The Influences of a Peer Tutoring Program on Its Participants at a Japanese University

Ruriko Tsuji
Siwon Park

Abstract

In accordance with a shift from teacher-centered to learner-centered or learning-centered language learning, collaborative learning has gained much attention in foreign language education (MEXT, 2011). Peer tutoring is an example of collaborative learning and has been adopted in higher education in Japan. The present study examined to what extent peer tutoring positively impacts on participants' achievement of English proficiency and their perception towards English learning. A TOEFL tutoring program that was implemented at a university in Japan for two consecutive years was investigated for its effectiveness. The participants' achievement gains in English proficiency were examined using a pre- and post-test design, and their questionnaire responses and reflective comments on their learning processes were qualitatively examined through a covariance structure analysis using KH coder. The results indicate that participants were able to achieve statistically meaningful TOEFL gains from the program. In addition, their questionnaire responses and reflective comments revealed that there were motivational as well as attitudinal changes toward the tutoring program and their own learning of English.

Introduction

Past years have seen shifts in higher education from hierarchically structured programs to ones that can promote more student oriented, cooperative, and collaborative learning. At

the center of this movement, peer tutoring or peer (assisted) learning has been considered as a viable method that can help realize a program of such. While its effects have not been nationally recognized in Japan yet, a number of institutions have implemented it for learning of general as well as field specific subjects (Ruegg, Sudo, Takeuchi, & Sato, 2017; Tsukayama, 2011).

Peer tutoring, among many definitions, can be defined as "a formalized activity for the acquisition of knowledge and skill through active helping and supporting among status equals or matched companions" (Topping & Ehly, 1998: 1). It requires two-way, reciprocal (collaborative rather than cooperative) learning of tutors as well as tutees, suggesting mutual benefits to both parties as they share knowledge, ideas, and experiences (Saunders, 1992).

In peer tutoring, the role of tutors is to facilitate group discussions with their tutees about a subject that was collaboratively decided based on the mutual learning needs. The growing popularity of peer tutoring programs is due to such a learner driven nature that allows the participants to build a learning environment of their own. Through the interaction, participants can exchange formal as well as informal feedback regarding their learning processes and also outcomes. That is, learning occurs not only as a result of knowledge transmission but as a process of collaboration that helps foster both parties' interdependent learning, study and problem-solving skills, and critical thinking.

Theoretical advantages of peer tutoring

Many studies on the effectiveness of peer tutoring have reported that peer tutoring is beneficial to its participants providing not only academic and cognitive supports but also social and behavior gains (Boud, Cohen, & Sampson, 2001; Greenwood, 1997; Miller, Topping & Ehly, 1998, Newton & Ender, 2010; Topping, 2005; King, 1997). Peer tutoring programs, for example, can provide the participants with a psychological support, helping

them transit from high school settings to those of university and adjust to the new environment. It can also help affirm their beliefs that they can "also" succeed at the university just like their peer tutors have. These advantages are realized as peer tutoring provides the tutees with an opportunity to meet and form approachable allies with other learners (i.e., both tutors and other tutees) for sharing personal and academic concerns.

Additional benefits of peer tutoring include motivational and attitudinal gains such as greater commitment, self-confidence, self-esteem, and empathy with others (Topping, 1996), increased self-efficacy and motivated learning (Miller & MacGilchrist, 1989), and empowerment for students and tutors (Goodlad & Hirst, 1989; Parkin & McKegany, 2000). All of these could be difficult for learners to achieve in a formal classroom setting of higher education in Japan, where the vertical transmission of knowledge has been the norm.

Finally, as pointed out earlier, peer tutoring serves as a learning support function for both tutors and tutees. Its reciprocal nature makes most of the benefits mentioned earlier bidirectional. For example, studies reported that tutors were able to improve their academic performance and communication skills, achieve personal growth, and increase an understanding of themselves as a learner and social capital on campus. For the tutors, peer tutoring offers an opportunity to reinforce their own learning through "learning by teaching" (Topping, 1996).

