

Shared Identities: Our Interweaving Threads

Cooperative learning for argumentative writing

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Writing is quite challenging for L2 learners because of both global and local aspects of the language needed. High school students in Taiwan do not demonstrate high writing proficiency even though it is emphasized in the curriculum. One approach which has been found to be beneficial for learning writing is computer-assisted language learning (CALL). In addition, cooperative learning has been proposed as a powerful weapon for improving learning efficiency. Therefore, this study aimed to combine the benefits of both approaches by employing cooperative learning within a CALL environment to enhance students' writing achievement. The genre of argumentative writing was selected because it is widely considered to be difficult for Taiwanese students. It was found students' argumentative writing achievement improved significantly. Of particular interest was an interaction effect for cooperative evaluation and group rewards on the improvement of students' overall argumentative writing achievement. Simple main effects were also found significantly within two conditions in the evaluation domains of overall score, focus, organization, and conventions. On the basis of these findings, several pedagogical implications are raised.



A major component of process-oriented writing instruction is feedback, comments and input from a reader to provide information to the writer for revision (Keh, 1990). With the feedback that teachers or peers provide, revision is facilitated, leading to new ideas, the clarification of meanings, and more proficient writing (Beason, 1993). Feedback from peers has also been found to be an effective tool in process writing (Melograno, 1997; Searby & Ewers, 1997; Sivan, 2002). However, peer review in L2 writing instruction has its limits. Students tend to emphasize surface-level changes too much, and therefore neglect organization and content (Crowhurst, 1986; Leki, 1990). Sometimes the comments are too vague, and some students do not know what feedback to provide to their peers (Min, 2003). Peer review may also produce counterproductive feedback if the reader lacks sufficient L2 formal writing schemata (Bender, 1989).

In spite of the limits, researchers still suggest peer review is important to facilitate students' revision (Connor & Farmer, 1990; Stanley, 1992; Connor & Asenavage, 1994; Zhu, 1995; Berg, 1999). Some researchers suggest that with training, students can become better at peer evaluation. Through training and practice, students can learn to comprehend and apply analytical scoring rubrics (Wolfe, Dalton, & Neuburger, 1993; Collins, 1998). This enables them to give more specific and focused feedback (White, 1994; Strickland, Ganske, & Monroe, 2002; Grande, 2003).

In this project, the application of peer review in Taiwanese high school English writing instruction was explored. English writing instruction in high schools in Taiwan has been receiving more and more attention because of national

exams and future career needs. High school students are required to write a composition in the College Entrance Exams. However, they do not demonstrate high writing proficiency in these exams according to the CEEC 2000 Report (Chang, 2000). Also, around 7%-9% of the students did not earn any scores in English writing in the entrance exams and the overall average scores is between 6 to 7 points of 20 points (Chang et al., 2000; HCHS, 2007). 12.5% of students scored zero in English composition in 2004 (CEEC, 2004). In 2005, 15.8 % of students scored zero in English composition (CEEC, 2005). Even more students scored zero in English composition in 2006 than before, with the numbers reaching 18% (CEEC, 2006). In 2008, the proportion of students who scored zero in English composition was 14.47% (CEEC, 2008). In fact, students in Taiwan often felt frustrated and challenged to accomplish writing assignments effectively (Liu, 1998; Yang, 2003; Huang, 2006). Accordingly, several major writing problems for English learners in Taiwan can be found, including organization, content development, and linguistic forms (Chou, 1989; Chen, 1997; Chen, 2001; Chiu, 2006). Especially with expository and argumentative writing genres, it is thought generally these two types of writing are more difficult than descriptive and narrative writings because students are required to demonstrate higher organizational and analytical abilities to express their opinions. On the other hand, although teachers play an influential role in guiding students to write successfully through correcting students' writing assignments and offering feedback (Cohen, 1991; Beason, 1993; Ferris, 1997), high school teachers in Taiwan think it is a nightmare to correct students' writing assignments and are often reluctant to give assignments

(Chang, 1996). The more assignments they give, the more time they need to spend correcting students' work, increasing the weight of their teaching load. However, without enough opportunity to engage in writing, it is impossible for students to improve their writing performance (Chiu, Chung, & Chiang, 2008). In addition, teachers' revisions may concentrate mainly on grammar, limiting the students' revision mostly to linguistic forms rather than content aspects, and downplaying the importance of peer review in the process of writing (Chen, 2001; Tsai, 2003). Therefore, it is suggested that through teamwork, in which teachers and learners play an interactive and cooperative role, revision can become more effective (Tsai, 2003, Chiu, 2006; Chiu, Chung, & Chiang, 2008).

