

The Cooperative Learning Effects on English Reading Comprehension and Learning Motivation of EFL Freshmen

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Received: March 1, 2013 Accepted: March 19, 2013 Online Published: April 3, 2013

doi:10.5539/elt.v6n5p13 URL: <http://dx.doi.org/10.5539/elt.v6n5p13>

Abstract

This experimental study aims to investigate the effects of using cooperative learning to enhance the English reading comprehension and learning motivation of EFL freshmen by comparing the cooperative learning instruction and traditional lecture instruction. This experiment was implemented in a Freshman English Reading course, a two credit course, with two hours of instruction per week, over a full semester. Seventy-eight EFL freshmen taking Freshman English Reading courses participated in this study, with 44 participants in the experimental group and 34 in the comparison group. We employed a pretest-posttest comparison group quasi-experimental design. The experimental group received a reciprocal cooperative learning instruction, whereas the comparison group received a traditional lecture instruction. Both groups were administered three English-reading achievement tests and an English learning motivation scale. The data were analyzed by means, standard deviations, *t* tests, and one-way ANCOVA. The findings indicate statistically significant differences in favor of cooperative learning instruction on English reading comprehension, particularly among medium- and low-proficiency students. Cooperative learning instruction also created a significantly positive effect on student motivation toward learning English reading. In conclusion, we strongly suggest teachers use cooperative learning instruction in university-level EFL reading classes.

Keywords: cooperative learning, English reading comprehension, learning motivation

1. Introduction

Faced with globalization and international competition, the Taiwanese government has strongly urged universities to promote students' English ability, which affects the future studies and career development of college students. The English reading ability is the most important component of English performance, particularly in an academic setting (Huckin, Haynes, & Coady, 1993). Thus, all Taiwanese universities offer compulsory English reading courses and pledge to improve instruction to promote students' English reading competence (Pan & Huang, 2009). However, tailoring an effective English reading instruction as a foreign language is not an easy task (Zoghi, Mustapha, Massum, 2010).

Because of the dominance of conventional language instruction, a transmission style of language instruction prevails across universities in most EFL contexts throughout Taiwan (Pan & Huang, 2009). Traditional EFL reading courses are typically taught in large classes by teacher-centered lecturing, which mainly involves text explanation, vocabulary illustration, grammar instruction, and intensive drills on language forms (Wei, 1996; Jin & Cortazzi, 2004). These traditional methods emphasize linguistic accuracy and rote learning. Teachers serve as the sole providers of language knowledge, and students are treated as passive recipients of teaching, rather than active learners, and exhibit limited autonomy (Ning, 2011). These methods have caused students to feel dull and disinterested in EFL classes (Gomleksiz, 2007).

A recent shift has occurred toward English reading instruction that is more student-centered and communication-oriented (Brown, 2007). Suh (2009) indicated that English reading instruction must become a meaning-making and self-directed task, and benefited from infusing certain communicative approaches into reading classes. Learning EFL reading requires more cooperation and interaction. Therefore, a promising alternative to traditional reading instruction is cooperative learning, which emphasizes interaction and

communication and promotes the socio-linguistic competence of students (Bolukbas, Keskin, & Polat, 2011; Gomleksiz, 2007; Ning, 2011; Tsai, 2004).

Cooperative learning is one of the most remarkable and fertile areas of theory, research, and practice in education. In the past three decades, cooperative learning has become a widely used instructional procedure across different grade levels and subject areas (Tsai, 2005; Tseng, 2004). Using cooperative learning with college students enhances their learning motivation, knowledge retention, and understanding (Law, 2011; Liao, 2009; Suh, 2009).

Numerous studies have shown the effectiveness of cooperative learning with university-level students in EFL reading classes (Ghaith & El-Malak, 2004; Law, 2011; Liao & Oescher, 2009; Suh, 2009). Certain studies have shown that combining cooperative learning with English reading instruction creates student opportunities to interact with peers, increase peer communication and support, encourage reading-comprehension development, and lower anxiety (Gillies & Ashman, 2000). However, other studies have disproved the advantages of cooperative learning in English reading comprehension compared to traditional lecture-based instruction (Gladwin, & Stepp-Greany, 2008; Zoghi, Mustapha, Maasum, 2010). In Taiwan, however, English reading instruction within the framework of cooperative learning pedagogy has remained under-explored in university level education (Liao, 2009; Tsai, 2005). Kessler (1992) mentioned cooperative learning as a humanistic, pro-social form of education for second language learners. Consequently, in this study, we created a “humanistic and pro-social” cooperative learning environment for Freshmen English Reading classes, and compared it with traditional lecture-based instruction to explore the effects of cooperative learning instruction on English reading comprehension and learning motivation.

Three research questions represent the foci of this study:

- 1) Do EFL freshmen who receive cooperative learning instruction perform better on English reading comprehension examinations than those who receive traditional lecture instruction?
- 2) Do the two instructional methods affect the English learning motivation of EFL freshmen differently?
- 3) What are the EFL freshmen’s views on cooperative learning after providing cooperative learning instruction?

