (SE)	*AM (SE)*	
Definition	13.28 (0.68)	14.05 (0.92)	00.45 (1, 39)
Example/explanation	9.60 (0.62)	13.13 (0.84)	11.43** (1, 39)
Japanese expression	9.01 (0.41)	10.33 (0.55)	03.70† (1, 39)
Total score	31.89 (1.62)	37.50 (2.12)	04.27* (1, 39)

**$p < .01$ *$p < .05$ †$p < .10$

Figure 4.2

Test Scores Comparison



4.3.2 Anonymous Class Questionnaire

Table 4.4 presents the descriptive statistics for preparation and review time, class manners, note-taking behavior, and concentration in class, based on the 33 participants' responses. No ANCOVA was performed on these data, because they were anonymous and the covariate (GPA) details were not identifiable.

Table 4.4

Means and Standard Deviations for Each Question Item of the Anonymous Class Questionnaire

Item	Lecture with activities group (n = 21)	TBL group (n = 12)
	M (SD)	*M (SD)*
Preparation/review time	0.95 (1.17)	1.50 (1.00)
Class manners	4.52 (0.60)	4.58 (0.67)
Note-taking behavior	4.33 (0.48)	4.33 (1.15)
Concentration in class	4.52 (0.51)	4.25 (0.87)

4.3.3 Open-Ended Questionnaire

Twelve participants in the TBL group responded to the questionnaire. A mean of 17.17 (*SD* =13.90) was obtained for the question, "If the average amount of study time spent for other courses is 10, what is the amount of study time spent for this course?" Thus, the students seemed to feel that they had studied about 1.7 times more than for other classes. Among the 67 analysis units, 50 were related to the analysis theme of

clarifying TBL's effects on conceptual understanding and learning motivation for the five open-ended questions. As a result of the analysis, 15 concepts and four categories were obtained, as shown in Table 4.5.

Table 4.5

TBL's Effects on Conceptual Understanding and Learning Motivation

Categories	Concepts	Frequency	Examples
Positive reaction to conceptual understanding	Good evaluation for class procedures and contents in general	3	・I learned a lot and it was easy to understand.
	Good evaluation for teaching materials	4	・I could understand the contents after reading the textbook a few times, so it was not too difficult and not too easy.
	Good evaluation for group work	1	・When I presented my opinion in writing (quizzes) and group work, I could sort out my thoughts, and by listening to the opinions of the others (the opinions different from mine), my thoughts changed and spread.
	Good evaluation for quizzes	2	・As a quiz was provided for each class, a preparation- lesson contents-review cycle was created, live lessons were made, and the contents were connected to the next class.
Negative reaction to conceptual understanding	Requests/dissatisfaction with the overall class procedure/contents	2	・Since I could not understand what you said immediately, I wanted you to explain it through handouts and pictures. I wanted you to make it easy to understand visually.
Positive reaction to learning motivation	Good evaluation for class procedures and contents in general	9	・I was able to attend the class without feeling any distress, because the teaching style did not make me feel forced to prepare and review. ・Every class was fun. The teaching style was good and I got a good sense of accomplishment in each class.
	Good evaluation for teaching materials	1	・I think it was good. There were many technical terms, but it was a textbook that was worth studying.
	Good evaluation for group work	10	・It was not just a class where I just listen to the teacher, like normal classes. We all had discussions so it was good. I felt more participation in the class. ・I felt like I could not bother other people, because it was a group study, so I worked hard.
	Positive evaluation for clear tasks	1	・It was good that I was given the task and thought that I had to do it, and actually did it.
	Improvement in learning interest	7	・I do dictation in only one field, but should I do it in various fields evenly, in order to improve my English? ・It is important to listen to and read English, but what kind of English is the most effective for listening?
	Improvement in learning motivation	2	・I thought I wanted to improve my English skills during the summer vacation.
	Promotion of learning behavior	1	・I do dictation of TED on the train. (Of course I also do shadowing and writing.)
Negative reaction to learning motivation	Requests/dissatisfaction with group members	4	・Some students did not prepare and only the same students kept talking in group work.
	Requests for enforcing the rules	2	・I want you to decide the time for "summarizing ideas in a group and discussing as a whole."
	Requests/dissatisfaction with quizzes	1	If I have to say, I'm happier if the test is not a written one.
	Total	50	

Note. $n = 12$.

4.4 Discussion

4.4.1 TBL's Effects on Conceptual Understanding

The results of the examinations showed that incorporating TBL promoted conceptual understanding. In particular, high effects were obtained for the specific examples or detailed explanations category. There are two possible reasons for these results. First, by using TBL, the number of occasions in which the students had to explain the concepts to others increased, compared to the lecture method. When a participant only explained the definition, it was often difficult for the other members to understand and as a result, they gave various examples. Giving these explanations possibly promoted their own understanding, as reported in other studies (Fukaya, 2011; Fukaya et al., 2016; Ichikawa, 2000).

Second, perhaps the thorough cycle of preparation → class → review, plus quizzes, also improved their understanding. In the TBL group, as a review task, the students were instructed to prepare themselves to explain the terms used in the class and a quiz was conducted at the beginning of the following lesson. The fact that some participants mentioned the effectiveness of the quiz in the open-ended questionnaire suggests that the quiz was an effective review task. Furthermore, it is worth noting again that the comparison was made between the final examination, in the lecture with activities group (15th class), and the midterm examination, in the TBL group (8th class). Despite having less lecture time, the scores were higher in the TBL group. The class

progress in the lecture with activities group tended to be slow if all the contents were covered during the class. On the other hand, in TBL, more contents could be covered. The results of the open-ended questions also showed many positive responses regarding the TBL lesson design, further strengthening its promotion of conceptual understanding.

4.4.2 TBL's Effects on Learning Motivation

There were no significant differences between the two groups in the class manners, note-taking behavior, and concentration in the class, as measured by the anonymous class questionnaire. The means of these indices were 4.2 or higher in both groups, indicating a possible ceiling effect. In the open-ended questionnaire, the TBL group reported spending approximately 1.7 times the amount of study time compared to the average spent in other classes. These facts suggest that implementing TBL will result in a quantitative change in learning behavior. In addition, an analysis of the open-ended questionnaire shows some effects on learning motivation. Among the "positive reaction to learning motivation" category, the number of specific examples was especially large in "good evaluation for group work," "good evaluation for class procedures and contents in general," and "improvement in learning interest."

Overall, group work had positive effects on learning motivation. Specifically, the awareness of "more participation in the class" and the feeling of not wanting to "bother other people" were two aspects that indicated enhanced learning motivation

(Table 4.5). In addition to the fun that a student may experience by explaining to and discussing with others, the shared task of creating one answer as a group can increase one's motivation to learn. On the other hand, it should be noted that there were also negative responses to learning motivation: "Some students did not prepare and only the same students kept talking in group work." Thus, it would be important to establish a system that encourages each individual's thorough preparation, which is a prerequisite for group work.

Moreover, the teaching procedure and overall TBL content seem to have a positive effect on learning motivation. For example, the following description, "I was able to attend the class without feeling any distress, because the teaching style did not make me feel forced to prepare and review," implies that the procedure and TBL content not only reinforce an individual's learning goal, but also serve as a prerequisite for active participation in group work. In other words, plural factors support learning motivation. However, as another statement noted "I want you to decide the time for 'summarizing ideas in a group and discussing as a whole,'" there is some room for improving the rules to ensure that students can be more motivated to work.

Finally, students' interests in learning improved. As typified by the question "It is important to listen to and read English, but what kind of English is the most effective for listening?" all the examples were questions regarding students' strategies for learning English. This is proof of the direct interest in this course, Second Language

Acquisition Research (Learning English as a Foreign Language).

4.4.3 Study's Significance

This study adopted a TBL approach, which had not been widely reported in practice outside of the medical field in recent years, and examined its effects on conceptual understanding and learning motivation in English language education classes. In particular, rather than reporting the changes before and after one practice lesson, this study offered more objective knowledge by comparing the effects of TBL courses with the lectures and activity-type classes conducted in the previous year. In addition, this study was able to focus on cognitive aspects, whereas previous TBL research has mainly centered on examining changes in emotional aspects, such as the degree of participation in classes and the sense of belonging to a team. Furthermore, the fact that conceptual understanding was better in the TBL group than in the lecture with activities group, although the class time was about half, demonstrates the practical value of the approach.

4.4.4 Limitations and Implications for Future Research

This study has several limitations that offer opportunities for further research. First, there was room for improvement in the rubrics used by the students in the TBL group to score the quizzes and measure their level of conceptual understanding in the

exam. In the TBL group's classes, the students exchanged their answer sheets with others and scored them based on the given rubrics. However, as the open-ended questionnaire revealed, six out of the 11 comments that mentioned the rubrics were negative. For example, the following two answers, "There were times when I didn't understand the class, which made it difficult to evaluate" and "I felt other students interpreted the rubrics differently," indicate evaluation difficulties and suspicions regarding the validity of the rubrics. In addition, the degree of coincidence between the two evaluators, the graduate student and I, was not very high. As rubrics have attracted attention in recent years, improving the accuracy of their measurements is essential in educational practice.

Second, not one part of the TBL practice can fully explain the results obtained in this study. I considered conceptual understanding as an aspect of scholastic ability, due to the nature of acquiring basic specialized knowledge in English language education. To promote such an ability, I employed the basic TBL procedure, suggested by Michaelsen and Sweet (2008), and Suno et al. (2013), and incorporated a written quiz as a review task. Although the class practice had a great effect on promoting the understanding of the concepts as a whole, similar results could possibly have been obtained even if the class was not in the TBL style and just used the written quiz. In the future, it will be necessary to carefully examine the process of how the TBL group activities are influenced by incorporating the quiz in the written form and as a result,

how academic achievement improves.

Chapters 5 and 6 will focus on the process of how conceptual understanding and learning motivation develop in TBL by qualitatively analyzing the students' interview responses. Then, Chapters 7 and 8 will introduce TBL into an English Linguistics course without the review quiz. By comparing those results with the ones in this chapter, this dissertation aims to better pinpoint the individual effects of TBL.

Chapter 5

Process of Conceptual Understanding and Learning Motivation Development: Study 2

In Study 1 (Chapter 4), I introduced TBL into Second Language Acquisition Research classes, and examined its effects on conceptual understanding and learning motivation. Then, I compared these TBL classrooms to the lecture with activities classes that covered the same topics the previous year. Although TBL increased learners' conceptual understanding and learning motivation more than the lecture with activities method, it remained unclear which part of the TBL practice contributed to the results. As previously noted, TBL has several procedures and contents that are not involved in the lecture with activities class, such as preparation prerequisites, the tRAT, and discussions with other members.

Shimpuku et al.'s (2014) series of studies present some insights regarding this issue found in Study 1. Through open-ended questionnaires, their qualitative study collected TBL opinions and impressions from students who had completed their nursing training. The results revealed that the students were initially confused with the unfamiliar learning method. However, they gradually felt the need to review it, a sense of fulfillment, and a sense of accomplishment from enhancing each other within the team. These studies are valuable as they carefully analyzed and successfully reported

how learners' mental aspects change with qualitative methods. In order to resolve the pending issues in Study 1, the development process of conceptual understanding needs to be examined as well as the above mental aspects. The examination also must be carried out in specialized English language education courses.

5.1 Study Purpose

This study aimed to examine the effects of introducing TBL on the development of conceptual understanding, and reveal the process by which conceptual understanding and learning motivation are developed. In Study 2a, TBL was introduced to different students and the effects were compared with those in Study 1 to confirm the results. Then, Study 2b conducted semi-structured interviews with the students, aiming to elucidate the process of how TBL develops conceptual understanding and learning motivation.

5.2 Study 2a: Reexamining TBL's Effects on Learning

5.2.1 Method

5.2.1.1 Participants

The participants were 50 undergraduate students from the same faculty and university as those in Study 1, who had opted to take the same elective course (Second Language Acquisition Research). Of these students, only those who attended

three-quarters or more of the classes up to the exam date were eligible. As a result, the previous lecture with activities group (academic year 2015) sample now consisted of 25 participants and the TBL group (academic year 2016) contained 13 participants. The new TBL group (academic year 2017) had 12 participants.

5.2.1.2 Course Overview

As with Study 1, I taught the lecture with activities group and the two TBL groups using different teaching methods. The textbook written by Shirai (2012), 『英語教師のための第二言語習得論入門』 (*Introduction to Second Language Acquisition Theory for English Teachers*) was used for all three groups. The syllabi of each group are shown in Table 5.1.

Table 5.1

Course Syllabi

Group	Lecture with activities group (Academic year 2015)		TBL groups (Academic years 2016 and 2017)	
Class time	Content	Textbook page	Content	Textbook page
1st	Guidance		Guidance	
2nd	SLA and English language education	p. 7	Advantages of bilingual, individual differences, and motivations	～p. 12
3rd	Age factors and filter by L1	～p. 12	Effective learning methods based on SLA research	～p. 28
4th	Individual differences and aptitude in foreign language learning	～p. 20	What is the essence of language acquisition?	～p. 50
5th	Relationship between motivation and learning	～p. 26	Effective learning/teaching methods for foreign languages	～p. 64
6th	Effective learning methods based on SLA research	～p. 29	Current situation in Japan	～p. 78
7th	Krashen's input hypothesis ①	～p. 36	Review	
8th	Krashen's input hypothesis ②	～p. 44	**Mid-term examination**	
9th	Summary (from SLA research to English language education in Japan)	～p. 50	Return of mid-term exam papers and the future of elementary school English education	～p. 96
10th	Effective learning/teaching methods for foreign language ①	～p. 52	The future of junior high school English education	～p. 108
11th	Effective learning/teaching methods for foreign language ②	～p. 60	The future of senior high school English education	～p. 128
12th	Combination of input and output	～p. 64	English education for college students and adults ①	～p. 136
13th	Think micro: Application of SLA research in class	～p. 69	English education for college students and adults ② and review	～p. 145
14th	Thinking macro: Teacher training and entrance examinations	～p. 78	Final examination	
15th	**Final examination**		Summary: Return of final exam papers and explanation of final assignment	

Note. SLA = Second Language Acquisition. The content and page numbers refer to Shirai (2012).

In the lecture with activities group, the first 78 pages of Shirai (2012) were covered by the 14th class, whereas in the TBL groups, the same number of pages were completed

by the 6th class, and the whole textbook (145 pages) was covered by the 13th class. Therefore, the scope of the final exam in the lecture with activities group and the midterm examination in the TBL groups was the same. Additionally, please view sections 4.2.2.1 Lecture with Activities Group and 4.2.2.2 TBL Group for the contents and procedures for each group.

5.2.1.3 Measurement of Variables

I used the same six questions to measure conceptual understanding (Please refer to 4.2.3.1 Conceptual Understanding). To assess study time, the participants in the 2017 TBL group were also asked to respond with a number to the question: "If the average amount of study time spent for other courses is 10, what is the amount of study time spent for this course?" Finally, I calculated the GPAs for all the subjects that the participants took the previous year. The average GPA was 2.86 for the lecture with activities group, 2.80 for the TBL group 2016, and 2.98 for the TBL group 2017, $F(2, 47) = .20$, $p = .82$. I again applied ANCOVA models using the GPA as a covariate in the quantitative group comparison of the dependent variables to control the conditions and ensure that all participants had the same academic ability (see Chapter 3).