Training needs for peer tutoring

Studies on peer tutoring identify adequate tutor training as an essential component of successful peer tutoring programs (Dufrene, Reisener, Olmi, Zoder-Martell, McNutt, & Horn, 2010). In the end, tutors are the ones imparting educational principles and knowledge in the given context and cannot strive for the program success without such backgrounds.

Boud et al. (2001), for example, point out the main problems that can arise from peer

learning as issues of difference and interpersonal dynamics. When a group includes students of diverse levels and backgrounds, they may not perceive each other's contribution to their learning. That is, peer learning needs to take account of the dynamics present in any group situation, such as difference in knowledge and experience base, potential power struggles, potentials for dominant behavior and expectations of traditional teacher student roles (Anderson & Boud, 1996)

Therefore, tutor training needs to address effective ways to work with their tutees, with an emphasis on keeping confidentiality, providing positive reinforcement, and allowing adequate response time when asking questions. In addition, the training process needs to instruct tutors on explaining directions, designing work for extra practice, watching for and correcting mistakes, and providing positive feedback and encouragement.

In sum, sufficient research has attested the benefits of peer tutoring leading to academic success in higher education. Achievement gains have been demonstrated for a diversity of learners in a wide range of content areas. However, as Reugg et al. (2015) noted, it is uncommon to find institutions that offer a peer tutoring program especially for foreign language learning in Japan. The roles and effects of peer tutoring programs are under researched in the Japanese context.

In this study, therefore, using the prior research as a foundation, we examined: (1) to what extent the peer tutoring program influences learners' English proficiency, and (2) if and how the program may have affected the participants' perceptions and attitudes towards English language learning at a local Japanese university.

Method

Data collection and participants

On the ground of the benefits that peer tutoring could bring to the student population, a university in Japan that specializes in foreign language education has implemented a

tutoring program to encourage its participants (both tutors and tutees) to improve their TOEFL test scores while fostering collaborative learning on campus. While attending the program, participants themselves decide how and what to study and also reflect on their own learning processes. They meet once a week for a 90 minute session for the total of 10 sessions.

Table 1 shows the numbers of the participants in this study. The tutors were required to have a minimum 520 of TOEFL ITP score and to sit for an interview to be hired as tutors. Their primary duties included: (1) collaborative learning and teaching of English to their tutees (freshmen) for 10 weeks, (2) participating in professional development workshops, (3) reflective journaling of their tutoring practices and recording of their tutoring activities with their tutees.

The tutees, on the other hand, were required to understand and abide by the program regulations. In addition, they were required to present a minimum 420 of TOEFL ITP score to maximize the achievement gain while ensuring the homogenous environment of learner diversity in terms of English proficiency. The minimum score requirement was deemed appropriate especially because TOEFL is a test that requires a level of threshold proficiency to take and also study for.

Table 1   The number of the participants in this Study

		Tutors	Tutees
2015	1st semester	11	55
	2nd semester	15	44
2016	1st semester	18	80
	2nd semester	14	59

Analysis

In order to achieve the research purposes, we analyzed participants' TOEFL ITP test scores, their responses to the questionnaires and the comments from their reflective journals. We fully recognize that the TOEFL gain does not translate into the achievement gain due only to the learning in the peer tutoring program. However, we believe that it can add a partial support to the argument we attempts to generate based on the result of the study. We conducted statistical analyses with the score data collected using a pre-post design with a 10 week interval. Participants sat an institutional TOEFL exam approximately a month before they joined the program and took another TOEFL exam upon completion of the program.

In addition, all participants, both tutors and tutees, were asked to answer a questionnaire on *Google form* right after the last 10th session. The questions were designed to examine how the participants as either a tutor or a tutee perceived their tutoring experiences in the program. For this study, we have selected a few questions that directly concern the research purposes and will qualitatively discuss the findings in relation to them.

Another source of qualitative data comes from the reflection notes from the program participants. As part of learner development, the participants were asked to spend the last 10 minutes or so of each tutoring session completing a reflection note based on their onsite learning experiences. Tutors were asked to reflect and write a note on both their tutoring practice and their own learning. Especially, they were told to report if there was any attitudinal issues with regard to their tutees during a session, while tutees were only required to reflect on and write about their learning experiences. They all completed their reflective journals in their native language, mostly Japanese.