One approach to resolving these problems is the introduction of cooperative learning. Cooperative learning is an instructional method in which students work in small groups to help one another learn academic material or to accomplish shared goals (Slavin, 1991; Johnson, Johnson, & Smith, 1998). In a cooperative learning classroom, L2 learners are actively engaged in interaction with others to complete task. Research findings in other contexts have revealed that cooperative learning can lead to a significant improvement in students' development of writing skills (Storms & Storms, 1998). This is especially true when a reward structure, which creates a contingent relationship between students' academic performance and material incentives, is included in the instructional design (Slavin, 1995). For example, the teacher may allot points to groups through the semester according to improvements in the sum of their scores for writing assignments. At the end of the

semester, students in the most successful groups receive rewards such as book vouchers. Without group rewards for individual learning, and rewards for students in groups who achieve some standards, it is hard to make cooperative learning successful (Slavin, 1983). Therefore, it seems likely that the incorporation of cooperative learning into peer review activities may have the effect of minimizing the limitations of peer review. In this paper, we use the term cooperative evaluation to apply to an instructional approach in which the characteristics of cooperative learning are added to the process of peer review. That is to say, students actively participate in discussions to provide feedback and response to others' work in groups or teams.

The purpose of this study was to combine the value of feedback and group rewards to see if difficulties in writing instruction in high schools could be overcome. Based on a theoretical framework for writing and CALL, an on-line cooperative evaluation writing system (Writing & Evaluation – Cooperative On-line Learning; WE-COOL) was established to guide students clearly when giving peer review. With the employment of cooperative discussion in peer review and group rewards in a CALL learning environment, this research investigated whether high school students in Taiwan could improve their argumentative writing achievement, both in overall quality and in five specific scoring domains.

The research aimed to investigate the following questions:

1. How effectively does cooperative evaluation and group rewards within the WE-COOL system influence senior high school students' overall English argumentative writing achievement?

2. How effectively does cooperative evaluation and group rewards within the WE-COOL system influence senior high school students' writing achievement within the domains of focus, content, organization, style, and of conventions?

Research methodology

Experimental design

The research employed a 2 x 2 factorial quasi-experimental design. The units of the experimental design were intact class sets, including four experimental groups conditioned alternately in two independent variables: teaching strategy and group reward structure. The teaching strategies in this research were cooperative evaluation and peer review. The other independent variable, group reward, was employed as an incentive. Therefore, based on the two independent variables, there were four experimental groups with different treatments.

Two classes engaged in peer review followed by cooperative evaluation. Students in these classes were placed in groups. After writing the first draft of their essays, each student in each group used the WE-COOL system to individually write comments on the drafts of five or six students from another assigned group and allocate a score. After this, the same five or six drafts would be discussed orally by the student evaluators in their home group, who would collectively produce comments and arrive at a consensus score for each of the drafts. The other two classes engaged in the first two stages of this instructional cycle, but did not participate in the third cooperative evaluation stage.

Subjects

The subjects were 160 eleventh graders from four classes in a senior high school, and each class represented an experimental group with a different treatment conditioned alternately by the two independent variables. Table 1 shows the distributions of participants in different groups.

Table 1. Distributions of participants in different groups of teaching strategies and rewards

		Teaching Strategies	
		<i>Cooperative Evaluation & Peer Review</i>	<i>Peer Review</i>
Rewards	<i>With rewards</i>	CPR (37 participants)	PR (41 participants)
	<i>Without rewards</i>	CP (45 participants)	P (37 participants)

Instruments

Writing & Evaluation – Cooperative Online Learning System (WE-COOL System)

An on-line cooperative evaluation writing system was designed according to principles of process-oriented writing. Participants could write drafts, review peers' work, and revise their work using the system.