5.2.2 Results and Discussion

5.2.2.1 Conceptual Understanding

Table 5.2 shows the means of each group for each question. Please refer to 4.3.1 Conceptual Understanding for the process of calculating the scores for the six questions, their division into three categories, and guidance for interpreting the results.

Table 5.2

Mean Scores and Standard Deviations for Each Question and Category

Category	Lecture with activities group (n = 25)	TBL group 2016 (n = 13)	TBL group 2017 (n = 12)
	M (SD)	*M (SD)*	*M (SD)*
Definition	14.00 (4.50)	14.62 (3.25)	15.21 (2.96)
Example/explanation	10.04 (4.01)	13.58 (4.16)	14.67 (3.51)
Japanese expression	9.44 (2.72)	10.69 (2.23)	10.04 (2.03)
Total score	33.48 (10.89)	38.88 (9.30)	39.92 (8.27)

The means of the test scores for each group are shown in Table 5.2 and Figure 5.1. Two orthogonal contrasts (Haebara, 2014) were conducted for the definitions, specific examples or detailed explanations, Japanese expressions, and total scores for the six questions. The first contrast was the teaching method, in which the coefficients of –2, 1, and 1 were assigned to the lecture with activities group, TBL group 2016, and TBL group 2017, respectively. The second contrast was the academic year in which TBL was introduced, and the three groups were assigned coefficients of 0, –1, and 1, respectively.

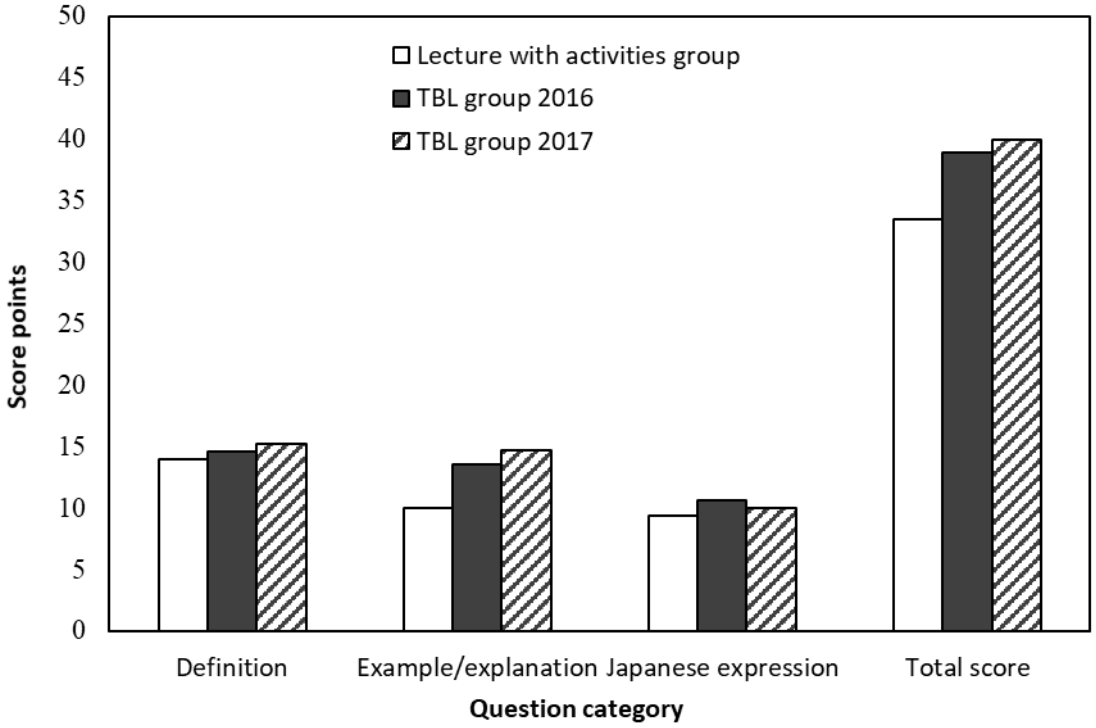
As a result, it was possible to examine the effects of TBL and their differences depending on the implementation year. In these analyses, the GPA of the previous year was used as a covariate.

In the total score, the main effect of the teaching method contrast was significant, $F(1, 46) = 5.29$, $p < .05$. In other words, the two TBL groups scored higher than the lecture with activities group. For specific examples or detailed explanations, the main effect of the teaching method comparison was significant, $F(1, 46) = 15.99$, $p < .01$. Again, the two TBL groups scored higher. There were no significant main effects regarding the contrast of the teaching method in the definition, $F(1, 46) = .72$, *ns*, or Japanese expressions, $F(1, 46) = 2.04$, *ns.* Finally, for the contrast in the academic year, there were no significant main effects on the total score, $F(1, 46) = .00$, *ns*, definition, $F(1, 46) = .01$, *ns*, specific examples or detailed explanations, $F(1, 46) = .21$, *ns*, or Japanese expressions, $F(1, 46) = 1.16$, *ns*.

These results indicate that, following Study 1 (Chapter 4), TBL can promote conceptual understanding. In particular, the same high effect was obtained for the specific examples or detailed explanations category. Thus, this study succeeded in reproducing the results showing that incorporating TBL into the lesson design enhances conceptual understanding and helps the teacher cover the learning contents at a faster rate.

Figure 5.1

Test Scores Comparison



5.2.2.2 Study Time

Based on the questionnaire responses of the 12 participants in the TBL group 2017, a mean of 18.33 (*SD* =15.12) was obtained for the question: "If the average amount of study time spent for other courses is 10, what is the amount of study time spent for this course?" The students felt that they had studied about 1.8 times more than for their other classes, compared to the TBL group 2016 in Study 1, who felt it was 1.7 times more.

5.3 Study 2b: Process of Enhancing TBL's Learning Effects

5.3.1 Study Purpose

The main purpose of Study 2b was also to examine the effects of introducing TBL on the development of conceptual understanding, and reveal the process by which conceptual understanding and learning motivation are developed. For that purpose, the following three research questions (hereafter RQ) were posed:

RQ1: How does group work promote conceptual understanding and learning motivation?

RQ2: What individual factors of the learners permit the proper functioning of group work?

RQ3: How are learners influenced by others in the group?

5.3.2 Method

In order to capture a broad range of learners' experiences in TBL and clarify their meaning, a qualitative research method using semi-structured interviews was adopted. The interviews were held between July (slightly before the end of the semester) and October 2017.

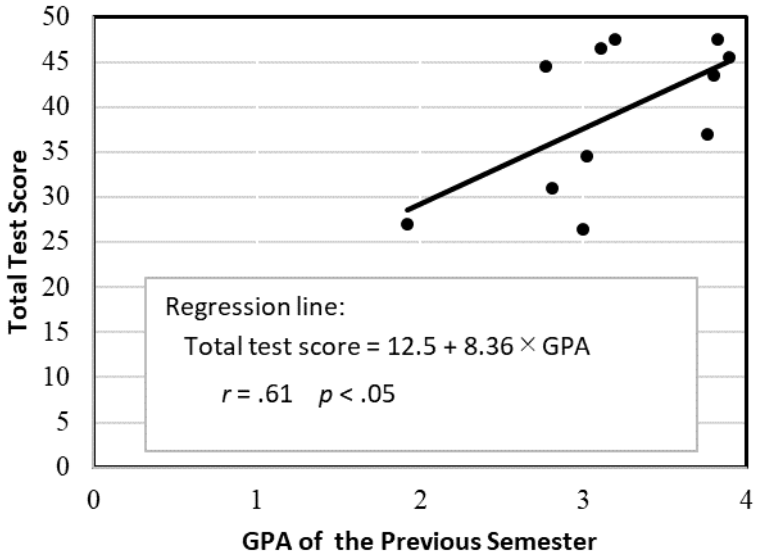
5.3.2.1 Participants

The students who took the Teaching Research for Second Language (Learning

English as a Foreign Language) taught in the TBL style in 2017 participated in the interviews. Among the students, six were sampled based on the following procedure in order to add diversity in the adaptability to TBL. After excluding an outlier, a simple regression analysis was performed to predict the total score of conceptual understanding from the previous year's GPA. Based on the result of this analysis, the following students were asked to participate in the interview (Figure 5.2): two students (A and B) who had almost the same value of conceptual understanding as the predicted value from the GPA, two other students (C and D) with a higher conceptual understanding value than the predicted value, and another two students (E and F) with a lower value than the predicted one.

Figure 5.2

Scatter Plot and Regression Line: Total Test Score With the Previous Semester's GPA



5.3.2.2 Ethical Considerations

I explained the purpose and contents of the study to the participants and informed them that participation was voluntary. They were also informed that their voices would be recorded during the interviews and their words transcribed. Finally, I assured them that their personal information would be strictly protected and kept confidential in my office.

5.3.2.3 Question Items

The participants were asked 10 questions. Questions 1 to 5 concerned their group work experience in TBL and questions 6 to 10 aimed to clarify the meaning of group work.

1. What kind of experience was the group work?
2. How did you feel about group work?
3. What were the important points in group work?
4. Have any changes occurred from the beginning to the middle and at the end?
5. What was the most impressive element?
6. What does group work mean?
7. Do you want to continue group work?
8. Do you want to do group work in other classes?
9. What are the positive and negative points of group work?

10. Are there any points that could be improved?

5.3.2.4 Analysis Method

The analysis was performed based on the procedure explained below, partially using the Modified Grounded Theory Approach (M-GTA). The M-GTA was applied, because it is suitable for research investigating social interactions and their processes in the human service fields, the analysis procedure is clear, and it is possible to generate a theory that is closely related to a specific field (Kinoshita, 2003).

5.3.2.5 Analysis Procedure

All interview data were transcribed verbatim into the protocol and the subsequent analysis was performed using the following procedure.

1. Read the data.
2. Set the analysis themes based on RQ1–3. The analysis themes were (a) the function of group work, (b) the individual factors that allow the group work to function properly, and (c) the influence of other members in the group.
3. Extract specific examples. Focusing on the parts related to the analysis themes from the protocols, I extracted specific examples of the concepts.
4. Interpret the concepts. In the interpretation, I generated the concepts while considering the answers to the analysis themes.

5. Examine the concepts. I examined the validity of the concept names in relation to other data and revised them as necessary. I followed these steps, while simultaneously creating analysis worksheets (Kinoshita, 2003; Appendix D).
6. Generate categories. When several concepts were generated, I examined their relationships.
7. Create a paradigm model.

5.3.3 Results

Table 5.3 summarizes the concepts generated based on the (a), (b), and (c) analysis themes. Below are detailed explanations about each concept in the diagram model (Figure 5.3). Concept names are enclosed in square brackets [ ].

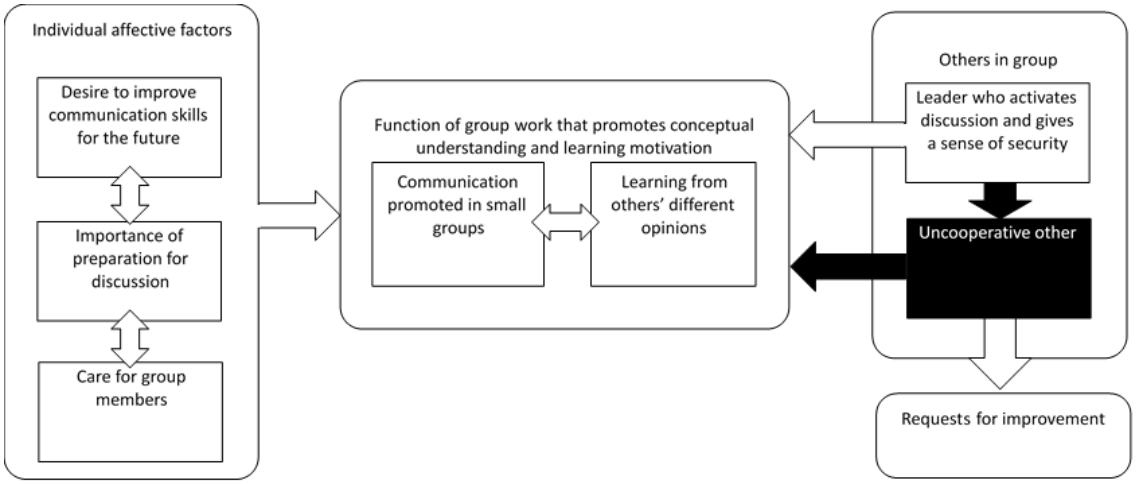
Table 5.3

Categories, Concepts, Definitions, and Examples

Categories	Concepts	Definitions	Examples	Frequency					
				A	B	C	D	E	F
Function of group work that promotes conceptual understanding and learning motivation	Communication promoted in small groups	Lowering mental thresholds and promoting familiarity with communication and a sense of enjoyment in a small group activity	It was also a place to exchange opinions, but I was very nervous when I presented my opinion in front of a large number of people in the class. When I had a small number of people, it was easy to give an opinion, and it seemed there were others who thought that way. So, it was easier to exchange opinions actively. (Learner A) Ah, I didn't know most of the people, and there were a lot of people who I hadn't talked to, so there was a lot of silence, but in the end I made good friends and there wasn't much silence, so it was a lot of fun. (Learner F)	2	1	2	2		6
	Learning from others' different opinions	Learning from different opinions of others in the group and feeling its significance and enjoyment	Somehow, I could see how narrow I am, or how can I say ... (laughter). I like listening to how different people see and think. So it was great to know that it's like "Oh, there is also such a way of thinking" or "Oh, there is also such a way of looking at things," it's not exciting, but it's fresh and fun. (Learner A) It is very effective when thinking, because I can incorporate the good things in my opinion based on the opinions of others. (Learner E)	5		3	2	3	
Individual affective factors	Care for group members	Respecting and listening carefully to others, and speaking spontaneously, when silence is likely to occur, for a better group atmosphere and lively discussions	When people were talking ... well, it's obvious, but when people were talking, I tried to listen to them properly, or I tried not to make the air get so bad that I felt like the people in the group didn't like it. Like I kept in mind, somehow, that I, someone else wouldn't feel like, "No, I'm still talking" with the other person. (Learner C) Well, if I didn't say my opinion, the group would be silent, so I tried to say my thoughts as much as possible. (Learner F)	3		1		1	1
	Importance of preparation for discussion	Preparing with the thought that it is important for contributing to the group and a more meaningful discussion, and feeling guilty when unable to do so	Oh, it does change, after all. I think I wouldn't have studied unless I had group work. (Learner F) I don't mean that I read the book really seriously, but I'm not saying that I never read it, and about my opinions, I tried to be able to answer with reasons, like this is so because of that. In the beginning, I hadn't read it once, but when everyone else was prepared, I answered, "Well, I wonder maybe is this it?" So I was sorry for that. (Laughter) Someone else was also like, "Oh, I felt like that too," so I thought it wasn't good. (Learner C)	2		2	2		4
	Desire to improve communication skills for the future	Recognizing the needs of communication skills in the envisioned path in the future and wanting to improve them	Thinking about a recruitment test ... (I want to do group work). (Learner A) After all, when I go out into society, though I have done like a lot of meetings like club activities, but when I go out into society, there will be more and more jobs involving that stuff, though there are jobs not involving the stuff, there are many people who are involved, aren't there? And because I also want to get a job that values such group work, so I want to work... want to take what I think is good, great about others, and I think it will be great learning, so I want to continue. (Learner E)	1			3	1	
Others in group	Leader who activates discussion and gives a sense of security	Activating discussions and allowing learners to tackle tasks with confidence due to the presence of others with a leadership role	There is a fourth-year senior in the group. Then, I wondered how I should talk to other third-year students, ah, I'm sorry, second years that I haven't talked to, so at first we were pretty silent. But ... But the fourth-year senior did a great job, so maybe we were able to exchange opinions more actively recently. (Learner A) She has a very clear opinion. I thought she was thinking a lot about what she was saying. Well, it's kind of reliable. I depended on her. I depended on her. Yes. (Learner F)	2			1		2
	Uncooperative other	Feeling disappointed and unfairly treated about not having deep discussions because of a lack of preparation by others	If I talk to someone who hasn't done it, she just says like, "I haven't read it, I don't know," "What do you mean?" so she just asks me what I know ... I want to learn with people who understand it, but if they ask me what I know, it doesn't help me. (Learner B) Well, I thought that they didn't read the book. When I heard them making an opinion, I wondered with what kind of viewpoint they were choosing the answer, but they just picked it saying it just fits and ended with no learning. That was especially impressive. (Learner E)	10	3	1	7		
Request for improvement	Requests for improvement	Making requests for improving discussions and eliminating dissatisfaction	Well, you might want to deepen the questions a little further so we can't get them unless we read the book. (Learner C) Well, I don't know how to do it, but when I'm in a group, I want you to see who is doing it and who isn't doing it. But even so, I don't know if you see me, so I get worried sometimes... I want you to make it clear that you are seeing me. (Learner B)	1	1	1	2		