In order to examine the participants' perceptional and attitudinal aspects toward the program, we employed a co-occurrence network analysis (KH coder). This co-occurrence network analysis (KH coder) allowed us to examine the frequency of lexical items used in

their reflective journals as they reveal how closely they are connected with each other forming an idea network.

Results and Discussion

Statistical analysis

TOEFL gains by tutors Table 2 shows the descriptive statistics of tutors' TOEFL ITP test scores. Means for all comparisons of pre and post results indicate gains, and the smaller *SD*s in the post results except for the 2016 2nd semester show that the participants' scores increased narrowing the gap between the higher and lower performers in each group. As for the data distribution, all values of skewness and kurtosis except for the ones for 2015 1st semester confirm that the data are more or less normally distributed and hence subsequent statistical analyses can be performed. As the data for 2015 1st semester seem unreasonably non-normal, we decided to apply a parametric technique to the mean comparison.

Table 2   Descriptive statistics of tutors' TOEFL ITP scores

Time			N	M	Median	SD	$Min.$	$Max.$	$Skew.$	$Kurt.$
2015	1st	pre	11	555	543	26.5	533	617	1.60	2.01
	sem	post	11	570	563	25.6	533	617	0.61	-0.50
	2nd	pre	15	555	543	23.8	533	617	0.98	0.35
	sem	post	15	570	563	20.8	533	617	0.71	0.94
2016	1st	pre	18	550	553	14.3	523	570	-0.24	-1.17
	sem	post	18	564	567	17.4	533	600	-0.08	-0.06
	2nd	pre	14	566	567	18.9	537	600	0.36	-0.30
	sem	post	14	569	567	18.7	540	607	0.53	0.00

We then performed *t*-tests and calculated effect-sizes (Cohen's *d*) with the mean gains and examined to what extent the tutors' achievement was reflected in their TOEFL score gains and the effect sizes. As Table 3 demonstrates, all of the mean comparisons between the pre- and post-tests resulted in statistical significance indicating that the tutors were able to achieve TOEFL gains while fulfilling their duties as a tutor in the program. As the effect-sizes inform, the sizes of such gains varied from small (*d*=0.20) to large (*d*=0.87) and were larger in the 2nd semesters than the 1st semester.

Table 3   Tutors' TOEFL score means

Time		TOEFL scores		Gain	Effect-size(d)
		Pre	Post		
2015	1st semester	555	570	15.10*	0.58
	2nd semester	565	571	6.00*	0.27
2016	1st semester	550	564	13.90*	0.87
	2nd semester	566	569	3.72*	0.20

* *sig.* at *p*<.05

TOEFL gains by tutees   Tutees' TOEFL ITP test scores were examined to see to what extent the tutoring program influenced their English proficiency reflected in the score gains. Table 4 shows the descriptive statistics of tutees' TOEFL ITP scores.

All post means are higher than those of pre showing score increase. As for the data distribution, most of the skewness and kurtosis values fall around 0 with an exception of the means from the pretest data in 2015 1st semester and the post data in 2016 2nd semester. They are nonetheless within acceptable limits for the use of parametric statistical analyses in comparing group means.

Table 4　　　Descriptive statistics of tutees' TOEFL ITP scores

Time			*N*	*M*	Median	*SD*	*Min.*	*Max.*	*Skew.*	*Kurto.*
2015	1st sem	pre	55	456	447	22.9	430	530	1.26	1.32
		post	55	465	467	27.5	400	530	-0.27	0.08
	2nd sem	pre	44	459	457	28.5	410	520	0.41	-0.47
		post	44	492	488	21.7	450	543	0.59	0.70
2016	1st sem	pre	80	450	443	22.1	420	510	0.85	-0.06
		post	80	472	473	25.3	427	540	0.29	-0.41
	2nd sem	pre	59	449	450	38.4	353	540	-0.18	0.56
		post	59	482	480	31.1	420	593	0.58	1.93

