

Original Article

The Effects of Cooperative Learning on Improving English Pronunciation and Comprehension of Medical Students

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Abstract

Introduction: Acquisition of intelligible English pronunciation and comprehension of medical texts has been considered as an important need for medical students. This can be improved by employing different methods and taking into consideration various learning styles of students. This study is an attempt to reveal the effect of cooperative learning on enhancing pronunciation and reading comprehension in students of medicine in Yasuj University of Medical Sciences.

Methods: All 60 students of medicine in Yasuj University of Medical Sciences who enrolled in English for specific purposes 1st Feb 2013 took part in this quasi experimental study and were divided into two groups of thirties, according to the enrollment list. Cooperative learning was implemented with the experimental group dividing them into groups of five randomly, while the control group was taught with traditional method. Phonetic transcriptions were used along with passages taken from their book for the two groups. The data collected from three reading aloud tasks, scores of pretest, and midterm and final written examinations were analyzed using SPSS software, version 19.

Results: The results of the study showed that the experimental group outperformed the control group significantly ($P < 0.05$) in all areas of reading aloud tests, pronunciation, and comprehension.

Conclusion: It is concluded that cooperative learning significantly improves medical students' pronunciation and comprehension. Teaching pronunciation and comprehension through cooperative learning yields better learning results for university students.

Keywords: Cooperative learning, Medical students, Pronunciation, Reading comprehension

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Introduction

Cooperative Learning (CL), according to David and Roger Johnson, is regarded as a successful teaching strategy, in that students allocated in a team according to the levels of their language ability use a variety of different learning activities and strategies to

understand written materials. Such learning activities and strategies help them to improve a number of different skills such as their reading comprehension and pronunciation. When working together in a team, each member of a team is responsible not only for learning what is taught but also contribute to and facilitate the learning process of other teammates (1).

In principle, CL consists of the following five elements:

1. Positive interdependence
2. Individual accountability
3. Quality group processing
4. Explicit teaching of small group skills
5. Teaching of social skills.

Out of the many methods of cooperative learning that different teachers or researchers have developed, the following three models have received the most attention from English teachers: Student Team Achievement Divisions (STAD), Jigsaw, and Learning Together (3). STAD, used as the method of instruction in this study, operates on the principle that students work together to learn and are responsible for their teammates' learning as well as their own, and emphasizes having team goals that are dependent on the learning of all group members (4).

Numerous studies have shown the effectiveness of CL with university-level students in English as a Foreign Language (EFL) reading classes (5-8). Certain studies have shown that combining CL with English reading instruction creates student opportunities to interact with peers, increase peer communication and support, encourage reading-comprehension development, and lower anxiety (9, 10). Conversely, other studies have disproved the advantages of CL in English reading comprehension compared to traditional lecture-based instruction (11, 12). In Iran, however, very few studies were found on implementing CL in EFL in university level education. As an example we can refer to the study done by Jalilifar on the effect of CL techniques on college students' reading comprehension achievement (13).

The English language that medical professionals need in their medical career is not only English for General Purposes (EGP), but also English for Medical Purposes (EMP), a kind of English for Specific Purposes (ESP). Van Naerssen (1978) (as cited in Hull, 2006) explains EMP as a form of English as a Second Language education that clearly emphasizes teaching aspects of medical English according to the needs of the job: for writing progress notes and charting, interviewing and assessing patients, and providing oral and written reports (14).

ESP is presented to the students of medicine of Yasuj University of Medical Sciences (YUMS) as two three-credit courses in the fourth and fifth semesters. The need assessment and impact evaluation of ESP in previous years suggested that in spite of students endeavor to learn English and their perception of their need to this knowledge in their future studies, their acquired language skills have not been satisfactory and they seemed incompetent in aforementioned skills. Considering the limited courses devoted to teaching English in medical universities where English is regarded as a foreign

language, it is crucially important to apply new approaches to benefit mostly from the classes.

Thus, in the present study, we decided to examine the efficacy of CL method as an alternative to teacher-centered approach (which is already the method applied in most ESP classes). There is the need to conduct such study for most of the studies examining the efficacy of CL have been conducted in the contexts different from Iran. The reports of the studies using CL method are controversial, since they have been conducted on students on different language abilities, and mostly not in EFL context. Therefore, it seemed necessary to conduct a research on the effect of CL with special emphasis on learning pronunciation of English and reading comprehension of medical texts in Iran where English is a foreign language and students are at university level.

In this article, we aimed to examine the efficiency of CL on improving medical students' comprehension of written materials and pronunciation in a three credit course of ESP in YUMS Yasuj-Iran. The researchers made an attempt to answer the following research questions:

1. What are the effects of CL on pronunciation of the students of medicine?
2. What are the effects of CL on reading comprehension of the students of medicine?

Methods

The sample population of this quasi-experimental study was all 60 medical students in YUMS who had chosen English for specific 1 in February 2013. They were divided into two groups of 30s, according to the list of enrollment, as control and experimental groups.