Writing tests

Writing tests were given in the form of 120-word argumentative paragraphs, that students were required to complete in 45 minutes. A pre-test and a post-test were administered, as well as a writing test in each writing cycle (two cycles of process-oriented writing, including drafting, writing, peer review or cooperative evaluation, and revision). Two experienced English teachers were employed as raters. The scoring system was based on the Pennsylvania Writing Assessment Scoring Guide, with 5 domains: focus, content, organization, style, and conventions. Inter-rater reliability was above .70, showing a high level of correlation.

Group reward system

After each writing test, group recognition through a group reward system was utilized in two groups. Students earned points for their groups based on the degree to which their writing test scores exceeded their base scores. After adding up the improvement points earned by each group member, the top six groups were announced. At the end, these groups received a 400-dollar bookstore voucher and puddings as a reward. Table 2 explains the conversion of individual writing test scores to improvement points.

Data collection and analysis

The implementation of the experiment took 25 weeks, including pre-test, tutorial class on argumentative writing, on-line writing activities, and post-tests. The writing activities were divided into three process-oriented writing cycles, containing two online exercises of draft writing, peer

Table 2. Conversion of individual writing test scores and improvement points

Writing Test Scores (X = writing test score- base score)	Improvement Points
More than 2 points below base score ($-2 < X$)	0
2 points below to 0 but above base score ($-2 \leq X \leq 0$)	10
2 points above 0 but below base score ($0 \leq X \leq 2$)	20
More than 2 points above base score ($X > 2$)	30
Perfect paper (regardless of base score)	30

review, cooperative evaluation if applicable, and revision. Two-way ANCOVA was employed to test for a significant interaction effect on writing achievement.

Results and discussion

Analysis of students' overall English argumentative writing achievement and each domain of the rubrics

Analysis of writing achievement involved the data from a pre-test, three writing tests at the end of each writing exercise cycle, and a post-test. The results of one-way ANOVA on the pre-test writing test indicated that the groups had homogeneous levels of English writing proficiency, both overall and in each scoring domain. The results in each writing test were different. In the first writing test, neither significant interaction effects nor main effects were found in any domain of writing. In the second test, no significant interaction effects were found in each domain, but main effects of cooperative evaluation and of group rewards were found significantly in each domain. In the third writing test,

interaction effects were found with significant differences in all domains. From these results, it can be inferred that both cooperative evaluation and group rewards gradually brought about significant changes in the levels of writing displayed in the three writing tests.

At the end of the experiment, a post-test was employed to see whether the four groups had made any improvement. By means of a two-way ANCOVA, it was found that there were significant interaction effects in all domains ($p=.000$; $p=.027$; $p=.040$; $p=.042$; $p=.040$; $p=.033$). From Table 3 to Table 8, the results display that under the condition of cooperative evaluation, the CPR (Cooperative evaluation & peer review with group reward) group performed significantly better than the CP (Cooperative evaluation & peer review) group in the overall scores, focus, content, organization, style, and conventions domains. Likewise, the PR (Peer review with group reward) group showed a significant difference from the P (peer review) group in overall scores and each scoring domain, under the condition of peer review. Under the condition of no group rewards given, the CP group had a more significant improvement than the P group in overall scores and each domain as well. However, under the condition of group rewards given, the CPR group performed significantly better than the PR group only in the overall scores and the domains of focus, organization, and conventions. The domains of content and style did not show any significance ($p=.094$; $p=.192$).

Table 3. Simple minimum effect on overall scores in the post-test

Source	SS	df	MS	F	p
Group Rewards					
Within cooperative evaluation	101.494	1	101.494	57.782	.000*
Within peer review	296.986	1	296.986	128.599	.000*
Cooperative Evaluation					
With group rewards	26.164	1	26.164	13.493	.000*
Without group rewards	162.830	1	162.830	77.230	.000*
* $P<.05$					

Table 4. Simple main effect on focus in the post-test

Source	SS	df	MS	F	p
Group Rewards					
Within cooperative evaluation	4.583	1	4.583	25.624	.000*
Within peer review	12.703	1	12.703	45.440	.000*
Cooperative Evaluation					
With group rewards	1.449	1	1.449	5.317	.024*
Without group rewards	7.457	1	7.457	40.177	.000*
* $P<.05$					