With the mean scores from pre- and post-tests, we then performed *t*-tests and calculated effect-sizes (Cohen's *d*) and examined the amount of achievement gains that the tutee may have made while studying in the program. Table 5 shows that all comparisons of pre and post means resulted in statistical significance indicating that the gains tutees achieved were statistically meaningful, which is also evidenced in the magnitude of the effect sizes ranging from 0.36 to 1.31. The TOEFL gains that tutees achieved were relatively larger than those tutors achieved in terms of effect-sizes. In addition, tutees who participated in the 2016 program were able to achieve higher gains than the 2015 program. This result may be an indication that the program itself was able to offer a more reliable learning support to its participants as both the program staff and the tutors were able to build expertise through repeated program management and tutoring practices.

Table 5　　Tutees' *TOEFL means*

Time		TOEFL scores		Gain	Effect-size(*d*)
		Pre	Post		
2015	semester 1	456	465	9.2*	0.36
	semester 2	459	492	33.2*	1.31
2016	semester 1	450	472	22.4*	0.94
	semester 2	449	482	32.5*	0.93

* *sig.* at *p*<.05

Qualitative analysis

The statistical analysis on participants' English proficiency has revealed that their (tutors and tutees') English proficiency was improved during the tutoring program. What is yet unclear is to what extent such statistical gains are solely due to the participation in the program. While it is certain that the participants join the program as they were motivated to study TOEFL in a tutoring setting, it is uncertain how much of the motivational aspects the tutoring program can be responsible for the gain and the construction of positive attitudes toward learning by participating in the tutoring program.

To analyze the participants' motivational as well as attitudinal changes in the program, the more in-depth qualitative analysis was conducted from two perspectives; the one is from tutors' (the senior participants leading their groups) and another is from tutees' (the junior participants) perspective. For this study, the qualitative data only from 2015 was chosen and analyzed.

In this qualitative analysis, the students' responses to the questionnaire and their reflective comments were analyzed using computer software called KH Coder. It allowed us to evaluate the frequencies of words used in their reflective comments and to visualize

the relationships between the words.

　　Tutors and tutees were asked to answer the questions on Google form regarding their perspectives and attitudes towards TOEFL tutoring program. It was expected that even though changes in the students' scores on TOEFL ITP test seem to be marginal, the results from students' perceptions towards English learning in this program may show some positive insights into their learning experiences.

Tutor perception　　　In this questionnaire, tutors were asked how they felt about the TOEFL tutoring program. The Likert scale was employed in the questionnaire: 5 means strongly agree and 1 strongly disagree. Most of the mean scores were over 4. To be more specific, statement (I) "From this TOEFL tutor program, I learned a lot of things." (*M* =4.67), statement (m) "To study English with other students, such as through tutoring program, is important for me." (*M* =4.60), statement (g) "By teaching tutees, I myself improved my English." (*M* =4.27), statement (j) "I felt that I have changed the way and perception of my English studying." (*M* =4.07) showed high mean scores. These results shown in Table 7 reveal that this program helped the tutors build a positive perception and attitudes towards their English language learning.

Table 7   Descriptive statistics of tutors' responses to the questionnaire

項目　　　　　　　　　　　　　　　　　　　　　　　N=15	M	SD	Mdn	min	max
[a. セッションの回数（全 10 回）は適当だった。]	3.80	0.98	4.00	2	5
[b. チューターとして意欲的に取り組むことができた。]	4.27	0.44	4.00	4	5
[c. チューター同士の情報交換を研修（中間・最終報告会）以外で積極的に行った。]	3.07	0.93	3.00	2	5
[d. 困ったときは誰かに相談した。]	3.40	1.25	3.00	1	5
[e. チューティーは積極的にセッションに参加した。]	4.40	0.49	4.00	4	5
[f. チューティーの英語力が向上したと思う。]	4.40	0.49	4.00	4	5
[g. チューティーを教えることによって、自分自身の英語力も向上した。]	4.27	0.57	4.00	3	5
[h. チューティーと一緒に学習したセクションの TOEFL スコアが上がった。]	3.93	1.00	4.00	2	5
[i. このチューター制度を通じて多くのことを学んだ。]	4.67	0.47	5.00	4	5
[j. 英語学習への取り組み方・意識に変化があったと思う。]	4.07	0.85	4.00	2	5
[k. 教授法などについて、今後アドバイスを受けたいと思っている。]	3.73	0.93	4.00	2	5
[l. チューターの活動を通して今まで気づかなかった自分を発見できるようになった。]	4.07	0.77	4.00	2	5
[m. チューターの活動といった他の学生と学びある英語学習は自分にとって大切である。]	4.60	0.61	5.00	3	5