Figure 5.3

Paradigm Model



Note. A square without corners represents a category, and a square with corners represents a concept. Arrows indicate that they influence each other. The dark color represents an inhibiting factor/direction and the white color indicates a promoting factor/direction.

5.3.3.1 Function of Group Work

The learners first experienced [communication promoted in small groups] and felt less tense, because the number of people was small, which encouraged them to speak up. They became accustomed to communicating with others and simultaneously found it fun. Many learners experienced the process of promoting learning motivation through interactions with others, which represents a general function of group work. Learners also gained the concept of [learning from others' different opinions] through group work. They became aware of others' different perspectives and ideas, experienced

fresh view points, enjoyed the process, and learned to accept others. Many also mentioned processes of deepening conceptual understanding, considered a general function of group work. However, they implied that this preferable function can be inhibited depending on the conditions, as explained later.

5.3.3.2 Individual Factors Contributing to Proper Group Work Functioning

By having the [desire to improve communication skills for the future], the learners seemed to have found meaning in experiencing the group discussions. Their ambition tended to be stronger if they could envision scenarios in their future that required specific communication skills. They recognized the [importance of preparation for discussion], because it is necessary to actively participate in discussions to experience active communication. Nevertheless, the learners did not always prepare thoroughly for the discussions and sometimes regretted not being prepared enough to contribute to the group. For example, some noted regretting that they could not speak and defuse the situation when there was a long silence within the group. After such an experience, they became keenly aware of the consequences of their lack of preparation on others. This is how [care for group members] emerged. Other learners pointed out the importance of listening to and accepting what others said when the discussion became active.

5.3.3.3 Impact of Others

The behavior of others had significant effects on group work. First, a [leader who activates discussion and gives a sense of security] promotes the function of group work to enhance conceptual understanding and learning motivation. The learners frequently mentioned the senior students (*Senpai*), as dependable persons who could lead discussions and be role models for the majority of the students. With regards to this, most students were in their second year, but a few had studied abroad for a year and took the course in their third year. When there was such a leader in the group, the moderator function seemed to strengthen and the group members gained a sense of security.

On the other hand, recognizing an [uncooperative other] created strong dissatisfaction. This "other" suppressed [learning from others' different opinions], because they did not provide different perspectives. Furthermore, as each individual's disappointment increased with regard to the lack of [learning from others' different opinions], the function of [communication promoted in small groups] also seemed to stop. Well-prepared learners gave up trying to interact if they felt that there was no learning.

5.3.3.4 Requests for Improvement

Many requests for improvement were mentioned in the context of the

aforementioned [uncooperative others] based on feelings of dissatisfaction with the lack of discussion and unfairness, as individual contributions could not be properly evaluated. In addition, some hypothetical directions were also suggested. Specifically, these included making the classes more difficult and deeper to encourage preclass preparation, instructing students to present class discussions with clearer reasons, and fairly evaluating their contributions.

5.4 Discussion

The results of Study 2a showed that TBL promoted conceptual understanding. In particular, high effects were obtained for the specific examples or detailed explanations category. These results were consistent with those of Study 1, indicating the robustness of TBL's effects. Study 2b qualitatively analyzed the process of how TBL helps develop conceptual understanding and learning motivation. The concepts were generated based on specific interview responses, the categories emerged while examining their validity, and relationships were analyzed to create the diagram model.

In order to foster conceptual understanding and learning motivation, [communication promoted in small groups] and [learning from others' different opinions] have an interacting relationship. Also, affective factors, such as the [desire to improve communication skills for the future], [importance of preparation for discussion], and [care for group members], influence the smooth functioning of group work. Group

work is especially fostered when the group has a [leader who activates discussion and gives a sense of security], whereas the presence of an [uncooperative other] is inhibitive and triggers [requests for improvement].

5.4.1 Effects on Conceptual Understanding

The results of Study 2a indicate that TBL encourages conceptual understanding through the process of offering specific examples or detailed explanations. Study 2b suggests that [learning from others' different opinions] is directly related to the promotion of conceptual understanding. Similar to Fukaya et al. (2016), Fukaya (2011), and Ichikawa (2000), Study 1 implies that explaining to others promotes self-understanding, but no concepts were formed to support these findings in Study 2b. On the contrary, in the specific example of an [uncooperative other], learner B said:

> If I talk to someone who hasn't done it, she just says like, "I haven't read it, I don't know," "What do you mean?" so she just asks me what I know […] I want to learn with people who understand it, but if they ask me what I know, it doesn't help me.

Fukaya et al. (2016) argued that if a tutor does not check the tutee's understanding of the explanations and teaches fragments of knowledge or procedural solutions through one-way instruction, the effectiveness of peer tutoring does not increase. They suggested that tutors teach the relations between knowledge components interactively

with their tutees. However, the group work in this study was premised on preclass preparation and when an [uncooperative other] who had not prepared was present, learners experienced emotional discomfort as shown in the specific examples. In order to adopt Fukaya et al.'s (2016) proposal, all group members must meet the minimum requirements for peer tutoring, that is, thorough preparation for the class.

5.4.2 Effect on Learning Motivation

According to Study 2a and Study 1, learners taught via TBL perceive themselves as spending more than 1.7 times the amount of study time compared to other classes. If we consider the amount of study time as a behavioral indicator of learning motivation, TBL is thought to promote learning motivation. Study 2b depicts the process with which the interaction between [communication promoted in small groups] and [learning from others' different opinions], influenced by their own affective factors and those of others in the group, becomes the main factor affecting learning motivation, as shown in the diagram model. The fact that TBL has a positive effect on factors closely related to learning motivation, such as class participation, is also indicated in Mennenga (2013), Cheng et al. (2014), Suno et al. (2013), and Tokoro (2016).

Regarding [communication promoted in small groups], learner F elaborated on the process as follows:

Ah, I didn't know most of the people, and there were a lot of people who I

hadn’t talked to, so there was a lot of silence, but in the end I made good friends and there wasn’t much silence, so it was a lot of fun.

This finding is consistent with Shimpuku et al.’s (2014) results, reflecting the initial stage of discomfort that eventually leads to a sense of achievement. Furthermore, Study 1 highlighted that although TBL had high learning effects, it was possible that the review quiz, introduced at the same time, contributed to these effects. On the other hand, Study 2b did not suggest that the quiz encouraged study time and learning motivation. Rather, as [importance of preparation for discussion] shows, when TBL is functioning properly, the learners contribute to the group and recognize that preparation is important to make the discussions more meaningful. While it would be bold to conclude that the quiz had no effects, this fact implies that the main procedure and content of TBL can be useful to devise ways to motivate learners and encourage their actions.

5.4.3 Limitations and Future Research

This study involved incorporating TBL into classroom practice in the field of English language teaching, and examined the processes that promoted learners’ conceptual understanding and learning motivation, which Study 1 had left unexamined. In particular, this study succeeded in elucidating the actual learning situation of TBL in further detail, using a qualitative method based on the quantitative study results. The findings have practical value in that they have the potential to be applied not only to

TBL classes, but also to other different forms of group work.

However, this study still has one unresolved problem that future studies can explore: the *free rider.* Study 2b highlighted the presence of an uncooperative other or a free rider, who suppressed the basic function of group work, the promotion of conceptual understanding, and learning motivation. These free riders have also previously been regarded as a problem for active learning (Yukawa et al., 2016). In addition, as shown through the specific example in [requests for improvement], there is room to reconsider evaluation fairness, and task difficulties and depth.

It is worth noting that, as shown in the number of concepts in the list, when there is a [leader who activates discussion and gives a sense of security] in the group, there are almost no [uncooperative others]. This has two practical implications. One is the effectiveness of intentionally incorporating a learner with leadership qualities while forming the groups. The other is the potential to scrutinize the requirements of this leader. If we know the requirements, teaching them to the group members can nurture a learner with leadership who can enhance the function of group work.

The next chapter will introduce a study that added an intervention to strengthen members' role awareness for the purpose of solving the free rider problem and seeking a form of group work that better promotes the functions of TBL.

Chapter 6

Addressing “Free Riders”: Study 3

The results of Study 2 (Chapter 5) confirmed those of Study 1, that TBL promotes conceptual understanding and learning motivation. The qualitative analysis illustrated the learning process in group work, but also that learning is suppressed when there is an uncooperative member or a free rider. Specifically, if there is a [leader who activates discussion and gives a sense of security] among the group, the function of group work is promoted, while if there is an [uncooperative other], it is suppressed. Based on these results, Study 2 emphasized finding a solution for the free rider problem, a recognized issue in active learning (Yukawa et al., 2016). As a suggestion to resolve this, Study 2 focused on the fact that when there was a leader within the group, there were almost no [uncooperative others]. This can be implemented via two routes: (a) intentionally incorporating a learner with leadership when forming groups or (b) educating group members to help them enhance the function of group work after carefully examining the requirements of the aforementioned leader.

6.1 Study Purpose

The purpose of this study was to overcome the problem of free riders, and further improve learners’ conceptual understanding and learning motivation in TBL in a

university-level course in the field of English language education. Specifically, based on the two routes mentioned above, I requested that a research assistant serve as a group work moderator in the early stage of the course and midway onwards. I assigned each group member a role, such as the moderator, first presenter, and second presenter. This way, even if none of the group members initially knew how to fulfil their given role, they were able to learn through observations. It could also help curb their hesitancy to take on these roles.

The rest of this study is organized as follows. Section 6.2 will explain this class practice. Section 6.3 will offer a quantitative analysis to compare this practice with those of the previous years and a self-assessment questionnaire that aims to explore the possible presence of free riders. Section 6.4 will examine, through a qualitative analysis, whether role assignment can prevent free riders, as well as reexamine how TBL develops conceptual understanding and learning motivation.

6.2 Class Practice

6.2.1 Participants

The participants in this study were 65 undergraduate students from the aforementioned faculty and university, and who took the same elective course as those in the previous studies. The time span for this study was between the academic years 2015 and 2018. Only the students who took the examination and attended three-quarters

or more of the number of class days up to the examination date were eligible. As a result, the lecture with activities group consisted of 24 participants, who took the course in the academic year 2015. The TBL group had 25 participants, who took the course in 2016 and 2017, and the new TBL group with role assignment had 16 participants, representing those who took the course in 2018.

6.2.2 Course Overview

I taught the course in all the academic years using different teaching methods, as previously mentioned. Shirai's (2012) texbook was employed for the new group as well and the 2018 TBL group also followed the same syllabi (Table 6.1) as the previous TBL groups.

Table 6.1

Course Syllabus

Lecture with activities group (Academic year 2015)			TBL groups (Academic years 2016–2018)	
Class time	Content	Textbook page	Content	Textbook page
1st	Guidance		Guidance	
2nd	SLA and English language education	p. 7	Advantages of bilingual, individual differences, and motivations	～p. 12
3rd	Age factors and filter by L1	～p. 12	Effective learning methods based on SLA research	～p. 28
4th	Individual differences and aptitude in foreign language learning	～p. 20	What is the essence of language acquisition?	～p. 50
5th	Relationship between motivation and learning	～p. 26	Effective learning/teaching methods for foreign languages	～p. 64
6th	Effective learning methods based on SLA research	～p. 29	Current situation in Japan	～p. 78
7th	Krashen's input hypothesis ①	～p. 36	Review	
8th	Krashen's input hypothesis ②	～p. 44	**Mid-term examination**	
9th	Summary (from SLA research to English language education in Japan)	～p. 50	Return of mid-term exam papers and the future of elementary school English education	～p. 96
10th	Effective learning/teaching methods for foreign language ①	～p. 52	The future of junior high school English education	～p. 108
11th	Effective learning/teaching methods for foreign language ②	～p. 60	The future of senior high school English education	～p. 128
12th	Combination of input and output	～p. 64	English education for college students and adults ①	～p. 136
13th	Think micro: Application of SLA research in class	～p. 69	English education for college students and adults ② and review	～p. 145
14th	Thinking macro: Teacher training and entrance examinations	～p. 78	Final examination	
15th	**Final examination**		Summary: Return of final exam papers and explanation of final assignment	

Note. SLA = Second-Language Acquisition. The content and page numbers refer to Shirai (2012).

In the lecture with activities group, the first 78 pages of Shirai (2012) were covered by the 14th class, whereas in the TBL groups, the same number of pages were

completed by the 6th class, and the whole textbook (145 pages) by the 13th class. Therefore, the scope of the final examination in the lecture with activities group and the midterm examination in the TBL groups were the same. For the specific contents and procedures for the respective groups, refer to sections 4.2.2.1 Lecture with Activities Group and 4.2.2.2 TBL Group.

For the academic year 2018, the research assistant joined the groups to serve as a moderator in the 2nd and 3rd classes (step 5, p.37). In the 4th and subsequent classes, the group members' roles were decided via lottery, after step 3 (p. 36). Specifically, at step 5, the roles of moderator and first to fourth presenters, serving as group representatives (in a team of five), were assigned. For example, when a teacher asked a question, such as "Other groups chose (a), but why did your group choose (b)?" the group member assigned as the first presenter would be required to answer first. For the next question that the group was asked, the second presenter would have to answer and so on.