2. Literature Review

2.1 Cooperative Learning

Cooperative learning is an instructional method whereby students in small groups collaborate to maximize one another’s learning and to achieve mutual goals (Johnson, Johnson, & Smith, 1998). Cooperative learning was one of the most popular methods, and has been shown to have positive effects on various outcomes (Johnson & Johnson, 2002). This methodology has been widely used to teach various language skills, such as university English reading comprehension (Bolukbas, Keskin, Polat, 2011; Meng, 2010; Law, 2011), oral English (Fen, 2011; Pattanpichet, 2011), English writing (Roddy, 2009; Shih, 2011), and EFL courses (Morgan, Rosenberg, Wells, 2010; Suh, 2009; Tuan, 2010). Most studies on the effectiveness of cooperative learning have consistently indicated that this methodology promotes higher achievement, more positive interpersonal relationships, and higher self-esteem than do competitive or individualistic efforts (Gomleksiz, 2007; Johnson & Johnson, 1994).

Fosnot and Perry (2005) indicated that English reading materials could be learned through social interaction by undergoing re-definition and reconceptualization of the materials to become internalized. Reading skills are enhanced in a learning environment where learners interact and use language for socially constructing meaning (Zoghi, Mustapha, Massum, 2010). Practically employed cooperative learning helps learners participate in reading lessons effectively, create an abundant and healthy English learning environment, make language learning more meaningful, and increase acquisition (Bolukbas, Keskin, Polat, 2011).

The following characteristics should be evident in a cooperative learning classroom setting: positive interdependence, individual accountability, face-to-face interaction, social/interpersonal skills, group processing, and the opportunity for equal success (Johnson, Johnson, & Smith, 1991). Teacher roles should also shift from knowledge transmitters to thought mediators (Calderon, 1990). Teacher mediation involves facilitating, modeling and coaching. As effective facilitators, teachers intervene and assist in the problem-solving process, and assess group interactions and monitor how students are developing their language skills, which allows them to adjust their procedures to enhance student learning (Chen, 1998). Creating a safe, non-threatening, and learner-centered environment is also important for teachers to ensure that all students have opportunities to contribute to their group (Ning, 2011).

2.2 Reciprocal Cooperative Learning

We adopted reciprocal cooperative learning (RCL) as the cooperative learning instructional methodology for this study. RCL is modified from “interteaching,” a strategy for enhancing the user-friendliness of behavioral arrangements in a college classroom. Boyce and Hinline (2002) introduced interteaching as a mutually probing, mutually informing conversation between two people. Interteaching retains certain key features of a personalized instructional system (Keller, 1968), reciprocal peer tutoring (Griffin & Griffin, 1998), and cooperative learning. Considerable class time is spent in an active and well-focused discussion among students. Brief lectures are conducted, but they address topics that students have identified as needing clarification (Boyce & Hinline, 2002).

The sequence of a typical interteaching session proceeds as follows. The instructor first designs and distributes a preparation guide consisting of various questions to lead students through the course material that will be discussed during the next class period. During the class period, students work in pairs and discuss questions contained in the preparation guide while the instructor moves from group to group to clarify information, evaluate student comprehension, and facilitate discussions. Students then complete an interteaching record sheet that informs the instructor of which questions were difficult to answer and which questions require review. The instructor then uses this information to construct a short, clarifying lecture to present during the next class period (Saville, Zinn, & Elliott, 2005).

We adopted RCL, which modified certain interteaching elements. Because SQ3R reading strategies (Robinson, 1970) were used to facilitate student reading comprehension and for generating questions during the reading process as part of SQ3R, the questions students generated in RCL replaced the preparation guides designed by instructors in interteaching. For interteaching, pairs are formed as the basis of groups, and may frequently change partners. However, in RCL, students are assigned to small heterogeneous groups of three to four persons to collaborate for the entire semester. One reason for using long-term learning groups is that it particularly suits a large class context where students have diverse abilities and needs (Johnson, Johnson, & Holubec, 1998). The other reason is that it offers students more time to develop cooperative skills and build group cohesion.

The course in our study was designed such that all unit tasks would be completed within the same week; therefore, no interteaching record sheets were collected to guide instructor lectures. In RCL, after completing a group discussion, students were encouraged to ask questions regarding the text, and the instructor offered a brief lecture to clarify confusing texts, solve student problems, or both. At the end of the class, each student took a quiz individually that was frequently adopted in the cooperative learning class. This modified interteaching methodology is called RCL.

3. Method

This section presents information on the research design, treatments, and instruments used in this study.

3.1 Research Design

The experimental study was implemented in the Freshman English Reading course, a two-credit course, over a full semester. Nine units were assigned for study during the semester; six units were selected from *The Norton Sampler* (Cooley, 1997) and two stories and one essay were selected from other resources.

A pretest-posttest comparison group quasi-experimental design was employed. The sample comprised 78 EFL freshmen from different departments who were enrolled in two Freshman English Reading courses with the researcher as the instructor; one was assigned as the experimental group ($n = 44$), and the other was assigned as the comparison group ($n = 34$). The experimental group was exposed to RCL instruction, whereas the comparison group received traditional lecture instruction. Both groups had the same learning materials, schedule, tests, and instructor; the sole difference was the instructional method.