Tutor reflection   Tutors' reflective comments after each session revealed the changes in their perception toward tutoring sessions and their learning. In their reflective comments, the connections between the key word "Session" and other lexical expressions were closely analyzed using the KH coder. Table 8 presents the most frequently used expressions which are strongly associated with the keyword "Session." From this table, it is clear that as the time advanced, the tutors' perception towards the tutoring program as well as English learning changed.

　　　During the first three sessions (No.1 – No. 3), tutors often associated the keyword with "Feel" (No.1), "Attend" (No.2), "Time" (No.3), "Learning" (No.4), and "Self" (No.5). Their view of each session seems conceptually simple in the first three sessions. During the last three sessions (No.8 – No.10), however, tutors associated the keyword "Session" with more contextualized, concrete, yet emotion attached expressions such as "Consider" (No.1), "Grammar" (No.3), "Enjoyable" (No.4), "Tutees (No.5), and "Undertaking" (No.6). The analysis reveals that the tutors saw the later sessions as enjoyable and as a

81

place for teaching and studying grammar with and for their own tutees. Tutors were more self-oriented concerned more about how to manage time and learning; however, later on, they were able to consider their tutees and their learning, leading them to find the sessions enjoyable.

Table 8　　　　Relationship between the keyword "Session" and other co-occurring expressions

Sessions 1 - 3

No.	抽出語	品詞	全体	共起	Jaccard係数
1	感じる	動詞	23 (0.097)	12 (0.164)	0.1429
2	行う	動詞	15 (0.063)	10 (0.137)	0.1282
3	時間	副詞可能	27 (0.114)	10 (0.137)	0.1111
4	学習	サ変名詞	13 (0.055)	6 (0.082)	0.075
5	自身	名詞	14 (0.059)	6 (0.082)	0.0741
6	ポイント	名詞	9 (0.038)	5 (0.068)	0.0649
7	進む	動詞	4 (0.017)	4 (0.055)	0.0548
8	中心	名詞	5 (0.021)	4 (0.055)	0.0541
9	配分	サ変名詞	5 (0.021)	4 (0.055)	0.0541
10	高い	形容詞	6 (0.025)	4 (0.055)	0.0533

Sessions 8 - 10

No.	抽出語	品詞	全体	共起	Jaccard 係数
1	思う	動詞	50 (0.225)	17 (0.266)	0.1753
2	行う	動詞	17 (0.077)	11 (0.172)	0.1571
3	文法	名詞	41 (0.185)	12 (0.187)	0.129
4	楽しい	形容詞	9 (0.041)	8 (0.125)	0.1231
5	チューティー	未知語	37 (0.167)	11 (0.172)	0.1222
6	取り組む	動詞	7 (0.032)	6 (0.094)	0.0923
7	TOEFL	未知語	14 (0.063)	6 (0.094)	0.0833
8	時間	副詞可能	16 (0.072)	6 (0.094)	0.0811
9	雰囲気	名詞	7 (0.032)	5 (0.078)	0.0758
10	学習	サ変名詞	12 (0.054)	5 (0.078)	0.0704

We conducted another co-occurrence analysis, this time, with the keyword, "Myself", and the result is presented in Table 9. "Myself" was chosen and analyzed to see how the tutors' perception towards themselves changed. As the expressions from "Learning" (No.1), "Explanation" (No.2), "Preview" (No.3), "Listening" (No.4), "Session" (No.6), and "Key point" (No. 10) attest, tutors were self-centered and concerned about session management during the first three sessions. After a few sessions, however, tutors started to think more about learning experience as well as learning atmosphere; i.e., their attention shifted from local to global and from self to others in relation to their roles as a tutor. Their attitudinal change is evident from the frequent co-occurrence of the expressions such as "experience" (No.2) "future" (No.5), "think deeply" (No.7) and "improve" (No.8) in the later three sessions. They came to consider seriously how to improve the current for the better future with their tutoring practices.