6.3 Quantitative Analysis of Class Practice: Analysis 1

6.3.1 Measurement of Each Variable

In Analysis 1, I attempted to quantitatively examine the improvement effects of group members' role assignment by comparing the test scores and study time with those of the previous years. I also aimed to detect the presence of free riders via a

self-evaluation questionnaire. For this analysis, the following variables were measured.

6.3.1.1 Conceptual Understanding

Once more, please refer to 4.2.3.1 Conceptual Understanding for a detailed overview on the six questions used to measure students' degree of conceptual understanding. As noted in 4.3.1 Conceptual Understanding, all six questions were further divided into three categories and once more, the graduate student and I independently performed the measurements, with a resulting match rate of 82.0%. As I was aware of the strong desire for class improvement, our average scores were used for analysis to minimize the potential bias.

6.3.1.2 Study Time

After the final examination, the new participants were asked to respond with a number to the same related question: "If the average amount of study time spent for other courses is 10, what is the amount of study time spent for this course?"

6.3.1.3 Free Rider Questionnaire

After returning the final examination, I distributed the Free Rider Questionnaire Survey, consisting of 21 items and five factors (Yamada, 2017). Factor I was motivation (e.g., My interests are more important than earning credits), Factor II was contribution

to the group (e.g., Group members have thanked me), Factor III was sense of defeat (e.g., I felt defeated within the group), Factor IV was homework negligence (e.g., I didn't do my assignment), and Factor V was sense of guilt (e.g., I feel sorry for the members). The participants were asked to respond to the items on a five-point scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). In the measurement, the scores for factors I and II were reversed to permit lower motivation and contribution to the group, and a higher sense of defeat, homework negligence, and sense of guilt to be reflected in the higher total score.

6.3.2 Results and Discussion

6.3.2.1 Conceptual Understanding

Once again, please refer to 4.3.1 Conceptual Understanding for a general guide regarding the interpretation of the results. As in the other studies, I calculated the GPAs for all the subjects the participants took the previous year. The average GPA was 2.90 for the lecture with activities group, 2.80 for the TBL group, and 2.97 for the TBL with role assignment group. However, the results of a one-way analysis of variance (ANOVA) did not show a significant main group effect, $F(2, 62) = .09$, $p = .92$. In order to more strictly control the conditions to ensure that all participants could have the same academic ability (Chapter 3), the GPA was used as a covariate in the contrast analyses for the group comparison of the dependent variables mentioned below.

Two contrast analyses were again conducted for the definitions, specific examples or detailed explanations, Japanese expressions, and total scores for the six questions (Haebara, 2014). The first contrast was the teaching method, in which the coefficients of –2, 1, and 1 were assigned to the lecture with activities group, TBL group, and TBL with role assignment group, respectively. The second contrast was role assignment and the three groups were assigned the coefficients of 0, –1, and 1, respectively. By doing so, TBL's effects and their differences, depending on the presence of role assignment, could be examined.

In the total score, the main effect of the contrasting teaching method was significant, $t(62) = 3.26$, $p < .01$, $r = .38$. The two TBL groups again scored higher than the lecture with activities group. In the specific examples or detailed explanations category, the main effect of the teaching method comparison was significant, $t(62) = 5.56$, $p < .01$, $r = .58$, with the two TBL groups scoring higher once more. There were no significant main effects on the teaching method contrast for definitions, $t(62) = 1.24$, $p = .22$, $r = .16$, or Japanese expressions, $t(62) = 1.61$, $p = .11$, $r = .20$.

For the specific examples or detailed explanations category, the contrast of role assignment was marginally significant, $t(62) = 1.78$, $p = .08$, $r = .22$. The score was higher in the TBL with role assignment group. There were no significant main effects on the total score, $t(62) = 1.39$, $p = .17$, $r = .17$, definitions, $t(62) = 1.23$, $p = .22$, $r = .15$, or Japanese expressions $t(62) = 0.64$, $p = .53$, $r = .08$. The means of the test scores for each

group are shown in Table 6.2 and Figure 6.1.

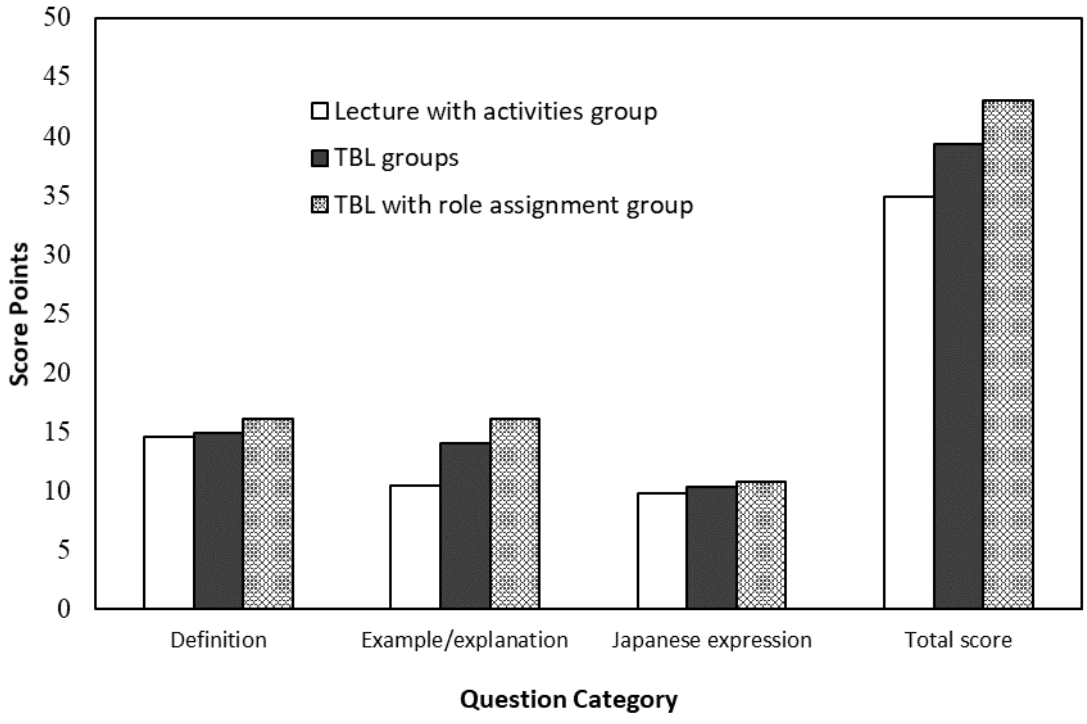
Table 6.2

Mean Scores With Standard Deviations for Each Question and Category

Category	Lecture with activities group (n = 24)	TBL groups (n = 25)	TBL with role assignment group (n = 16)
Definition	14.58 (3.50)	14.90 (3.06)	16.16 (1.91)
Example/explanation	10.46 (3.50)	14.10 (3.82)	16.10 (2.60)
Japanese expression	9.83 (1.93)	10.38 (2.12)	10.84 (1.59)
Total score	34.88 (8.54)	39.38 (8.65)	43.09 (5.80)

Figure 6.1

Test Scores Comparison



6.3.2.2 Study Time

For the 16 participants in the TBL with role assignment group, who responded to the questionnaire, a mean of 24.38 (*SD* =21.07) was obtained for the related question: "If the average amount of study time spent for other courses is 10, what is the amount of study time spent for this course?"

6.3.2.3 Free Rider Questionnaire

For the 16 participants in the TBL with role assignment group, a mean of –0.45 (*SD* = 2.34) was obtained. Those who showed an exceptionally high value (values of 2 standard deviation points higher than the mean) were defined as potential free riders. One participant was found to fall under this category (total score = 5.28; $z = 2.45$).

6.4 Qualitative Analysis of Class Practice: Analysis 2

6.4.1 Purpose

The purpose of Analysis 2 was to examine whether role assignment could inhibit the emergence of an uncooperative other, and to qualitatively examine the process of how conceptual understanding and learning motivation are developed in TBL. For that purpose, the following four research questions were posed:

RQ1: How does group work promote conceptual understanding and learning motivation?

RQ2: What individual factors of the learners permit the proper functioning of group work?

RQ3: How are learners influenced by others in the group?

RQ4: Does role assignment inhibit the emergence of free riders?

6.4.2 Method

In order to capture a broad range of learners' experiences in TBL and clarify their meaning, a qualitative research method using semi-structured interviews was adopted. The interviews were held between July and October 2018.

6.4.2.1 Participants

Sampling was conducted for the students in the TBL with role assignment group. First, I selected student X, who was defined as a potential free rider, and two members of the same group (Y and Z). Next, nine students (A to I) were selected from each of the remaining four groups by lot. I asked these 12 students to participate in the interviews and obtained consent from all of them.

6.4.2.2 Ethical Considerations

I explained the purpose and contents of the study, and informed the prospective participants that participation was voluntary, that their voices would be recorded during

the interviews, and that their personal information would be strictly protected and kept confidential.

6.4.2.3 Question Items

The participants were asked 11 questions. Questions 1 to 5 concerned their group work experience in TBL, and questions 6 to 10 aimed to clarify the meaning of group work, all of which had been used in Study 2 (Chapter 5). However, Question 11 was a new addition: “What is true and not true about the diagram model?” This was asked while showing and explaining Figure 5.3.

6.4.2.4 Analysis Method

The analysis was performed based on the procedure explained below, partially using the M-GTA, as before. The analysis was conducted by carefully examining the points to be modified based on the diagram model proposed in Study 2 the previous year (Figure 5.3).

1. Read the data.
2. Set the analysis themes based on RQ1–4. The analysis themes were (a) the function of group work, (b) the individual factors that contributed to proper group functioning, and (c) the influence of other members in the group.
3. Extract specific examples. Focusing on the parts related to the analysis themes

from the protocols, and categories and concepts in the diagram model (Figure 5.3), I extracted specific examples of the concepts.

4. Examine the concepts. I examined the concepts to be integrated, those to be subdivided, and those to be newly generated in relation to other data. Then, I examined the validity of the concept names and revised them as necessary. I followed these steps, while simultaneously creating analysis worksheets (Kinoshita, 2003).
5. Reexamine categories. When several concepts were generated, I examined their relationships.
6. Modify the paradigm model. I had some attachment to the diagram model created in Study 2 and was aware of the tendency to interpret data by forcing it into the existing concepts. Therefore, I asked the research assistant to analyze and when our interpretations diverged, we discussed them further.

6.4.3 Results

Table 6.3 summarizes the concepts generated and reexamined according to the analysis themes (a) to (c). The newly drawn relational diagram model was named “Diagram Model of Group Work Function in TBL ver. 2” (Figure 6.2). In the following text, each concept is explained according to the category. Square brackets [ ] indicate

concepts and angled brackets < > indicate subordinate concepts. Next, I will explain whether or not the emergence of free riders was inhibited to answer RQ4.

Table 6.3

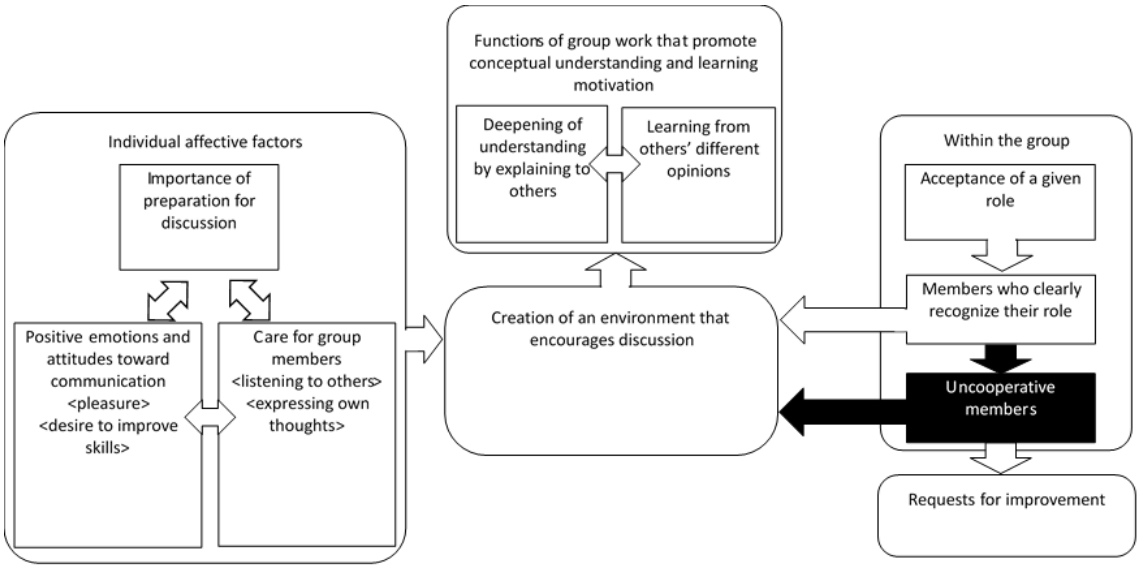
Categories, Concepts, Definitions, and Examples