The Intermediate Level Reading Comprehension Test of the General English Proficiency Test (GEPT) and the English Learning Motivation Scale were administered as pretests to measure the entry level of each group before the experiment. Two midterm examinations and one final examination were given to check the students' English reading outcome. The English Learning Motivation Scale was administered again at the end of the semester to determine the variations of students' learning motivation. The experimental design for our study is shown in Table 1.

Table 1. Experiment design for the study

Groups	Instructional Methods	Pretest	Treatments	Posttest
Experimental group	Reciprocal cooperative learning instruction	O ₁	X ₁	O ₃
Comparison group	Traditional lecture instruction	O ₂	X ₂	O ₄

X₁: The experimental group received “reciprocal cooperative learning instruction”

X₂: The comparison group received “traditional lecture instruction”

O₁, O₂: Pretests included the intermediate GEPT Reading Comprehension Test and the English Learning Motivation Scale

O₃, O₄: Two midterms and one final examination were the reading comprehension posttests

The English Learning Motivation Scale was the posttest of student motivation.

Only experimental group students took the “Cooperative Learning Survey”

3.2 Treatment

3.2.1 Reciprocal Cooperative Learning Instruction

The experimental group received RCL instruction. The experimental group students were sorted into small heterogeneous groups of three to four members based on GEPT pretest scores at the beginning of the experiment. In the first two weeks of the experiment, the instructor spent about 15 minutes each week guiding students to practice RCL strategies and skills through explanation and coaching. In the RCL classroom, students were asked to preview the unit text and prepare individual questions before class, and then bring the questions to class for cooperative learning. During class collaboration, group members clarified word meanings and confusing texts, and then engaged in a discussion to determine the answers to their questions. During group discussions, the instructor helped students resolve misunderstandings, offered feedback, and facilitated discussions. Following a group discussion, students were encouraged to ask questions on the text they had read, and the teacher offered a brief lecture to clarify any confusing text and resolve their questions. Finally, students were tested individually with a unit reading comprehension quiz developed by the instructor.

3.2.2 Traditional Lecture Instruction

The comparison group received the traditional lecture instruction, or teacher-centered instruction. In traditional lecture classroom, students were asked to preview the text for each unit before class, and the teacher instructed the whole class by explaining the text paragraph by paragraph, focusing on English syntax and semantics. The teacher interacted with students by asking questions and leading a discussion. After finishing each unit, students were tested individually on the material.

3.3 Instrumentation

We used four research instruments as listed below.

3.3.1 Intermediate GEPT Reading Comprehension Test

The intermediate GEPT Reading Comprehension Test was used as the pretest to assess the English reading comprehension proficiency of both student groups. It comprises 45 multiple choice items of vocabulary, cloze, and comprehension of short passages. GEPT test was commissioned by the Ministry of Education in Taiwan. It provides individuals with a gauge of their English language proficiency and assist employers and educational institutions in selection and placement. The rigorous procedures of test construction and administration ensure that the high quality, validity, and reliability of the GEPT are maintained (Roever & Pan, 2008). The reliability indices for the GEPT Reading tests fall between 0.87 and 0.91.

3.3.2 English Reading Achievement Tests

English reading achievement tests assess whether different instructional methods induce varied performance in English reading comprehension. The researchers developed the reading achievement tests including two midterms and one final examination. After completing three units, students were given a summative examination to assess their overall reading comprehension of the three units. Item formats included vocabulary, cloze, translation, and short-answer questions. To ensure the content validity of the tests, another expert was invited to evaluate and validate them. To ensure good inter-scorer reliability, all examinations were independently rated by

two teachers.

3.3.3 English Learning Motivation Scale

The English Learning Motivation Scale was revised from the Peng scale (2002) consisting of five factors: liking, dedication, self-efficacy, intrinsic motivation, and extrinsic motivation (See Appendix I). The scale consists of thirty-seven 5-point Likert-type items, ranging from 1 “strongly disagree” to 5 “strongly agree,” and a higher score indicates greater motivation. Its Cronbach’s α for whole scale is 0.95, for liking is .85, for dedication is .83, for self-efficacy is .83, for intrinsic motivation is .62, and for extrinsic motivation is .92. The proportion of variance explained is 62.1%.

3.3.4 Cooperative Learning Survey

At the end of this experiment, the experimental group students were asked to complete the Cooperative Learning Scale to reveal their views on the use of RCL, which consisting of thirteen 5-point Likert-type items and four factors: (1) active learning, (2) group discussion, (3) views of cooperative learning, (4) interaction (See Appendix II).

3.4 Data Analyses

The data were analyzed using the software package SPSS 14. To understand the effects of cooperative learning instruction, pretest and posttest results were compared, and t tests and one-way ANCOVA were conducted to determine whether the differences were significant. The effect size is an objective and standardized measure of the magnitude of observed effect. In this study we adopted Cohen’s criteria to interpret the effect sizes. According to Cohen (1988), the values of effect size, $.059 > \eta^2 > .01$, $.138 > \eta^2 > .059$, $\eta^2 > .138$ are indicative of a small, a medium, and a large effect respectively.