Table 9　　　Relationship between the keyword "Myself" and other co-occurring expressions

Session 1-3　　　　　　　　　　　　　　　　Session 8-10

「自身」						「自身」				
No.	抽出語	品詞	全体	共起	Jaccard係数	No.	抽出語	品詞	全体	共起	Jaccard係数
1	学習	サ変名詞	13 (0.055)	4 (0.286)	0.1739	1	学習	サ変名詞	12 (0.054)	4 (0.308)	0.1905
2	説明	サ変名詞	24 (0.101)	5 (0.357)	0.1515	2	経験	サ変名詞	3 (0.014)	2 (0.154)	0.1429
3	予習	サ変名詞	4 (0.017)	2 (0.143)	0.125	3	チューター	未知語	7 (0.032)	2 (0.154)	0.1111
4	リスニング	名詞	15 (0.063)	3 (0.214)	0.1154	4	教える	動詞	8 (0.036)	2 (0.154)	0.1053
5	思う	動詞	65 (0.274)	7 (0.500)	0.0972	5	今後	副詞可能	11 (0.050)	2 (0.154)	0.0909
6	セッション	名詞	73 (0.308)	6 (0.429)	0.0741	6	TOEFL	未知語	14 (0.063)	2 (0.154)	0.08
7	本当に	副詞	1 (0.004)	1 (0.071)	0.0714	7	考える	動詞	14 (0.063)	2 (0.154)	0.08
8	向ける	動詞	1 (0.004)	1 (0.071)	0.0714	8	改善	サ変名詞	1 (0.005)	1 (0.077)	0.0769
9	当てる	動詞	1 (0.004)	1 (0.071)	0.0714	9	肯定	サ変名詞	1 (0.005)	1 (0.077)	0.0769
10	要点	名詞	1 (0.004)	1 (0.071)	0.0714	10	習慣	名詞	1 (0.005)	1 (0.077)	0.0769

We also examined "English" as the keyword in relation to other co-occurring expressions in tutors' reflections. Their reflective comments indicated that tutors were going through some perceptional changes of their own English learning as well. As Table 10 reveals, at the beginning of the program (sessions 1-3), tutors associated "English" with "learning (No.1)" similar to training as the other co-occurring expressions imply. However, later on, they associate the keyword "English" with expressions such as "Meaning (No.4)" and "Knowledge" (No.5)". Although the primary purpose of the tutoring program was to help the participants achieve higher TOEFL scores, tutors may have realized that studying to TOEFL is not enough to achieve the purpose, and rather accumulating English knowledge in a meaningful way is more desirable.

Table 10　Relationship between the keyword "English" and other co-occurring expressions

		Session 1-3						Session 8-10		

「英語」

No.	抽出語	品詞	全体	共起	Jaccard係数	No.	抽出語	品詞	全体	共起	Jaccard係数
1	学習	サ変名詞	13 (0.055)	3 (0.500)	0.1875	1	話す	動詞	5 (0.023)	3 (0.333)	0.2727
2	余る	動詞	1 (0.004)	1 (0.167)	0.1667	2	言う	動詞	3 (0.014)	2 (0.222)	0.2
3	向ける	動詞	1 (0.004)	1 (0.167)	0.1667	3	最近	副詞可能	4 (0.018)	2 (0.222)	0.1818
4	発表	サ変名詞	1 (0.004)	1 (0.167)	0.1667	4	意味	サ変名詞	7 (0.032)	2 (0.222)	0.1429
5	スピーキング	未知語	1 (0.004)	1 (0.167)	0.1667	5	知識	名詞	8 (0.036)	2 (0.222)	0.1333
6	伸ばせる	動詞	1 (0.004)	1 (0.167)	0.1667	6	今後	副詞可能	11 (0.050)	2 (0.222)	0.1111
7	意義	名詞	1 (0.004)	1 (0.167)	0.1667	7	エッセイ	名詞	1 (0.005)	1 (0.111)	0.1111
8	選択	サ変名詞	1 (0.004)	1 (0.167)	0.1667	8	科目	名詞	1 (0.005)	1 (0.111)	0.1111
9	生活	サ変名詞	1 (0.004)	1 (0.167)	0.1667	9	添削	サ変名詞	1 (0.005)	1 (0.111)	0.1111
10	形成	サ変名詞	1 (0.004)	1 (0.167)	0.1667	10	一般	名詞	1 (0.005)	1 (0.111)	0.1111