Category	Concept	<Subcategory> Definition	Example	Frequency A	B	C	D	E	F	G	H	I	X	Y	Z
Functions of group work that promote conceptual understanding and learning motivation	Deepening of understanding by explaining to others	Checking and deepening understanding by explaining it to others in the group	When I tried to explain to my friend who said she didn't get it, I realize I didn't understand it either, and I think it's an activity that I've noticed a lot about such new discoveries. (B) I put my thoughts together, and understood more by saying my thoughts... (Y)		1					1				1	
	Learning from others' different opinions	Broadening understanding by making thoughts relative by learning different opinions of others in the group	Group work is a work that allows you to learn new things by listening to the opinions of others, while considering your own, I think that is how it works. (H) In that way, everyone can give their opinions and I can listen to everyone's opinions rather than just mine, so I can broaden my perspective... (I)	1	2	2	1	1	2	1	4	4	2	4	
Creation of an environment that encourages discussion	Creation of an environment that encourages discussion	Creating an atmosphere and relationships that make it easy to talk with group members	Well, at first I had to sympathize with the others' opinion, which seemed to be the case, but when we got used to it later, I was able to argue, or because I got used to each other, yeah, I've come to say, "well, I think it's a little wrong rather frankly." (A) Even if you don't talk much at first, it's kind of easy to talk later. (C)	2	2	1	2	3	2	2	4	10	2	3	4
Individual affective factors	Care for group members	<Listening to others> Respecting and listening carefully to others without only one person speaking	First of all, I try not to overstate my opinion, but listen to the others' opinions, because I often talk quite a bit. (D) I think I paid attention to listening to everyone's answers. (E)	1		2	1	1	1		1	1		1	1
		<Expressing own thoughts> Speaking so that you are not the only one silent	Well, I had to rely on someone else for a while, so I thought it would be nice if I could say a little more. (G) I worked hard so that I could give my opinion as much as possible. (Z)	2	1			1		2	1	1		1	1
	Positive emotions and attitudes toward communication	<Pleasure> Enjoying communicating with others	For group work, I was glad that I was able to talk with those people because I had never spoken to most of them, and I've never really done pair work since I entered university, so it was kind of fresh. (A)	4	2	1	1	3	2	2		2	1	1	1
		<Desire to improve skills> Recognizing that communication skills are needed in the future and wanting to improve them	Since I am going into society in the near future, it's not like I'm experimenting with it, but it can be a first step in being able to speak so much to someone I meet for the first time person. I felt it was a good experience. (I) I can communicate with people, so I think this is an activity that helps me. (Y)							1		1		1	1
	Importance of preparation for discussion	Thinking that preparation is important to make the discussion more meaningful, or feeling guilty when preparation is not enough	The problems are like, I cannot solve at all unless I really work hard, so, you know, it's fine reading it briefly, but … I absolutely tried to read even if only part of it. (X) I did not prepare once, and I had to rely on other people all the time. (G)		1		1	1	2	1			4		
Within the group	Acceptance of a given role	Accepting the assigned role in group work	Maybe if there wasn't that (deciding the role with a lottery), maybe I would have been spending an indefinite amount of time. (B) Even someone who didn't seem to be suitable for a leader turned out to be good at summarizing everyone's opinions, and I realized you can discover new aspects of others who seemed to be not good, and I think it was really nice. (D)		1	2	1		1				1	1	
	Members who clearly recognize their role	Members who are clearly aware of their role and try to contribute to group work	Because I think a leader can get our opinions together, and because of the leader, we can discover something new… (D) I thought it's very important to have someone decisive. (B)		1		4	1	1			2	3	2	
	Uncooperative members	Members who do not or cannot participate in the discussion due to lack of preparation	If everyone did, oh, I think that if everyone did preparatory work, it would go quite smoothly, but since there were people who did not do it, I could not hear everyone's opinion. (F) If there are people who certainly do not cooperate, I think it may be that group work is suppressed. (Y)	(1)		(1)			2			(1)	(1)	(1)	
Requests for improvement	Requests for improvement	Requests for improvement to resolve dissatisfaction or to make the discussion more fulfilling	I felt I wanted them to do it (preparation). (F) (Regarding another class where group work is not working well) If the teacher could create an environment in which I could gradually get together on a completely different topic, I would be saying, "Hey, the teacher is approaching. Let's get to work," and someone might say "Give us your thoughts," and I think I could get along with others little by little. (I)						1			(2)			

Note. A number in parentheses indicates a discussion about other lessons, or in general and hypothetical contexts, not about this practice.

Figure 6.2

Diagram Model of Group Work Function in TBL ver. 2



Note. A square without corners represents a category, and a square with corners represents a concept. Arrows indicate that they influence each other. The dark color indicates an inhibiting factor/direction and the white color indicates a promoting factor/direction.

6.4.3.1 Functions of Group Work That Promote Conceptual Understanding and Learning Motivation

The learners experienced a [deepening of understanding by explaining to others] through group work. When sharing ideas and trying to persuade others, verbalizing their thoughts helped to verify their level of understanding. When they could not explain well, they realized that their understanding was insufficient and they deepened it by going back to what they had studied. The students also improved by [learning from others'

different opinions]. They talked to others with different opinions and fresh perspectives, and expanded their understanding by relativizing their thoughts, a process that many learners mentioned. Thus, group work was considered a general function to promote conceptual understanding.

6.4.3.2 Creating an Environment That Encourages Discussion

As time passed, the students were able to communicate with their group members, and create an atmosphere and relationships that made it easy to talk frankly. All interviewees experienced such a process and its positive implications, showing that [creation of an environment that encourages discussion] is an essential foundation for promoting the function of group work. However, it was also suggested that the emotional aspects of individual members and the state within the group can greatly affect the foundation under certain conditions.

6.4.3.3 Individual Affective Factors

Many learners first experienced having [positive emotions and attitudes toward communication]. Through group work, they became acquainted with each other and experienced <pleasure>, such as refreshment and fulfillment through talking. They also recognized the importance of improving communication skills in their specific future paths, showed a <desire to improve skills> to actively participate in group work, and

saw the [importance of preparation for discussion] for active participation in group work and achieving the learning outcomes. The students sometimes participated in group work without adequate preparation, but they reflected on their failure to contribute to the discussion and reaffirmed the importance of preparation. Finally, the learners exhibited a [care for group members]. For instance, those who were aware that they usually talked too much tended to show consideration for <listening to others>, while those who felt that they were not good at expressing their own opinions tried to make efforts in <expressing own thoughts>.

6.4.3.4 Within the Group

The students seemed to become [members who clearly recognize their role] through their [acceptance of a given role]. They perceived the role given via lottery to be positive, leading to a reduction in individual reluctance and hesitation, and resulting in more efficient and active group discussions. In addition, when learners saw their group members play roles that at first seemed unsuitable, they strongly felt the significance of the assigning roles. On the other hand, the roles were sometimes spontaneously shared within the group, regardless of the initial assignment. For example, in some instances, students in higher grades (*senpai*) within the group naturally became leaders. In any case, the results suggest that students' consciousness of their own role leads to the creation of an environment that encouraged discussion. Then, this would

contribute to the suppression of the emergence of an [uncooperative member].

6.4.3.5 Requests for Improvement

When learners recognized the existence of an [uncooperative member], there were [requests for improvement]. In this class practice, these requests only concerned members who were insufficiently prepared, but I also noted observations about other classes, general opinions, and hypothetical contexts. Specifically, they requested the theme not to be too difficult, to begin with ice-breakers on familiar topics, and that others to express their opinions firmly without hesitation or compromise.

6.4.3.6 Inhibiting the Emergence of Free Riders

A close examination of learner X's responses, who was identified as a potential free rider in Analysis 1, revealed that there were no responses reasonable enough to identify her as such. She did not feel guilty for not having cooperated with the group, rather she said: "I'm not good at speaking at a good tempo, so group work seems to be a burden, but the presence of a member (*senpai)* who led discussions has gradually made it easier to talk to me." There were also no responses that mentioned any dissatisfaction with group work or members from learners Y and Z, who were in the same group as X. Learner Y said that everyone was able to speak thanks to the *senpai* and the assigned roles, and that generally, it was a "good group." Learner Z did not mention the

evaluation of group members, but said that the group work was “fun.”

Judging from the above responses, it was concluded that X was not a free rider. It is probable that her high score on the free rider questionnaire was due to her modest self-evaluation. On the other hand, in the group in which the questionnaire did not find a potential free rider, learner F mentioned [uncooperative members] and the [requests for improvement]. However, since there were no similar responses from other members of the same group (learners C and G) and in my eyes, as the instructor, no student seemed to be a problem, learner F was not identified as a free rider. From my point of view, learner F was eager to work, but the high level of preparation and discussion expected by others probably led to these responses.

6.5 Discussion

The results of this study’s Analysis 1 suggest that, similar to Studies 1 and 2, TBL promoted conceptual understanding and the role assignment further enhanced the effects. The latter were particularly noticeable in the specific examples or explanation category. In addition, the students of this practice felt that the amount of learning was more than 2.4 times that of other classes. Considering this as a behavioral index of learning motivation, TBL with role assignment may further promote learning motivation, as compared to Studies 1 and 2 that reported 1.7 to 1.8 times the amount.

Analysis 2 adopted a qualitative analysis to examine the process of how TBL develops conceptual understanding and learning motivation. The concepts and categories that Study 2 generated were reconsidered, their relationships were rearranged based on the specific responses obtained in Analysis 2, and a new diagram mode was created (Figure 6.2). Analysis 2 also examined whether the emergence of free riders could be inhibited. The results suggested that assigning roles could make it more difficult for free riders to appear and that conceptual understanding could be further promoted. Hereafter, in discussing the process of how role assignment could develop the function of group work, I compared the diagram model proposed in Study 2 (Figure 5.3) with the one proposed in this study's Analysis 2 (Figure 6.2).

6.5.1 Effect of Role Assignment on Group Work Functioning

As functions of group work, [learning from others' different opinions] and [deepening of understanding by explaining to others] are thought to promote conceptual understanding. The latter factor was not generated in Study 2, but the results highlighted that if learners have a free rider in their group, they can be emotionally uncomfortable and refrain from spontaneous remarks. I want to refer back to Fukaya et al.'s (2016) argument that if a tutor does not verify the student's understanding and teaches fragments of knowledge or procedural solutions through one-way instruction, the effectiveness of peer tutoring does not increase. If this is true and we disregard the

emotional factors, in order to achieve a [deepening of understanding by explaining to others], there must be other individuals who cannot be convinced easily or refute without reasonable explanations. In other words, when an “explainee” does not show interest in the “explainer” or does not take any explanations into account, peer tutoring is not effective.

Therefore, the foundation for group work to function properly is the [creation of an environment that encourages discussion]. In the previous diagram model (Figure 5.3), this concept was not assumed and [communication in small groups] was thought to be the group work function that directly promoted conceptual understanding and learning motivation. The new model, on the other hand, assumes that the [creation of an environment that encourages discussion] is the independent concept that creates a foundation for supporting the group work’s functioning. This can better reflect the many narratives that underscore the importance of building the foundation over time.

In addition, as observed by Shimpuku et al. (2014), although the learners were not as receptive in the initial stages of TBL, eventually they had a sense of accomplishment arising from their experiences of enhancement within the team. Thus, the new diagram model is more valid and useful, given its consistency with Shimpuku et al. (2014). Regarding individual affective factors, the process has become clearer: [positive emotions and attitudes toward communication], including <pleasure> and <desire for skill improvement>, and [care for group members], involving <listening to

others> and <expressing own opinions>, while interacting with each other due to the [importance of preparation for discussion], contribute to the [creation of an environment that encourages discussion]. In the group, it was shown that [acceptance of a given role], such as moderator and first speaker, creates [members who clearly recognize their role]. When roles and responsibilities are clarified, there is less reluctance and fewer non-constructive sessions, preventing the emergence of [uncooperative members] and the related adverse effects.

6.5.2 Significance and Future Prospects

In order to further improve the TBL classes within a specialized subject in the field of English language education, this study examined the effects of role assignment in group work. There are two particularly important features of this study. First, this study adopted a mixed research design, combining quantitative and qualitative analyses, to enable both objective effectiveness examinations and detailed process explorations. Second, in the action research framework of a four-year improvement effort, from the academic years 2015 to 2018 of my own classes, this study succeeded in reporting the outcomes in a comparable way. As this involved an elective subject, it would be safe to assume that the majority of the students are relatively motivated, including those who wish to be teachers. However, this study still holds high practical value in that the results could apply to classes that aim to develop conceptual understanding in general,

and those incorporating student interactions in learning approaches other than TBL.

Study 1 arose from the awareness of a problem in my own educational practice, and Studies 2 and 3 attempted to overcome further newly spotted problems, while deepening the understanding of TBL. The next chapter will switch to broaden the scope. Specifically, in a different subject, English Linguistics, variables other than the teaching approach, such as the TBL approach or the lecture approach, will be controlled (e.g., keeping the same progress speed of the TBL and lecture group classes, but avoiding only using review quizzes for the TBL group). This way, I expect to reexamine the effects of TBL and verify their generalizability.

Chapter 7

TBL's Effects on Different Types of Learning: Study 4

Studies 1 (Chapter 4) and 2 (Chapter 5) involved introducing TBL into a university-level English language education class, named Second Language Acquisition Research, and examining its effects. The results showed that TBL is effective in promoting conceptual understanding and learning motivation, and a qualitative method explored its process. Study 3 (Chapter 6) regarded the presence of [uncooperative members] or free riders as a problem, and as a solution, assigning roles to group members was found to be effective. The next step could involve following two routes. One route could seek to deepen the scope, attempting to further enhance the understanding of TBL's learning effects, by carefully analyzing the process of group work and intervening to improve functions. The other route, the one chosen for this study, would be to seek to broaden the scope, aiming to establish a general-purpose style TBL by accumulating practice examples from different types of courses.

7.1 Study Purpose

This study's purpose is to introduce TBL into English Linguistics, one of the major subjects of university-level English language education, and examine the effects on knowledge acquisition and conceptual understanding in comparison with the lecture

style class taught the previous year. Compared to learning in the field of second language acquisition research, in which the knowledge is expected to apply to educational settings, the main focus in the early stages of learning English Linguistics is to obtain basic knowledge and understand concepts. Courses with such characteristics are considered to be subjects that are the least likely to be learned in a team. Therefore, it would be meaningful to show the effectiveness and limitations of TBL in such a context.

7.2 Method

7.2.1 Participants

The participants were 34 undergraduate students who took the course English Linguistics II (Phonology and Morphology; two credits) at the same faculty and university as the previous studies. This was a required course for 80% of the second-year students who were planning to join the English Language Teaching Major in their third year. Of those students, only those who attended three-quarters or more of the number of class days up to the exam date were eligible to participate. As a result, the lecture group consisted of 20 participants, who took the course in 2016, and the TBL group had 14 participants, who took the course in 2017.

7.2.2 Course Overview

I was in charge of the course for both years. Both groups used Hasegawa's (2006) textbook, 『初めての英語学　改訂版』 [*Introduction to English Linguistics Revised Edition*]. The syllabus is shown in Table 7.1. While the same textbook and syllabus were used for both groups, the teaching procedures were different. In the lecture group, each class was conducted in the form of lectures. Prior to each class, as per the syllabus, the students were required to preview the next lecture's content with the textbook and materials.

The lecture contents were summarized in advance through slides based on the textbook, using presentation software, and I explained the contents while projecting the slides on the screen at the front of the classroom. The students took notes in their notebooks while watching these slides. In addition, applied exercises were presented based on each theme. For example, while studying consonants and vowels, they practiced listening to and pronouncing minimal pairs. While learning changes in sound, they practiced dictation and pronunciation using movies. While learning morphemes and word-formation, they worked on exercises, such as dividing English words and sentences into morphemes (e.g., "uncertainly" is divided into the prefix "un-," root "certain," and suffix "-ly"), and analyzing word-formations (e.g., "edit" is a back formation of "editor," and "smog" is a blending of "smoke" and "fog"). The students worked on these tasks individually, and then the instructor gave answers and

explanations.