4. Research Findings

The research findings correspond to the three research questions: the improvement of English reading comprehension, learning motivation, and the experimental group student views on reciprocal cooperative learning.

4.1 Improvement of English Reading Comprehension

4.1.1 Pretests for English Reading Comprehension

Table 2 presents the results of the independent group t test by comparing the pretest mean scores of the GEPT Reading Comprehension Test. Table 2 shows the mean scores for both groups to be 69.06 and 70.06, respectively; no statistically significant difference was found in English reading comprehension pretest scores ($t_{(76)} = -.74$, $p = .463 > .05$). The result indicates that the 2 groups were at a similar level of English reading comprehension competence before the experiment.

Table 2. Independent group t test on GEPT reading comprehension pretest scores of the experimental group and comparison group

	Experimental group n=44		Comparison group n=34		t	df	p
	M	SD	M	SD			
GEPT scores	69.06	3.85	70.06	7.04	-.74	76	.463

Based on the pretest GEPT reading comprehension scores, we separated each group into 3 subgroups: high, medium, and low proficiency. Table 3 presents the means and standard deviations of the 3 subgroups and independent group t test results from comparing the 3 subgroups. The means for the 2 high-proficiency groups are 73.4 and 78.0, respectively; the t test result shows a significant difference between them ($t_{(25)} = -3.41$, $p = .002 < .05$); however, the high-proficiency comparison group outperformed the high-proficiency experimental group. The means for the 2 medium-proficiency groups are 68.80 and 68.18, respectively, which are close. The means for the 2 low-proficiency groups are 64.93 and 63.27, respectively, which are also close. No statistically significant differences were found between the medium- and low-proficiency subgroups, indicated as follows: $t_{(24)} = .65$ ($p = .527 > .05$), $t_{(23)} = 1.95$ ($p = .070 > .05$). This finding proves that the medium- and low-proficiency subgroups of both groups were at a similar level of English reading comprehension competence before the experiment.

Table 3. Independent group *t* tests on GEPT reading comprehension pretest scores of the three subgroups between the experimental group and comparison group

	Experimental group			Comparison group			<i>t</i>	df	<i>p</i>
	n	M	SD	n	M	SD			
High proficiency group	15	73.40	2.23	12	78.00	4.61	-3.41**	25	.002
Medium proficiency group	15	68.80	1.06	11	68.18	1.94	.65	24	.527
Low proficiency group	14	64.93	1.49	11	63.27	2.49	1.95	23	.070

***p* < .01

4.1.2 Posttests for English Reading Comprehension

4.1.2.1 Comparisons between the Experimental Group and Comparison Group

We conducted one-way ANCOVA with the pretest GEPT reading comprehension scores as the covariants to examine the posttest scores of three summative reading comprehension examinations to determine the difference in English reading comprehension between the experimental and comparison groups. The results are summarized in Table 4.

Table 4. One-way ANCOVA on English reading comprehension posttest scores between the experimental group and comparison group

	Experimental Group n=40			Comparison group n=34			F	η^2
	M	SD	Adj. M	M	SD	Adj. M		
1 st Mid-term Exam	105.2	22.3	105.9	85.6	24.2	84.9	17.32***	.20
2 nd Mid-term Exam	74.3	14.9	74.9	63.1	13.9	62.3	16.47***	.19
Final Exam	82.0	18.7	82.8	70.6	13.6	69.7	12.32**	.15

p* < .01 *p* < .001

As shown in Table 4, the reading comprehension adjusted mean scores of the experimental group were all higher than the scores of the comparison group. One-way ANCOVA showed significant differences between the 2 groups in the three summative examinations: for 1st midterm exam ($F_{(1,71)} = 17.32, p = .000$), for 2nd midterm exam ($F_{(1,71)} = 16.47, p = .000$), and for final exam ($F_{(1,71)} = 12.32, p = .001$). The effect size as measured by eta squared (η^2) was at .20, .19, and .15, respectively, each of which was considered a large effect. The results indicate that RCL instruction enhanced and promoted English reading comprehension performance in the experimental student group more than traditional lecture instruction did.

4.1.2.2 Comparisons between Proficiency Subgroups

Tables 5, 6, and 7 present the results of one-way ANCOVA comparing the 3 subgroups between the experimental group and comparison group. Table 5 shows no significant differences of the three pairs of adjusted mean scores from reading comprehension examinations of the high-proficiency groups: for 1st midterm exam ($F_{(1,23)} = 1.45, p = .24 > .05$), for 2nd midterm exam ($F_{(1,23)} = .67, p = .42 > .05$), and for final exam ($F_{(1,23)} = 1.40, p = .25 > .05$). Table 6 shows that the experimental medium-proficiency group significantly outperformed the comparison medium-proficiency group on three summative examinations: for 1st midterm exam ($F_{(1,21)} = 7.76, p = .010$), for 2nd midterm exam ($F_{(1,21)} = 6.38, p = .020$), and for final exam ($F_{(1,21)} = 7.77, p = .012$). The effect size as measured by eta squared (η^2) was at .275, .233, and .29, respectively, each of which was considered a large effect. Table 7 shows that the experimental low-proficiency group significantly outperformed the comparison low-proficiency group on two summative examinations: for 1st midterm exam ($F_{(1,21)} = 4.76, p = .041$), and for 2nd midterm exam ($F_{(1,21)} = 4.94, p = .038$). The effect size as measured by eta squared (η^2) was at .185, .198, and .139, respectively, each of which was considered a large effect. It can be concluded that the RCL instruction effectively enhanced the English reading comprehension of the medium- and low-proficiency experimental groups.