Table 5. Simple main effect on content in the post-test

Source	SS	df	MS	F	p
Group Rewards					
Within cooperative evaluation	3.417	1	3.417	12.679	.001*
Within peer review	11.718	1	11.718	31.584	.000*
Cooperative Evaluation					
With group rewards	1.095	1	1.095	2.868	.094
Without group rewards	7.390	1	7.390	28.515	.000*
*P<.05					

Table 6. Simple main effect on organization the post-test

Source	SS	df	MS	F	p
Group Rewards					
Within cooperative evaluation	4.049	1	4.049	11.699	.001*
Within peer review	12.963	1	12.963	41.761	.000*
Cooperative Evaluation					
With group rewards	1.227	1	1.227	4.260	.042*
Without group rewards	7.831	1	7.831	21.317	.000*
*P<.05					

Table 7. Simple main effect on style in the post-test

Source	SS	df	MS	F	p
Group Rewards					
Within cooperative evaluation	4.468	1	4.468	19.687	.000*
Within peer review	11.529	1	11.529	62.777	.000*
Cooperative Evaluation					
With group rewards	.357	1	.357	1.735	.192
Without group rewards	3.866	1	3.866	18.768	.000*
*P<.05					

Table 8. Simple main effect on conventions in the post-test

Source	SS	df	MS	F	p
Group Rewards					
Within cooperative evaluation	3.839	1	3.839	14.884	.000*
Within peer review	10.563	1	10.563	54.355	.000*
Cooperative Evaluation					
With group rewards	1.345	1	1.345	7.166	.009*
Without group rewards	6.486	1	6.486	24.548	.000*
*P<.05					

The results of the post test on argumentative writing achievement displayed an interaction effect between cooperative evaluation and group rewards in every domain of evaluation. Simple main effects of evaluation indicate that the use of cooperative evaluation could facilitate English writing because peers would offer constructive responses to peers, both beneficial for their own revision

and for peers' revision through the discussion. When they are involved in communication, they are able to sharpen their critical thinking, negotiate their ideas, and refine their expression. Peers' suggestions could also help writers to establish audience awareness to clarify any vague parts and offer productive feedback. As for the CPR and PR groups, which displayed no significant differences in the domains of content and style, the possible explanation could be insufficient reading input. These participants struggled to generate enough supportive ideas in argumentative writing to be able to offer constructive responses to peers.

In contrast, there was a significant difference between the participants in the CPR group and those in the CP group in every domain. The participants in the PR group also differed significantly from the P group in each domain of writing. The participants regarded group rewards as an incentive to contribute their efforts in the writing process and this enabled them to become more involved in cooperative evaluation and peer review. Their diligence not only facilitated peers' revision but also enhanced their own writing ability.

Conclusion and pedagogical implications

This research found that significant improvements were achieved in English argumentative writing, both in overall quality and in each domain of the scoring rubric. According to the findings, two pedagogical implications are proposed: the integration of reading, and training in the use of scoring rubrics.

First, it is recommended that teachers introduce more reading into writing instruction, since the results indicated that the domains of content and style are the most challenging aspects for students. Reading input can assist students in idea stimulation, framework initiation, and content development. Especially for the argumentative genre, sometimes it is hard to offer enough details to explain, argue, or reason from one's life experience or group discussion alone. It needs extra input to stimulate or to elaborate. With the stimulation of diverse reading input, hopefully students will be able to think more creatively and express their ideas more freely so as to achieve better in terms of the content and style domain. However, it is important to note that reading materials or model paragraphs directly related to the writing topic should not be provided before writing so that students do not rely on the ideas from model writings too much.

In addition, it is suggested that the use of cooperative learning and analytical scoring training should be integrated into the stage of providing feedback to peers so that students can provide more efficient and constructive comments to their peers. With cooperative discussion with peers, students are able to gain knowledge of how to evaluate a piece of writing and overcome the limits mentioned by previous studies. Also, having opportunities to practice the analytical rubrics of each writing domain, students are able to internalize and develop the skills needed to evaluate their own and peers' written work. Once they know the criteria for what is expected in writing, they can become proficient writers.

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