Table 7.1

Course Syllabus

Class time	Content	Textbook page
1st	**Guidance** Explanation of course objectives, content, method, and evaluation policy	
2nd	**Phonology: Phonetic organ** Learn about phonetic organ	pp. 58–60
3rd	**Phonology: Classification of speech sounds and classification of consonants ①** Learn the categorization of speech sounds, phonetic symbols of individual consonants, and actual pronunciation	pp. 60–62
4th	**Phonology: Consonant classification ②, vowel classification ①** Learn about consonant classification and vowel classification	pp. 62–65
5th	**Phonology: Vowel ①** Learn the concept and classification of vowels	Supplemental Materials
6th	**Phonology: What is a phoneme?** Understand phonemes while distinguishing them from other concepts	pp. 66–67
7th	**Phonology: Changes in sound** Learn concepts and examples of syllables, consonant clusters within syllables, assimilations and elisions of sounds	pp. 67–69
8th	**Phonology: What is a syllable?** Learn concepts and examples of syllables	pp. 69–71
9th	**Phonology: Accent and Rhythm** Learn concepts and examples of accents and rhythms/intonations comparing Japanese and English	pp. 71–73
10th	**Morphology: Various morphemes** Learn the outline of morphology and concepts and examples of morphemes	pp. 74–76
11th	**Morphology: Word-formation ①** Learn the concept and examples of word-formation based on morpheme combinations	pp. 76–79
12th	**Morphology: Word-formation ②** Learn the concept and examples of word-formation not based on morpheme combinations	pp. 79–81
13th	**Review** Review the learning contents	
14th	**Final Examination** Check the comprehension and expression of the learning contents	
15th	**Summary: Return of final exam and explanation of final assignment** Plan for future learning	

Note. The content and page numbers refer to Hasegawa (2006).

In the TBL group, the classes were taught with the following procedure.

1. Prior to the class, the students prepare for the class.
2. iRAT: The teacher distributes the handout (Appendix E) and the students work on the questions (approximately 15 minutes).
3. tRAT: In teams of four to five, the students discuss and determine the answers as a team for the same questions (approximately 15 minutes).
4. Each team presents their answers in class. If their answers are different from other teams', a discussion on which answers are correct ensues (10 to 20 minutes).
5. The teacher displays the correct answers and gives supplementary explanations (approximately 20 minutes).
6. The students work on applied exercises in teams (20 to 30 minutes).

I randomly selected the group members in the 2nd class, which were fixed until the 7th, and then reorganized the groups in the 8th class, which were fixed until the final class. In principle, the instructor does not intervene in group discussions, but when the answers were immediately agreed upon within the group and the discussion stopped, additional tasks, such as considering reasons and specific examples, were provided. In step 4, when the answers were different among groups, I encouraged them to challenge the correctness by refuting other groups' answers. Although the applied exercises in step 6 were the same as those in the lecture group, there were cases when the students discussed or presented in a group after working individually.

7.2.3 Measurement of Test Scores

7.2.3.1 Knowledge Check Questions

All question items were used for the final exam in the 14th class in both the lecture group and the TBL group. For the knowledge check section, there were 19 questions that required writing terms for articulatory organs and phonetic symbols in the blanks in consonant and vowel diagrams. For the six questions on the articulator organs, a cross section of a human face was presented and the students were asked to write the names of the articulators (e.g., upper teeth, alveolar ridge, velum, etc.) at the locations indicated by the question numbers. For the eight questions on the consonant diagram, they were asked to spell out the phonetic symbols at the locations indicated by the question numbers (see question 4 in Appendix E). For the five questions on the vowels, a diagram of American English showing the height and depth of the tongue was presented, and the students were asked to spell out the phonetic symbols, such as /æ/ and /ʌ/, at the locations indicated by the question numbers. The correct answer was scored with 1 point and the incorrect answer with 0.

7.2.3.2 Comprehension Check Questions

For the comprehension check section, a total of four questions (in the same format as questions 1 to 3 in Appendix E) were used in which the students were asked to select the most appropriate option to describe a technical term. The terms used for the

four questions were “natural language,” “consonants,” “pitch accent,” and “voiceless sound.” The correct answer was scored as 1 point and the incorrect answer was worth 0.

7.2.3.3 Term Description Questions

A total of four questions related to “voiced sound,” “vowel,” “arbitrariness,” and “bound morpheme” were used as term description questions. In the measurement, two categories (definitions and specific examples or detailed explanations) were created for all six questions, with 3 points for each category, up to a maximum of 6 points for each question. For instance, regarding the “bound morpheme,” if a student wrote, “The bound morpheme refers to a morpheme that cannot be a word by itself, but is attached to other morphemes. For example, -ed and -ly cannot be words by themselves, but must be attached to other words, such as ‘sadly’ (sad + -ly) and ‘played’ (play + ed),” they got 3 points for definition and 3 points for specific examples or detailed explanations. A research assistant with a Master’s degree in English Language Education and I independently performed the measurement based on the same rubrics (the match rate was 82.4%).

7.2.4 Study Time

In the 15th class in the TBL group, after returning the final exam, the participants were asked to respond with a number to the usual question: “If the average

amount of study time spent for other courses is 10, what is the amount of study time spent for this course?" Although the study time was not asked in the academic year 2016 and it could not be compared directly with the lecture group, the results were used to relativize this study by comparing it with previous studies.

7.3 Results

7.3.1 Test Scores

To make fair comparisons between groups, it is necessary to assume that the students in both groups had equal academic abilities. The GPAs of all the subjects previously taken by the participants in the prior year were calculated. The average GPA was 2.85 for the lecture and activity group, and 2.65 for the TBL group. Although the results of a *t*-test did not show a significant difference between groups, $t(32) = .66$, $p = .51$), in order to more strictly control the conditions to ensure that all participants had the same academic ability (Chapter 3), ANCOVAs were conducted using the GPA as a covariate for the group comparison of the dependent variables mentioned below. Table 7.2 shows the correlation coefficients between previous GPA and each test score.

Table 7.2

Correlations Between Previous GPA and Each Test Score

	Knowledge	Comprehension	Term Description
GPA	.347*	.443**	.582**
Knowledge		.708**	.612**
Comprehension			.640**

*$p < .05$ **$p < .01$

The descriptive statistics and test results are shown in Table 7.3 and Figure 7.1. The ANCOVAs results showed that there was a significant difference in the knowledge check questions, $F(1, 31) = 4.93$, $p < .05$, $\eta_p^2 = .14$, indicating that the TBL group scored higher. There was a marginally significant difference between the two groups in the understanding check questions, $F(1, 31) = 3.41$, $p < .10$, $\eta_p^2 = .10$, showing that the TBL group again scored higher. However, there was no significant score differences in the term description questions, $F(1, 31) = 0.39$, $p = .54$, $\eta_p^2 = .01$).

Table 7.3

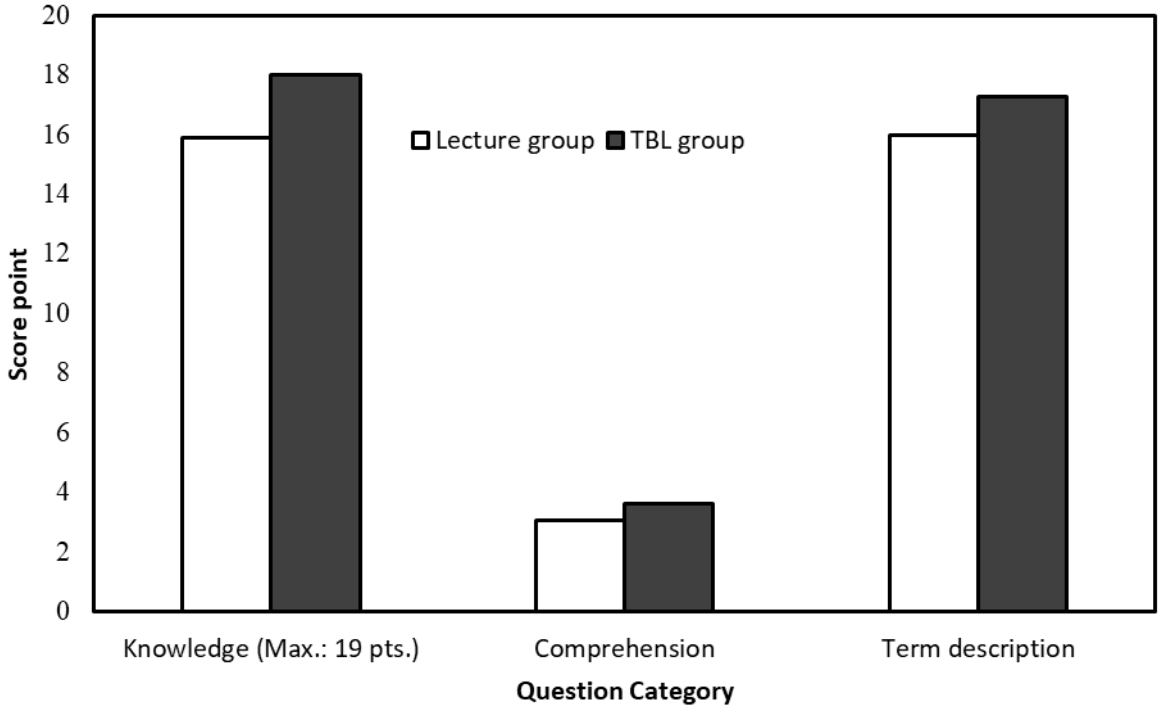
Means With Standard Deviations, Adjusted Means With Standard Errors, ANCOVA Results, and Effect Sizes

Category	Question	*M (SD)*		M_{adj} *(SE)*		ANCOVA results and effect size	
		Lecture group	TBL group	Lecture group	TBL group	*p* value	η_p^2
Knowledge	Phonetic organ	5.50 (0.83)	5.79 (0.43)	5.48 (0.15)	5.81 (0.18)	.186	.056
	Consonant diagram	6.80 (2.02)	7.64 (0.93)	6.76 (0.34)	7.70 (0.44)	.112	.080
	Vowel diagram	3.70 (1.45)	4.43 (1.09)	3.64 (0.27)	4.51 (0.32)	.046*	.123
	Total	16.00 (3.55)	17.86 (1.70)	15.89 (0.61)	18.02 (0.74)	.034*	.137
Comprehension		3.10 (1.12)	3.57 (0.85)	3.05 (0.20)	3.64 (0.24)	.074†	.099
Term description	Definition	8.20 (3.77)	7.96 (3.86)	8.01 (0.73)	8.24 (0.88)	.837	.001
	Example/explanation	8.20 (3.74)	8.75 (3.52)	8.00 (0.67)	9.04 (0.81)	.330	.031
	Total	16.40 (7.01)	16.71 (7.23)	16.00 (1.31)	17.28 (1.56)	.536	.012

†$p < .10$ *$p < .05$

Figure 7.1

Comparison of Adjusted Means



7.3.2 Study Time

For the 14 participants in the TBL group who responded to the questionnaire, a mean of 11.00 (*SD* = 6.30) was obtained.

7.4 Discussion

7.4.1 Summary

The results of the analysis showed that TBL promoted knowledge acquisition and conceptual understanding. Specifically, the greatest promotion effect was found for the knowledge check questions that did not require relatively deep thinking, such as writing articulatory organs, and completing the consonant and vowel diagrams. The second greatest promotion effect was found for the understanding check questions, which required a certain level of thinking. No significant effect was observed for the term description question that required deep understanding and expression. These results indicate that traces of memory were strengthened through active participation in group work. In addition, the effects tend to be apparent for cognitive tasks requiring a lower level of information processing compared to those requiring a higher level of information processing.

7.4.2 Significance, Limitations, and Future Outlook for Research

In this study, factors other than the teaching method, such as the textbook,

syllabus, and the presence or absence of quizzes, were controlled and both groups could be compared under the same conditions. In that sense, this study succeeded in presenting purer TBL effects on knowledge acquisition and conceptual understanding, excluding the confounders as much as possible. As a particularly significant contribution, TBL was conducted in an English Linguistics course, for which no practical reports are available in previous literature. English Linguistics, which requires the acquisition of basic knowledge and theories, would seem to be a difficult subject for most to learn while working as a team. Therefore, by introducing TBL in such a subject and demonstrating its effects, this study contributed to the broadening approach mentioned earlier.

However, some limitations remain. First, as TBL's effect was not observed for the term description questions, which involve a heavier cognitive load, there is room for improvement and examination. It would also be necessary to analyze the qualitative changes in detail. In addition, given that this research aimed to broaden the scope of the approach, the fact that it dealt with a single practice and that the sample size was small is an issue. In the next chapter, still with the aim to broaden, I introduce role assignment and adopt text mining to examine the effects on the conceptual understanding in English Linguistics, in which the conditions, other than the teaching method, are controlled.

Chapter 8

Reexamining the Effects of Assigning Roles During Group Work: Study 5

In Study 4 (Chapter 7), I introduced TBL to English Linguistics classes to examine its effects compared to the lecture style, and under the controlled conditions in which factors, such as class progress speed and the presence or absence of quizzes, were the same. Almost the same results were obtained as those obtained in the Second Language Acquisition Research course, that is, TBL promoted conceptual understanding. Study 3 (Chapter 6) attempted to resolve the emergence of free riders (uncooperative others) in group work in the Second Language Acquisition course taught with TBL. Roles were assigned during group work (e.g., moderator, first speaker, second speaker, etc.) to clarify what each member should do.

The results of the quantitative and qualitative analyses suggested that role assignment inhibits the emergence of free riders and that group work is further activated, which can have a positive effect on conceptual understanding. However, the effect was limited to specific examples or detailed explanations in the term descriptions and the effect was not necessarily larger compared to the TBL with no assigned roles, $t(62) = 1.78$, $p = .08$, $r = .22$. One of the future directions available involves further emphasizing role assignment to improve the functions of group work and inhibit the

emergence of free riders. Furthermore, it is important to examine the effects of TBL in a course different from that of Study 3, and expand the applicability of the practice and its effects.

8.1 Study Purpose

This study aimed to improve the learning function of group work in TBL by assigning roles to group members and examining the effects in an English Linguistics course. Specifically, the TBL with role assignment group's knowledge acquisition and conceptual understanding are compared to those in the lecture style class, taught in the academic year 2017, and in the TBL class without role assignment, taught in 2018.

8.2 Method

8.2.1 Participants

The participants were 54 undergraduate students who took the same course as described in Chapter 7 (English Linguistics II [Phonology and Morphology]) at the same faculty and university as all the other studies. Again, only those who attended three-quarters or more of the number of class days up to the exam date were eligible. As a result, the 2016 lecture group consisted of 20 participants, the 2017 TBL group had 14 participants, and the 2018 TBL with role assignment group had 20 participants.

8.2.2 Course Overview

I was in charge of the course for all years. All groups again used Hasegawa's (2006) textbook. While the same textbook and syllabus (see Table 7.1) were used for all groups, the teaching procedures were different. In the TBL with role assignment group, following the same contents and procedures as the TBL group, the group members' roles were decided via lottery after step 2 (p. 104). Specifically, the roles were assigned for the moderator at step 3 (p. 104) and for the first to fourth presenters, serving as group representatives (in a group of five), at step 4 (p. 104). Again, when a teacher asked, "Other groups chose (a), but why did your group choose (b)?," the group member assigned the role of first presenter was required to answer first. Similarly, for the next question, the second presenter would have to speak.

Initially, the role assignment with lottery was scheduled in each class before the final examination, but since all group members seemed to voluntarily decide the roles in agreement, I decided to stop using the lottery from the 8th class. Moreover, based on the findings of Study 3, in order to further strengthen the role assignment function, I intervened and advised the group on how to fulfil the roles as needed. At the end of the class, I distributed a questionnaire and asked the students to answer the following questions: "How have you felt about group work, what do you think is important to promote learning in group work, and what are your requests for improvement?"