Table 5. One-way ANCOVA on English reading comprehension posttest scores for high-proficiency groups between the experimental group and comparison group

	Experimental Group (n=14)			Comparison group (n=12)			F	η^2
	M	SD	Adj. M	M	SD	Adj. M		
1 st Mid-term Exam	109.2	21.8	109.0	98.5	12.44	98.6	1.45	.059
2 nd Mid-term Exam	76.3	11.8	77.1	73.9	8.80	72.9	0.67	.028
Final Exam	88.1	12.4	88.4	82.6	8.46	82.3	1.40	.058

Table 6. One-way ANCOVA on English reading comprehension posttest scores for medium-proficiency groups between the experimental group and comparison group

	Experimental Group (n=13)			Comparison group (n=11)			F	η^2
	M	SD	Adj. M	M	SD	Adj. M		
1 st Mid-term Exam	108.7	14.36	107.5	88.3	22.90	89.6	7.76*	.275
2 nd Mid-term Exam	74.9	12.42	74.8	62.5	10.27	62.6	6.38*	.233
Final Exam	80.0	12.77	79.9	66.8	5.93	66.9	7.77*	.290

* $p < .05$

Table 7. One-way ANCOVA on English reading comprehension posttest scores for low-proficiency groups between the experimental group and comparison group

	Experimental Group (n=13)			Comparison group (n=11)			F	η^2
	M	SD	Adj. M	M	SD	Adj. M		
1 st Mid-term Exam	97.5	28.34	96.90	68.9	26.95	69.56	4.76*	.185
2 nd Mid-term Exam	71.5	20.06	69.83	50.8	12.45	52.92	4.94*	.198
Final Exam	77.5	27.26	77.83	59.8	12.73	59.40	3.22	.139

* $p < .05$

Two teachers rated the three summative examinations, in which most items are open-ended questions. Table 8 shows the inter-scorer reliability for the two raters' scores. The Spearman correlations of the raters' scores were between .887 and .987 ($p = .000$), respectively. The high correlations between rater scores indicate that scores rated by the two teachers are relatively consistent.

Table 8. Inter-scorer reliability for two teachers to score three examinations

	Experimental group		Comparison group	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
1 st Mid-term Exam	.987***	.000	.976***	.000
2 nd Mid-term Exam	.887***	.000	.935***	.000
Final Exam	.952***	.000	.943***	.000

*** $p < .001$ r = Spearman correlation coefficient

4.2 English Learning Motivation

4.2.1 Pretest for English Learning Motivation

To assess homogeneity of the English learning motivation for the 2 groups, an independent group *t* test was conducted to check the results of the English Learning Motivation Scale administered before the experiment. The results are shown in Table 9. No statistically significant difference was found between the 2 groups, based on the five factors and total English learning motivation scores. These results proved that the 2 groups had similar English learning motivation at the beginning of this experiment.

Table 9. Independent group *t* test on English learning motivation pretest scores between the experimental group and comparison group (N=77)

	Experimental group N=43		Comparison group N=34		<i>t</i>	df	<i>p</i>
	M	SD	M	SD			
Liking	18.93	2.79	20.26	4.21	-1.59	75	.117
Dedication	23.26	3.19	23.26	4.01	-.011	75	.991
Self-efficacy	22.14	3.17	22.41	3.49	-.358	75	.721
Intrinsic	15.00	3.26	15.29	3.86	-.363	75	.718
Extrinsic	46.44	6.52	48.32	5.55	-1.341	75	.184
Total score	125.77	14.04	129.56	15.76	-1.115	75	.268

4.2.2 Posttest for English Learning Motivation

Table 10 presents the paired *t* test results of the comparison pretests and posttests of English learning motivation for the experimental group. The experimental group had positive promotion on each motivation factor after one semester of intervention, and promotions were statistically significant in liking, dedication, self-efficacy, and total score: for liking ($t_{(39)} = -3.81, p = .000$), for dedication ($t_{(39)} = -4.07, p = .000$), for self-efficacy ($t_{(39)} = -3.87, p = .000$), and for total score ($t_{(39)} = -3.80, p = .000$). These findings show the effectiveness of RCL instruction in promoting student English learning motivation.