Tutee perception　　　　As shown in Table 11, responses from the tutees show that they are highly satisfied with the program. The mean scores on each statement (a – k) are all above 4 indicating that the tutees were actively involved in this program. They felt that they were gaining much from the program as reflected in the statements e and f (M =4.64 and M =4.49, respectively). Their motivation towards English learning was improved as in g (M =4.56). Lastly, most of them believed that their attitude towards English learning changed after attending the program as shown in the statement k (M =4.36).
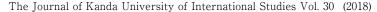
Table 11　Descriptive statistics of the tutees' responses to the questionnaire

	M	SD	Mdn	min	max
a. 私は意欲的に取り組むことができた。	4.64	0.57	5	3	5
b. セッションで使用した教材は自分に合っていた。	4.67	0.56	5	3	5
c. 出された課題（宿題）の量は適当だった。	4.60	0.58	5	3	5
d. セッションの回数（前10回）は適当だった。	4.16	1.00	4	1	5
e. このチューター制度を通じて多くのことを学んだ。	4.64	0.57	5	3	5
f. このチューター制度を通じて英語学習の方法について学んだ。	4.49	0.59	5	3	5
g. このチューター制度を通じて学習意欲が増した。	4.56	0.55	5	3	5
h. このチューター制度を通じてTOEFLスコアが上がった。	4.58	0.72	5	2	5
i. 二年生になってもこのプログラムがあれば、参加したい。	4.67	0.56	5	3	5
j. 全体的に私はこのチューター制度に満足している。	4.80	0.40	5	4	5
k. このチューター制度を通じて、英語学習への取り組み方・意識に変化があった。	4.36	0.68	4	3	5

Tutee reflection   We analyzed tutees' reflective comments using a co-occurrence network analysis on high frequency words. The analysis enabled us to visually examine the connections between the expressions frequently appeared in the tutees' reflective comments.

The darkness of the shadow in each circle denotes the centrality index: the light shadow in each circle specifies low centrality whereas the darker shadow endorses high centrality. If a word is frequently used in a text, it is positioned in the center of the figure. In our current discussion, the words which appeared eight or more times in the reflective comments were included in this network analysis. The network map shows how the words entered into analysis can be interactively arranged in relation to each other. Based on the resulted network maps in Figures 1 and 2, we examined tutees' perceptional changes while they were attending the program. Figure 1 is based on the tutees' reflective comments during the first three weeks (Weeks 1-3), and Figure 2 during the last three weeks (Weeks 8-10).

The network analysis in Figure 1 reveals that a number of tutees were concerned with their grammar questions and how they may be able to understand and answer them. In addition, the term "study" is networked with "vocabulary", "TOEFL", and questions, all of which are the description of what they are to study. The area (2) with a center of "think" indicates that the tutees reflected on "meaning", "explanation", and "answer" in association with their peer tutoring sessions. In addition, the tutees expressed their weakness, as shown in the area (3); the word, "weakness", is noted in the high centrality of the map. They may have been not confident about their English learning during the first three weeks.
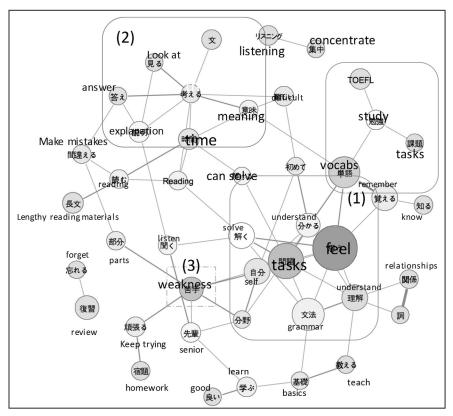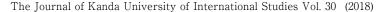
Figure 1 Co-occurrence network analysis based on the comments from Sessions 1-3