8.2.3 Measurement of Test Scores

The question items that were on the final exam in the 14th class in the lecture group, the TBL group, and the TBL with role assignment group, were used. I used the same 19 questions for the knowledge check section, the four questions for the comprehension check section, and the four questions for the term description section (Please refer to 7.2.3 Measurement of Test Scores). A research assistant with a Master's degree in English Language Education and I performed the measurement independently based on the same rubrics (the match rate was 85.6%).

8.2.4 Study Time

In the 15th class in the TBL group, after returning the final exam, the participants were asked to respond with a number to the question: "If the average amount of study time spent for other courses is 10, what is the amount of study time spent for this course?"

8.2.5 Quantitative Text Analysis: Free Description of Class Questionnaire

In the 15th class of the TBL and TBL with role assignment groups, questionnaires were distributed after the test was returned. The questions were divided into the following nine items with reference to Study 3.

1. What kind of experience was the group work?

2. What were the important factors in group work?
3. Have any changes occurred from the beginning to the middle and to the end?
4. What was the most impressive element?
5. What does group work mean?
6. Do you want to continue group work, including in other classes?
7. What are the positive points of group work?
8. What are negative points of group work? Write about any points that can be improved.
9. Insert any comments, opinions, and requests regarding this course in general as well as group work.

In order to clarify the learners' experiences and the meaning of in class group work, a quantitative text analysis was adopted, representing a method of organizing or analyzing text-type data using quantitative methods for content analysis (Higuchi, 2014). In this analysis, the collected free descriptions were converted into text-type data and the content was analyzed using the KH Coder. The latter is a software for quantitative text analysis, developed by Higuchi, that performs quantitative analyses by conducting numerical operations on qualitative data.

The specific procedures are as follows:

1. Collect and merge the responses to questions 1 to 9.
2. Divide the texts into word units through morphological analysis and identify the

speech parts for each word.

3. For each word unit, obtain a frequency number through a word frequency analysis for each of the two groups.
4. In order to determine the strength of the connections between the words and each group, conduct a cooccurrence network analysis on feature words with a frequency of 10 or more. In this analysis, the number of cooccurrence relationships to be drawn was set to 30.

8.3 Results

8.3.1 Test Scores

The GPAs of all the subjects the participants took in the previous year were calculated. The average GPA was 2.85 for the lecture group, 2.65 for the TBL group, and 2.96 for the TBL with role assignment group. Although the results of the one-way ANOVA did not show a significant main group effect $F(2, 51) = 0.69$, $p = .51$, in order to more strictly control the conditions to ensure that all participants have the same academic ability (Chapter 3), the GPA was used as a covariate in the following contrast analyses for the group comparison. Table 8.1 shows the correlation between the previous year's GPA and the test score for each category.

Table 8.1

Correlations Between Previous GPA and Each Test Score

	Knowledge	Comprehension	Definition	Examples/ Explanations
GPA	.336*	.368**	.507**	.541**
Knowledge		.635**	.566**	.462**
Comprehension			.564**	.502**
Definition				.815**

*$p < .05$ **$p < .01$

For the analysis to be as integrated and relative as possible, it would be worth examining whether TBL is more effective than the lecture teaching style and whether role assignment would further enhance the effects. For that purpose, two contrast analyses were conducted for knowledge, comprehension, definitions, and specific examples or detailed explanation of term descriptions (Haebara, 2014). The first contrast was the teaching method, in which coefficients of –2, 1, and 1 were assigned to the lecture group, TBL group, and TBL with role assignment group, respectively. The second contrast was role assignment and the three groups were assigned coefficients of 0, –1, and 1, respectively. By doing so, TBL's effects and their differences depending on the presence of role assignment could be examined. The means and adjusted means of the test scores in each category for the three groups are shown in Table 8.2 and Figure 8.1.

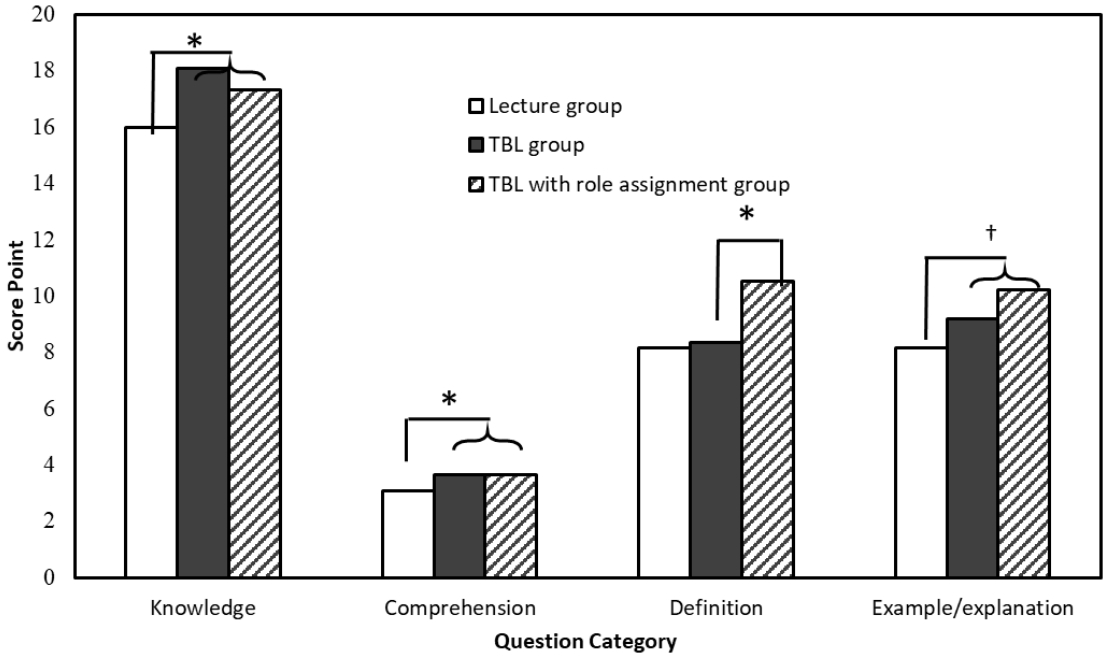
Table 8.2

Means With Standard Deviations and Adjusted Means With Standard Errors in Each Group

Category		*M (SD)*			M_{adj} *(SE)*		
		Lecture group	TBL group	TBL with role assignment group	Lecture group	TBL group	TBL with role assignment group
Knowledge		16.00 (3.55)	17.86 (1.70)	17.50 (2.19)	15.99 (0.57)	18.10 (0.68)	17.34 (0.57)
Comprehension		3.10 (1.12)	3.57 (0.85)	3.70 (0.47)	3.10 (0.18)	3.65 (0.22)	3.65 (0.18)
Term Description	Definition	8.20 (3.77)	7.96 (3.86)	10.70 (1.90)	8.18 (0.63)	8.37 (0.76)	10.54 (0.64)
	Example/explanation	8.20 (3.74)	8.75 (3.52)	9.20 (3.60)	8.18 (0.67)	9.22 (0.80)	10.22 (0.67)
	Total	16.40 (7.01)	16.71 (7.23)	21.33 (5.01)	16.36 (1.31)	17.59 (1.46)	20.76 (1.21)

Figure 8.1

Comparison of Adjusted Means



Note. † $p < .10$ *$p < .05$.

In the knowledge category, a main effect of the contrast in teaching method was significant, $t(51) = 2.42$, $p = .02$, $r = .32$, indicating that the two TBL groups scored higher than the lecture group. There was no significant main effect on the role assignment contrast between the TBL group and the TBL with role assignment group, $t(51) = –0.85$, $p = .40$, $r = .12$. In the comprehension category, a main effect of the teaching method contrast was significant, $t(51) = 2.45$, $p = .02$, $r = .33$. Again, the two TBL groups scored higher than the lecture group. There was no significant main effect on the role assignment contrast between the TBL and TBL with role assignment groups, $t(51) = –0.02$, $p = .98$, $r = .00$. In the definition category, although there was no significant main effect pertaining to the contrasting teaching methods in the definition category, $t(51) = 1.59$, $p = .12$, $r = .22$, a main effect of the role assignment was significant, $t(51) = 2.18$, $p = .03$, $r = .29$. In the specific examples or detailed explanation category, the marginally significant main effect of the contrasting teaching method was observed, $t(51) = 1.83$, $p = .07$, $r = .25$, indicating that the two TBL groups scored higher than the lecture group. Finally, there was no significant main effect on the contrast of role assignment between the TBL and TBL with role assignment groups, $t(51) = –0.85$, $p = .35$, $r = .13$.

8.3.2 Study Time

For the 14 participants in the TBL group and the 20 participants in the TBL with role assignment group, the means obtained were 11.00 (*SD* = 6.30) and 11.83 (*SD* = 6.22), respectively.

8.3.3 Quantitative Text Analysis

The total number of words for question items 1 to 9 was 1,978 in the TBL group and 2,607 in the TBL with role assignment group. Table 8.3 displays the frequency of the top 20 feature words in both groups. Figure 8.2 is a network diagram that presents the co-occurrence relationships between the feature words and each group.

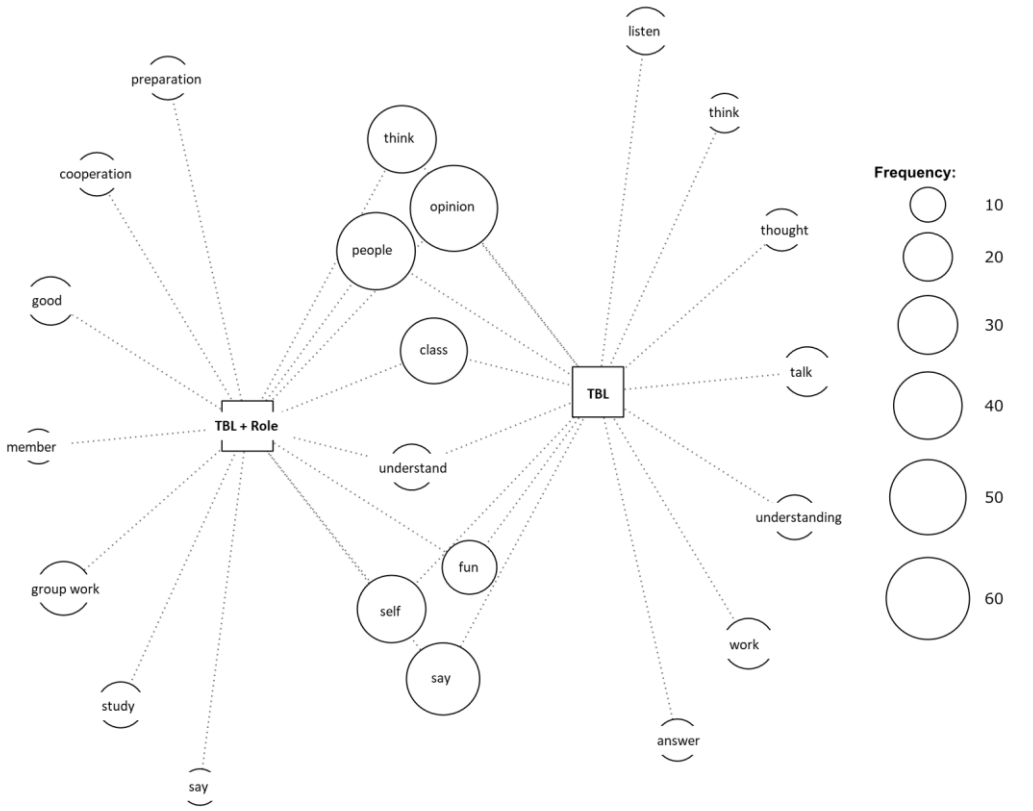
Table 8.3

Differences in Extracted Words Between the TBL and TBL With Role Assignment Groups

TBL group			TBL with role assignment group		
Rank	Extracted word	Frequency	Rank	Extracted word	Frequency
1	people	34	1	opinion	39
2	opinion	27	2	think	25
3	group	23	3	group	23
4	self	19	4	class	22
5	class	16	5	self	21
6	think	15	6	people	19
7	work	14	7	group work	18
8	study	12	8	fun	17
9	listen	11	9	good	14
10	thought	9	10	cooperation	12
11	fun	8	10	study	12
11	answer	8	12	understand	11
11	understanding	8	12	preparation	11
14	group work	7	14	say	10
14	consider	7	15	understand	9
14	others	7	15	talk	9
14	understanding	7	17	member	8
18	others	6	17	work	8
18	know	6	17	pronunciation	8
18	knowledge	6	17	listen	8
18	study	6			
18	good	6			

Figure 8.2

Co-occurrence Network Between Words and Groups



For words with 10 or more frequencies, I calculated the Jaccard coefficients (the number of actual cooccurrence relationships divided by the number of all possible cooccurrence relationships) for all combinations with each group. Then, the top 30 cooccurrence relationships were connected by lines. Words with more occurrences were described with larger circles. For example, words that were connected by lines to both the TBL and TBL with role assignment groups, such as “opinion,” “group,” “class,” and “fun,” appear frequently in both groups at a similar rate. The words that were only

connected to the TBL with role assignment group, such as “preparation,” “cooperation,” and “group work,” were used at a higher rate than the TBL group. Finally, the words that were only connected to the TBL group, such as “listen,” “speak,” and “work,” were used at a higher rate than the TBL with role assignment group.

8.4 Discussion

The results of the test score analyses show that TBL promotes knowledge acquisition, conceptual understanding, and the ability to describe specific examples or give detailed explanations. In Study 4, the effect appeared only for knowledge acquisition, which involves a low level of cognitive processing, such as naming articulatory organs, and completing consonant and vowel diagrams. This study also detected effects for conceptual understanding and term descriptions, which involve higher processing levels. However, it would be important to note that after comparing the effect sizes (knowledge: r = .32; comprehension: r = .33; description [definition]: r = .22; description [specific example or detailed explanation]: r = .29), the tendency that the effects are likely to appear from the category involving lower level cognitive processing was reproduced.

Additionally, when roles were assigned in TBL, the ability to describe the definition was promoted, although these effects were not observed for knowledge acquisition and conceptual understanding. However, it would be theoretically unlikely

that there is no effect for a task with a lower level of cognitive processing and only for one with a higher level of cognitive processing. The mean test scores of the knowledge category in the TBL and TBL with role assignment groups were over 17.5 points out of 19 points, and the scores of the conceptual comprehension category in both groups were over 3.5 points. This potentially indicates ceiling effects that made it difficult to detect significant differences.

As with Study 4, the study time was almost the same as in other classes. Thus, there is a strong possibility that the learners' performance improved without increasing their study time, because TBL promotes learning efficiency. The quantitative text analysis shows that both TBL groups had different experiences and ascribed different meanings to group work. Looking at the cooccurrence network of words and groups (Figure. 8.2), the TBL group seemed to emphasize individual actions and cognitive activities, such as "listening," "thinking," "speaking," and "understanding." The following responses show that they recognized the importance of looking back on their own learning outcomes and deepening their future learning: "Even if I don't understand, I can solve it while listening to others' opinions," "I came to think more," "It was good, because I had the opportunity to talk to people I hadn't talked to much," and "I focused on making sure that what I learned and understood was correct."