Table 10. Paired *t* test on pretests and posttests of English learning motivation for the experimental group

	Pretest			Posttest			<i>t</i>	df	<i>p</i>
	n	M	SD	n	M	SD			
liking	40	18.93	2.83	40	20.83	3.01	-3.81***	39	.000
dedication	40	23.38	3.15	40	25.70	3.32	-4.07***	39	.000
self-efficacy	40	22.20	3.03	40	24.43	2.81	-3.87***	39	.000
intrinsic	40	15.05	3.28	40	15.68	3.64	-1.19	39	.241
extrinsic	40	46.63	6.42	40	48.18	6.66	-1.52	39	.136
Total score	40	126.18	13.92	40	134.80	15.56	-3.80***	39	.000

 $p < .001$

Table 11 presents the paired *t* test results of the comparison pretests and posttests of English learning motivation for the comparison group. Only limited positive promotions of English learning motivation were found in the comparison group; by contrast, the extrinsic motivation was attenuated. These findings show that traditional lecture instruction did not promote student English learning motivation.

Table 11. Paired *t* test on pretest and posttest of English learning motivation for the comparison group

	Pretest			Posttest			<i>t</i>	df	<i>p</i>
	n	M	SD	n	M	SD			
liking	29	20.14	4.15	29	19.86	4.16	.42	28	.678
dedication	29	23.52	4.09	29	23.66	3.98	-.18	28	.862
Self-efficacy	29	22.31	3.52	29	22.55	4.11	-.42	28	.675
intrinsic	29	15.14	4.06	29	15.31	4.15	-.39	28	.697
extrinsic	29	48.07	5.50	29	45.62	6.98	1.92	28	.065
Total score	29	129.17	15.35	29	127.00	17.71	.76	28	.456

We used one-way ANCOVA to compare post motivation mean differences between the experimental and comparison groups, with prior English learning motivation scores as the covariant. The results are summarized in Table 12.

The initial analysis of the English learning motivation pretest scores showed no significant differences between the experimental group and comparison group. However, after a semester of intervention, the experimental group gained significantly higher motivation scores than the comparison group on liking, dedication, self-efficacy, extrinsic motivation, and total score: for liking ($F_{(1,66)} = 4.96, p = .029$), for dedication ($F_{(1,66)} = 6.78, p = .011$), for self-efficacy ($F_{(1,66)} = 6.83, p = .011$), for extrinsic motivation ($F_{(1,66)} = 5.02, p = .028$), and for total score

($F_{(1,66)} = 8.06$, $p = .006$) and the effect sizes measured by eta squared (η^2) were .07, .093, .094, .071, and .109, respectively, each of which was considered a medium effect. These results indicate that RCL instruction caused students to enjoy English reading more, to willingly dedicate more time to English reading, to develop more confidence in English reading, and to enhance their extrinsic motivation.

Table 12. One-way ANCOVA comparing the posttest English learning motivation scores between the experimental group and comparison group (N=69)

Motivation factors	Experimental group (n=40)			Comparison group (n=29)			F	η^2
	M	SD	Adj. M	M	SD	Adj. M		
liking	20.8	3.0	21.11	19.9	4.2	19.47	4.96*	.070
dedication	25.7	3.3	25.73	23.7	4.0	23.62	6.78*	.093
self-efficacy	24.4	2.8	24.45	22.6	4.1	22.52	6.83*	.094
intrinsic	15.7	3.6	15.70	15.3	4.2	15.27	0.39	.006
extrinsic	48.2	6.7	48.50	45.6	6.9	45.18	5.02*	.071
Total score	134.8	15.6	135.59	127.0	17.7	125.92	8.06**	.109

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

4.3 Experimental Group Student Views on Reciprocal Cooperative Learning

The Cooperative Learning Survey requested the experimental group members to compare their previous experience with traditional lecture instruction and their experience with cooperative learning instruction. Table 13 shows the student views on cooperative learning. For easier interpretation, the *strongly agree* and *agree* responses were merged into an *agree* response, and *strongly disagree* and *disagree* responses were merged into a *disagree* response. Table 13 shows that 80% of the students thought that cooperative learning could inspire them to active learning. Group discussion was the major method adopted in RCL classes, and over 85% of the students confirmed that group discussion benefited their reading comprehension, while 74% of the students believed that group discussion helped them obtain better midterm and final examination scores. In total, 71% of the students proved that they learned good study strategies or skills from their partners during the cooperative process. Approximately 60% of the students felt satisfied with their partners' performance during cooperative learning activities. Although students spent more time preparing and engaging in discussions in the cooperative process, 73% of the students preferred this method over traditional lecture instruction. In total, 52% of the students assented that cooperative learning brought more pleasure to their study. In summary, most of the experimental group students agreed that RCL instruction stimulated them to active learning, and improved their English reading comprehension; however, approximately 60% felt satisfied from interaction with their group members.