　　Figure 2 shows the results from the reflective comments during the last three weeks (weeks 8 – 10). The analysis on tutees' comments demonstrates changes in the way they reflected on their learning from the tutoring sessions. The words "TOEFL" and "think" were resulted in high centrality, as shown in Figure 2. The area (4) shows their confidence on their learning. The word "TOEFL" is closely networked with the expressions that describe their feelings towards TOEFL exams. The networked expressions in the area (4)

note that the tutees somewhat gained confidence in their English learning and their perception towards it has also become positive. Some tutees linked the word "classes" with "TOEFL", which shows they perceived the improvement of TOEFL scores is related to their class work or enrollment. The area (5) demonstrates the difficulty they felt on studying grammar, vocabulary, and reading. Their comments on difficulties or weaknesses are noticeable towards the end of the program. Lastly, the area (6) indicates that their reflection became rather specific compared to that of the first three weeks in the program; their reflection became more specific with respect to their English knowledge. They expressed concerns about their mistakes, knowledge, relationships between sentences, and parts of speech.
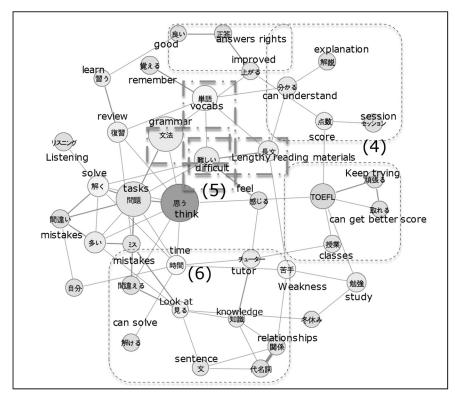
Figure 2 Co-occurrence network analysis based on the comments from Sessions 8-10

Conclusions

The purposes of this study were to examine the effects of a peer tutoring program on the participants' achievement gains and their motivational as well as attitudinal changes toward the program and their English learning. To achieve the purposes, we analyzed the participants' TOEFL scores using a pre-and post-test design and also examined their questionnaire responses and reflective comments on their learning processes through a covariance structure analysis using KH coder.

The findings in this study demonstrated that the participants' achievement gains were statistically meaningful and the magnitude of effect sizes varied from small to large. These gains were equally applicable to both tutors and tutees in the program and tended to increase as the program repeated with accumulated expertise in managing the program of the administrators and in tutoring by the tutors themselves.

Also, the peer tutoring program in this study helped the participants to develop positive perceptions toward learning in the context of peer tutoring. They saw peer tutoring as an opportunity to gain English proficiency and as a practice that requires thinking more globally and long-term planning. Most importantly, the participants were able to recognize the tutoring experiences not as a practice of knowledge transmission but as an enjoyable and collaborative opportunity for mutual learning. In addition, the program helped the tutees become more confident about their learning and manage their learning in a more focused manner. It also helped them see the value of developing study skills not just as accumulating content knowledge.

In conclusion, this study demonstrated that a peer tutoring program at a tertiary level can bear positive impacts on its participants, both tutors and tutees, in their development of English proficiency, higher motivation, and positive attitudes toward learning. Peer learning helped the participants in the program foster their metacognition which encouraged them to prepare and plan for learning, apply different strategies, and monitor and evaluate their own learning.

While we believe this study helped add to the body of knowledge on the effects of a peer tutoring program in the higher education in Japan, we recognize that continued research effort is required with more participants and programs in differing institutional contexts. Such research will help us understand the challenges better allowing us to examine the learner development in a peer tutoring program more closely in the long term.

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