The words that are only characterized by the TBL with role assignment group are prominently related to relations with others and prerequisites for group work, such

as “preparation,” “cooperation,” “member,” and “group work.” The following examples show that they were aware of the factors surrounding collaborative work and recognized the importance of preparations for smooth progress: “I thought it was necessary to do my own preparations and reviews,” “We worked together and helped each other,” “I prepared not to bother my group members, because it’s group work.”

Study 3 suggested that individual affective factors, including “positive emotions and attitudes toward communication” (e.g., fun and desire to improve skills) and “care for group members” (e.g., listening to others and expressing own thoughts), contribute to the “creation of an environment that encourages discussion” and that students influence each other with their “preparation for discussion.” At the same time, within the group, “acceptance of a given role” establishes “members who clearly recognize their role,” which also contributes to the aforementioned environment. The results of the quantitative text analysis also support this process, as this study provided some proof that strengthens the knowledge surrounding the learning process in TBL. Finally, in Chapter 9, I would like to summarize the series of studies and present a comprehensive discussion.

Chapter 9

Conclusion: Summary and Future Prospects

9.1 Summary of the Studies

Study 1 (Chapter 4) examined the effects of introducing TBL to develop conceptual understanding and learning motivation in Second Language Acquisition Research classes. The results showed that TBL had greater effects on improving conceptual understanding, especially in the specific examples or detailed explanation category, compared to the lecture and activity method. The findings also implied that TBL has some positive impact on students' learning motivation. Study 2 (Chapter 5) reexamined the effects of introducing TBL for developing conceptual understanding, and revealed the process of how conceptual understanding and learning motivation are developed in Second Language Acquisition Research classes. Similar to Study 1, the results suggested that TBL had greater effects on improving conceptual understanding, compared to the lecture and activity method. Based on the analysis of the student interviews, a diagram model (ver. 1) explaining the learning process was proposed. However, the analysis also found that the presence of an uncooperative other or a free rider can inhibit the function of group work.

Study 3 (Chapter 6) attempted to further improve learners' conceptual understanding and motivation in Second Language Acquisition Research classes.

Although the introduction of TBL was found to be effective, the presence of an uncooperative other in group work remained an issue. To resolve this issue, each member in the group was assigned roles (e.g., moderator, first presenter, second presenter, etc.). The quantitative analysis revealed that learners become more motivated and understand concepts better when certain roles were assigned in group work. The qualitative analysis suggested that if learners accepted their given role, they acted with a higher level of awareness regarding their role as a contributor to group work, which inhibited the emergence of an uncooperative other. As a result, a new version (ver. 2) of the paradigm model was proposed to explain the process of how learners' conceptual understanding and motivation are fostered.

Study 4 (Chapter 7), based on the "broaden" approach, aimed to examine the effects of introducing TBL for acquiring knowledge and understanding concepts in English Linguistics classes (Phonology and Morphology). The results showed that TBL had a greater influence on knowledge acquisition and conceptual understanding than the lecture method. This study succeeded in controlling factors other than the teaching method, which allowed for both groups to be compared under the same conditions. Finally, Study 5 (Chapter 8) reexamined the effects of role assignment during TBL group work on acquiring knowledge and understanding concepts in English Linguistics classes (Phonology and Morphology). Again, each member was assigned a role, such as moderator, first presenter, or second presenter. The results showed that TBL had a

greater influence on knowledge acquisition and conceptual understanding than the lecture method, and learners understood concepts even better when a role was assigned. Additionally, a quantitative text analysis suggested that with role assignment, learners became more purposeful about collaborating with others and recognized the importance of preparation. These text analysis results also supported the diagram model of group work function in TBL (ver. 2).

Table 9.1 summarizes the findings of Studies 1 to 5.

Table 9.1

Summary of TBL Studies

Course name		Second-Language Acquisition Research			English Linguistics (Phonology and Morphology)	
Focus of course		Acquisition of basic knowledge and understanding theories and their application to educational practice			Acquiring basic knowledge and understanding theories	
Course position		Elective			Required for over 80% of students	
Differences other than teaching method		TBL group also has descriptive quizzes Progress speed of TBL group is twice as fast			None	
Study number		Study 1	Study 2	Study 3	Study 4	Study 5
Effects of TBL	Knowledge	—	—	—	Large	Large
	Comprehension	—	—	—	Moderate	Large
	Description (Definition)	None	None	None	None	None
	Description (Example/ Explanation)	Large	Large	Large	None	Small
Effects of role assignment		—	—	Small effects on description (example/ explanation) and inhibition of free riders	—	Moderate effects on description (definition), promoting awareness of collaborative work and importance of preparation
Perceived study time compared to other classes		1.7 times	1.8 times	2.4 times	1.1 times	1.2 times

The effects of TBL are easier to observe in tasks requiring a low cognitive processing level. For term description tasks, which require a high cognitive processing level, the

effects of TBL are more likely to appear in the specific examples and detailed explanations than in the definition category. However, remarkable effects on term descriptions (specific examples or detailed explanations) were observed in Second Language Acquisition Research classes, which also incorporated term description quizzes. Thus, a positive learning cycle is thought to have functioned effectively. Specifically, this refers to the fact that preparation for the quiz leads to students giving further explanations to others in group work. Furthermore, as Table 9.1 shows, the quiz may have actually increased the study time.

9.2 Future Prospects

First, I would like to discuss the future prospects of Studies 1 to 3, which were conducted with the aim to deepen. According to the diagram model of group work function in TBL (ver. 2), to build an environment that encourages discussion, the group's and learners' affective factors must be in an ideal state. The interventions and improvements made in Study 3 were for factors within the group. For further improvements, more attention should be paid to learners' affective factors. For example, as suggested by the learners' responses, those who tend to speak too much should learn to listen to others, while those who are not good at speaking spontaneously, should develop assertive communication skills. Thus, interventions should take individual differences into consideration. It would be beneficial to continue to improve the

functions within the group, examine the functions between groups, and clarify how the entire class functions as a learning group.

Second, in Studies 4 and 5, which were conducted with the aim to broaden, TBL and role assignment were introduced and examined in English Linguistics classes, a different course from the one in Studies 1 to 3. In general, the learning objective of English Linguistics is the acquisition of specialized knowledge and the understanding of basic concepts, which teachers often find difficult to relate to practical skills, discussions, and presentation activities. In other words, in this type of course, the lecture style is most likely to be adopted. As mentioned in Chapter 2, TBL has been actively introduced in medical education, where working in a team is strongly required. It would not be an exaggeration to say that this dissertation has made a certain contribution to broaden the scope of TBL, by introducing it in so-called lecture subjects and examining its effectiveness. However, this is not enough, and the practice of TBL in various types of classes and reports of its effectiveness should grow in the future.

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Appendix A

Back of a Sample Handout Used in Second Language Acquisition Research

☆ Review Task (for Quiz)
Give the definition and an example each for the following terms.

1. Integrated motivation
2. Instrumental motivation
3. Effective learning methods from the SLA research viewpoint
4. Communicative competence

☆ Preparation Task (Reading Assignment for Next Class)
pp. 36–48

Appendix B

The Rubrics Used in Second Language Acquisition Research

Rubrics

Student No. Name

Goals	0	1	2	3	4	Score
① Definition	No or very little definition. The content is incorrect, cannot be understood, or is expressed incorrectly.	Can give a definition at a level that is not completely wrong. Some words are unclear or lack explanation, but somehow convey the meaning.	Can give the definition though there are some insufficient parts. Can convey the meaning of the contents almost accurately.	Can give the definition very clearly. The description is almost the same as the one in the textbook or can convey the meaning appropriately using a different expression.		/3
② Specific Examples/ Detailed Explanations	No or very little specific examples/detailed explanations, not related to the definition, the content is incomprehensible/ incorrect, or not expressed correctly.	Can give specific examples/detailed explanations, but not directly related to the definition. Or, if related, there are some unclear points and it is somewhat difficult to understand.	Can give specific examples/detailed explanations related to the definition.	Can appropriately give specific examples/detailed explanations that lead to a deeper understanding of the definition.		/3
③ Japanese Expression	Cannot write Japanese properly due to many typographical errors and omissions. The meaning is unclear. Kanji is not used properly.	Can write with almost no typographical errors or omissions. The meaning is clear and kanji is used almost properly.	Can write without typographical errors. The meaning is clear and kanji is used appropriately.	* If either ① or ② are not written, the score for ③ will be reduced by 1 point.		/2

Appendix C

An Example Handout (Front) Used in Second Language Acquisition Research to Check Learners' Preparation

Second Language Acquisition Research (Learning English as a Second Language)
Preparation Check Quiz

No. 3

Date

Instruction: Choose the most appropriate answer.

（1）

a. Integrative motivation is the desire to use a foreign language as a tool to achieve some other purpose

b. Integrative motivation has been said to be more important than instrumental motivation since it was first advocated until now.

c. Studying English for an entrance examination, a higher TOEIC score, or a higher salary is an example of integrated motivation

d. Integrative motivation is whether you like or dislike the culture of the language you are studying and the people who speak that language.

（2）Regarding the relationship between motivation and learning outcomes, the author said:

a. Strong motivation itself is directly linked to learning outcomes.

b. Learners who are strongly motivated at the moment tend to be motivated forever.

c. It is necessary to consider the task motivation, that is, what kind of task can increase motivation.

d. Learning outcomes can be obtained even if motivation does not lead to learning behavior.

（3）According to the author, the effective learning method is,

a. a learning method that is optimized for the essence of language, the essence of language acquisition, and individual differences of learners.

b. a learning method that carefully translates into the mother tongue, is optimized for the essence of language acquisition, and is optimized for individual teaching materials.

c. a learning method that is optimized for the essence of language, conducts tests repeatedly, and is optimized for individual differences of learners.

d. a learning method that carefully translates into the mother tongue, conducts tests repeatedly, and is optimized for individual differences of learners.

（4）Being able to speak a language is thought to mean having the communicative competence, such as,

a. pronunciation, discourse, sociolinguistic, and strategic abilities.

b. grammatical, discourse, sociolinguistic, and strategic abilities.

c. pronunciation, discourse, scientific linguistic, and strategic abilities.

d. literally, discourse, scientific linguistic, and strategic abilities.

Appendix D

An Analysis Worksheet Example

Category 5	Importance of preparation for discussion
Definition	Preparing with the thought that it is important to contribute to the group and have a more meaningful discussion, and feeling guilty when unable to do so
Variation (Examples)	I had a lot of preparation to do, I had to prepare my opinion… I don't think many people can express their opinions while improvising, because I cannot. If you don't summarize your thoughts to some extent, you will not be able to say anything when you start talking. (A)
	Oh, it does change, after all. I think I wouldn't have studied unless I had group work. Well, I don't think it's good to bother everyone. I do it [prepare] a little. Well, but maybe I wasn't doing my best. (Laughter) I think part of me depended on everyone. When we were working, I think everyone was more amazing [than me]. Yeah, I thought everyone memorized the book quite well. I think their quiz was awesome. I think I should have done a little more. Somehow, I thought I was doing it myself, but it was nothing compared to everyone ... There are times when I feel that. Well, yeah, you know, when we agreed, or when I say, or got to say why I chose this and that, I think that means it's because I studied, I was able to give the reason for that … There were times when I thought that way. (F)
	I don't mean that I read the book really seriously, but I'm not saying that I never read it. And about my opinions, I tried to be able to answer with reasons, like this is so because of that. In the beginning, I hadn't read it once, but when everyone else was prepared, I answered, "Well, I wonder maybe is this it?" So I was sorry about that. (Laughter) Someone else was also like, "Oh, I felt like that too," so I thought it wasn't good Well, first of all, I think that the main premise is that everyone will read the book. (I)
	Um ... at least I did my preparation, solved the problems, umm ... at least I was trying to prepare for class. But I sometimes I couldn't read all of it, and went to class, so I wasn't so confident with the last few questions … something like that. (D)
Theoretical notes	There are two main motivations for preparatory work: to be able to participate in discussions and to have a sense of fulfillment when prepared, and to try not to bother others in the group.

Appendix E

An Example Handout Used in English Linguistics to Check Learners' Preparation

English Linguistics
Preparation Check Quiz

No. 3

Date

（1）Regarding voiced and voiceless sounds,
a. when the air from the lungs becomes a speech sound, it is divided into voiced and voiceless sounds by the movements of the upper and lower lips.
b. there is a distinction in English, but not in Japanese.
c. the sound that comes out with the vocal cord completely closed is the voiceless sound.
d. the sound with the vocal cord opening slightly and being vibrated by air is the voiced sound.

（2）Regarding vowels and consonants,
a. the sound that comes out without much obstruction of the air is the vowel.
b. when speaking normally rather than whispering, all vowels are voiceless.
c. vowels include voiced and voiceless sounds.
d. the sound that comes out with the vocal cord completely closed is the vowel.

（3）Consonants are classified according to the following three criteria:
a. voicing, place of articulation, and pitch
b. voicing, place of articulation, and manner of articulation
c. voice volume, manner of articulation, and pitch
d. voice volume, place of articulation, and manner of articulation

（4）Complete the following consonant diagram of English:

Manner of Articulation \ Place of Articulation		Bilabial	Labio-dental	Dental	Alveolar	Palato-alveolar	Palatal	Velar	Glottal
Stop	Voiceless	①			t			③	
	Voiced	②			d			④	
Fricative	Voiceless		⑤	⑦	s	ʃ			h
	Voiced		⑥	⑧	z r	⑨			
Affricate	Voiceless				(ts)	⑩			
	Voiced				(dz)	dʒ			
Nasal	Voiced	⑪			n			⑫	
Lateral	Voiced				l				
Semivowel	Voiced					*r* (Amr.)	j		

①：　②：　③：　④：　⑤：　⑥：

⑦：　⑧：　⑨：　⑩：　⑪：　⑫：

Appendix F

The Rubrics Used in English Linguistics

Rubrics

Student No. Name

Goals	0	1	2	3	4	Score
① Definition	There is no or very little definition. The content is incorrect, cannot be understood, or is expressed incorrectly.	Can describe definitions at a level that is not completely wrong. Some words are unclear or lack explanation, but can somehow convey the meaning.	Can describe the definition though there are some insufficient parts. Can convey the meaning of contents almost accurately.	Can describe the definition very clearly. The description is almost the same as the one in the textbook or can convey the meaning appropriately using a different expression.		/3
② Specific Examples / Detailed Explanation	There is no or very little specific example / detailed explanation, it is not related to the definition, its content is incomprehensible / incorrect or not expressed correctly	Can describe specific example / detailed explanation, but not directly related to the definition. Or even if it is related, there are some unclear points and it is somewhat difficult to understand.	Can describe the specific examples / detailed explanation related to the definition.	Can appropriately describe specific examples / detailed explanations that lead to a deeper understanding of the definition.		/3