Table 13. Experimental group student views on cooperative learning

	Compared with traditional lecture instruction,	Agree	No difference	disagree
1. Active learning	cooperative learning inspires me to more active learning	80%	20%	
2. Group discussion	group discussion helps me grasp more key ideas from the text	86%	14%	
	group discussion reminds me of neglected key points in the text	97%	3%	
	group discussion helps me have more comprehensive understanding of the text	89%	11%	
	group discussion helps me determine the parts I don't really understand	88%	12%	
	group discussion helps me improve my exam scores	74%	26%	
4. Views of cooperative learning	cooperative learning helps me realize others' study methods that benefit me.	71%	23%	6%
	cooperative learning requires much more time to study	74%	16%	
	cooperative learning brings more pleasure to study	52%	48%	
	I prefer cooperative learning	73%	27%	
5. Interactions	cooperative learning increases my classroom participation	57%	30%	3%
	cooperative learning helps me share and help others which confirms my abilities.	60%	40%	
	during cooperative learning, I feel satisfied with the interactions with my partners	66%	29%	6%

4.4 Student Perceptions of Teacher Instruction

A questionnaire was administered to investigate the perception of both groups regarding teacher instruction. Table 14 shows no significant difference between the perceptions of either group regarding teacher instruction ($t_{(76)} = .37, p = .712 > .05$). The result shows that teacher efforts and work attitude are similar, regardless of the groups.

Table 14. Experimental- and comparison-group perceptions of teacher's instruction

	Experimental group			Comparison group			<i>t</i>	df	<i>p</i>
	n	M	SD	n	M	SD			
Satisfaction of instruction	43	16.23	2.93	35	15.97	3.29	.37	76	.712

5. Conclusions and Discussion

We explore how RCL instruction affected EFL freshmen in a college English reading course. The study findings are summarized and discussed as follows:

5.1 Conclusions

Students receiving RCL instruction performed significantly better on English reading comprehension examinations than students who were taught using traditional lecture instruction. For different proficiency levels of groups, the medium- and low-proficiency groups benefited more in English reading comprehension from cooperative learning instruction than from traditional lecture instruction. Our study results support the findings of previous studies conducted through reading comprehension and cooperative learning (Bolukbas, Keskin, Polat, 2011; Ghaith, 2003; Gomleksiz, 2007; Ning, 2011; Suh, 2009; Tsai, 2004).

Compared with traditional lecture instruction, RCL instruction created a significantly positive promotion in the student learning motivation, particularly in liking, dedication, self-efficacy, and extrinsic motivation. The results are also consistent with the findings of previous studies (Chen, 1998; Liao & Oescher, 2009; Manolas & Filho, 2011; Tsai, 2004).

5.2 Discussion

We showed that students who received RCL instruction had significantly higher liking, dedication, self-efficacy, and extrinsic motivation compared to students receiving traditional lecture instruction. The views of experimental group students expressed in the Cooperative Learning Survey indicated that in cooperative reading class, besides listening to the teacher lectures, they had more opportunities to actively learn by previewing the text, interacting with other group members, and helping each other during group discussions. Thus they obtained better reading comprehension, which enabled them to achieve higher self-efficacy. During group discussions, students obtained peer support and encouragement, which made them willing to devote more time to study and enjoy cooperative learning activities more than listening to teacher lectures. Therefore, over 86% of the students confirmed that the group discussion of RCL instruction benefited their reading comprehension, enhanced their scores, and increased their confidence.

Previous literature has indicated that social interaction and interactive learning of cooperative learning trigger the motivation necessary for reading comprehension to occur and to ensure reading and actively engaging with the text (Koda, 2005; Mathewson, 1994). Compared with the traditional lecture method, experimental group students articulated that reassurance from peers induced them to use more time to preview and study reading materials in greater depth. Cooperating with peers allowed them to work on reading materials more easily with the help of other group members, and they obtained encouragement, support, and achievement which enhanced their extrinsic motivation.

The success of cooperative learning in promoting student reading comprehension can attribute to the cognitive processes of cooperative learning. Group discussions, an essential part of RCL, facilitate student reading comprehension by fostering a supportive learning atmosphere, which provides more opportunities for explanation, logical inference, and debates to elaborate student understanding of reading materials, and makes ideas concrete (Liao & Oescher, 2009). Based on our classroom observation, RCL context encouraged student-based comprehension and textual interpretation through peer interactions, in which students co-constructed or reconstructed textual knowledge. Thus, besides higher motivation and easier access to obtain help, the cognitive processes of RCL is the main factor to increase student English reading comprehension.

Cooperative learning significantly promoted medium- and low-proficiency student English reading comprehension, but only offered limited benefits for high-proficiency students. Hill (1982) indicated that high-proficiency student performance did not reach the expected level because they could not obtain help from medium- and low-proficiency students when they encountered unsolved problems, and lacked a model to emulate. According to Vygotsky's scaffold theory, peer interactions allow students to enter the proximal development zone where a less able peer is able to enter a new area of potential development through problem-solving with someone who is more able (Vygotsky, 1978). This explains why medium- and low-proficiency students benefited from cooperative learning; they obtained help from higher-proficiency students facilitating their study of reading and rendering it more effective.

The study results prove that RCL instruction encourages active and interactive learning, which creates a positive learning atmosphere and causes students to enjoy and engage in their study of English reading. This consequently increases their confidence and motivation to promote effective reading comprehension for EFL freshmen.

5.3 Limitations and Suggestions

Negative feedback from experimental group students resulted when a few students showed minimal responsiveness to their individual accountability, such as not previewing reading material well and contributing little in group discussions, which affected the quiz performance of their group members. To solve this problem, we suggest that teachers frequently emphasize the rules and duties for cooperative learning in class, and remind group members to precisely rate the contribution of each group member to help teachers identify reluctant students and give them guidance and assistance to timely mend their actions. Based on our observation, sometimes certain group members did not get along well and affected the group-work effectiveness; thus, it is better to change group members whenever necessary.

Because this is a quantitative study, the limited number of questions incorporated into the survey questionnaire may not fully provide a comprehensive picture of student perceptions of cooperative learning. Future studies could collect some qualitative data such as interviews, to provide more insight into student perceptions of cooperative learning.

RCL instruction integrated into an EFL reading course is a challenging task for instruction because it requires more serious preparation and more effort by both teachers and students. However, it provides various benefits conducive to creating more positive learning motivation and promoting higher English reading comprehension. Teachers may assuredly view it as an effective instructional tool for EFL reading courses. We strongly suggest that teachers frequently use cooperative learning in university-level EFL reading classes.

Acknowledgements

Special thanks go to Hui-Yi Wu for collecting and analyzing the data and assisting in my English classes. I would like to thank Dr. Willis and Melissa Morgan for editing my manuscript and Valerio Puggioni for proofreading my manuscript.

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Appendix 1: English Learning Motivation Scale

Directions: Please indicate the extent to which you agree or disagree with each statement by encircling a number.
(5=strongly agree 4=agree 3=somewhat agree 2=disagree 1=strongly disagree)

Liking

1. English is the subject that I am interested in most. 5 4 3 2 1
2. I always think it's worthwhile to spend more time studying English. 5 4 3 2 1
3. I am pleased to take English classes. 5 4 3 2 1
4. I like to speak English with my classmates. 5 4 3 2 1
5. I expect to learn more English. 5 4 3 2 1
6. I often feel the time passing quickly in English classes. 5 4 3 2 1

Dedication

7. Compared with other subjects, I take English classes most conscientiously. 5 4 3 2 1
8. I spend more time studying English than before. 5 4 3 2 1
9. When encountering problems of English, I will do my best to solve them. 5 4 3 2 1
10. No matter good or bad the grades I get, I always study English hard. 5 4 3 2 1
11. I do my English homework conscientiously. 5 4 3 2 1
12. I often participate in discussions during English classes. 5 4 3 2 1
13. I grab every chance to practice my English. 5 4 3 2 1

Self-efficacy

14. I think I understand the content that my English teacher teaches. 5 4 3 2 1
15. In English classes, I believe I am able to help others. 5 4 3 2 1
16. When studying English with classmates, I can offer useful opinions. 5 4 3 2 1
17. I am satisfied with my performance in English classes. 5 4 3 2 1
18. I learn a lot from English discussions with classmates and teachers. 5 4 3 2 1
19. I feel a great sense of accomplishment when I finish my English assignments. 5 4 3 2 1
20. I am able to express my ideas clearly in English. 5 4 3 2 1

Intrinsic motivation

21. I like English very much. 5 4 3 2 1
22. Learning English is my hobby. 5 4 3 2 1
23. Learning English is a challenge that I love to receive. 5 4 3 2 1
24. I don't like English, even though I know it's important. 5 4 3 2 1
25. I have lots of fun learning English. 5 4 3 2 1

Extrinsic motivation

26. Learning English can broaden my horizons. 5 4 3 2 1
27. Learning English well can prove my ability to my parents. 5 4 3 2 1
28. Good English ability makes me get respect from my classmates. 5 4 3 2 1
29. Good English ability can promote my social status. 5 4 3 2 1

30. I want to learn English well because it's useful for traveling abroad. 5 4 3 2 1
31. My purpose for learning English is to make friends with foreigners. 5 4 3 2 1
32. My purpose for learning English is to promote my specialty. 5 4 3 2 1
33. Good English ability can help me get a better job. 5 4 3 2 1
34. Learning English can help me understand western culture. 5 4 3 2 1
35. I want to learn English well because I need to read English textbooks. 5 4 3 2 1
36. I want to learn English well because it will bring me some profit. 5 4 3 2 1
37. I want to learn English well because it can help me use computers and network. ... 5 4 3 2 1

Appendix 2: Cooperative Learning Survey

Directions: Please indicate the extent to which you agree or disagree with each statement by encircling a number.

(5=strongly agree 4=agree 3=somewhat agree 2=disagree 1=strongly disagree)

	Compared with traditional lecture instruction,	1	2	3	4	5
1	cooperative learning inspires me to more active learning.					
2	group discussion helps me grasp more key ideas from the text.					
3	group discussion reminds me of neglected key points in the text.					
4	group discussion helps me have more comprehensive understanding of the text.					
5	group discussion helps me determine the parts I don't really understand.					
6	group discussion helps me improve my exam scores.					
7	cooperative learning helps me realize others' study methods that benefit me.					
8	cooperative learning requires much more time to study.					
9	cooperative learning brings more pleasure to study.					
10	I prefer cooperative learning.					
11	cooperative learning increases my classroom participation.					
12	cooperative learning helps me share and help others which confirms my abilities.					
13	during cooperative learning, I feel satisfied with the interactions with my partners.					