The students were in the fourth semester of their study and had already passed nearly 60 credits of their specific courses, and were familiar with technical terms, but with the pronunciation used by the instructors of such courses.

Approval to conduct the research was obtained from the faculty education office. On the first day of class, the consent forms were distributed for students to sign after a brief explanation of the experimental procedure, the purpose of the research and the CL techniques to be used. The empirical study lasted 17 weeks, with students studying English for one and half hour two times a week.

Phonetic transcripts were used along the texts in their book (English for the students of medicine 1). Both classes were taught phonetic symbols in their first session. The experimental group was randomly divided into groups of 5 in the first session, using the enrolment list.

STAD was the cooperative technique used in this study. After the formation of five groups and the process of teambuilding, each member in the group was given a particular role to play. Five roles including leader, recorder, reporter, timer, and checker were assigned to the five people in each group.

The designation and rotation of role assignment for each student can avoid the occurrence of free riders or potential complaint of overloading from some above-achievers. The job description of each role, adapted from Kagan (1989) (15), was explained clearly and explicitly to the students.

The phonetic script of the passages of first lesson which was typed via "Just as Spoken" software was presented to the students to be practiced at home. Teaching reading comprehension is divided into three stages: pre-reading, while reading and post-reading. As the pre-reading stage, some tasks were assigned to the learning groups before class, which included previewing the text and looking up new words in the dictionary. The groups, also, had a 10 minute discussion in groups about the passages at the beginning of each session and wrote a summary of the passage which was followed by presenting of the summary by the reporter of the groups. Then, in the next stage, students started to read the passages one by one while their pronunciation errors were corrected by their peers. If they could not do this, or did it wrong, the teacher mediated and corrected them. The teacher read the passages, provided them with explanation of the technical terms, the roots, and the affixes. In the post-reading stage, the exercises, included true/false and reading comprehension questions, as well as some exercises on vocabulary, were done by members within the groups and the answers were presented by the reporter and corrected by the teacher. At the end of the session the passages of the next session were divided into 30 parts and distributed among students. Each person had the responsibility to rewrite the texts with phonetic symbols and type them via "Just as Spoken" software. The group members had to check their peers' script and correct the wrong symbols in 10 minutes before starting the lesson. Checkers and leaders in groups had the responsibility for helping others and making sure they do their job well. Their homework were checked and scored by the teacher. Following each session, their scores were compared with their previous ones which were the base scores for comparison. Then the differences were regarded as their improvement points. Table 1 shows the way to calculate the improvement points in this study which was adapted from Slavin 1995 (16).

The team score was the total of each member's improvement points rather than the raw quiz scores. In this way, each student's grade was based on his or her

own score. But, at the same time, they also contributed to their group score by being better than their own previous scores. Students could earn points for their teams based on the degree to which their scores exceeded their first base scores.

Table 1: Conversion Tables of Improvement Points (Adapted from Slavin)

Individual Gain	Group Gain
More than 5 points above base score	5 improvement points
More than 10 points above base score	10 improvement points
More than 15 points above base score	15 improvement points
More than 20 points above base score	20 improvement points
More than 30 points above base score	25 improvement points

The control group was also provided with the phonetic scripts but there was no grouping or discussion for this group. The teacher taught the lessons through lectures and the exercises were done individually. The typed phonetic scripts, made by each student, were gathered and corrected by the teacher who provided the students with the feedback in next sessions.

The data collected via pre-test, mid-term, and final written and oral exams. The written tests included: synonym matching, word formation, fill in the blanks, guessing the word according to the definition, writing the words according to the phonetic symbols, and reading comprehension). The tests were given to two colleagues in the department of English to comment on the appropriateness of each test by filling a checklist prior to the administration. The comments were considered for revising the tests. The correlation among different parts of each exam was calculated through Cronbach alpha which was 0.82, 0.79, and 0.81 for pre-test, mid-term, and final written exams respectively.

There were two passages in the part of reading comprehension followed by 10 multiple choice questions. Scores on this section were isolated to be estimated as the indicators of reading comprehension.

Because of large number of students in our sample, the holistic approach was chosen to assess the pronunciation since it has been proved to be better than atomistic one in assessing the overall impression of the assessors of students' stress and production of sounds. (17, 18)

In order to assess pronunciation, one part of the written exam, asking students to write the words according to their phonetic symbols, and a reading aloud test were

regarded as our measurement tools. Two scorers assessed the reading aloud test which included reading a paragraph taken from their book. The assessors were asked to mark their overall impression of the production of sounds and stress according to the following scale: 1) Bad, 2) Quite good, 3) Good, 4) Very good and, 5) Excellent. The texts were the same for all students but different among pretest, midterm and final exam. The inter-rater reliability between the two raters was calculated through the Pearson Correlation Coefficient which was 0.95, 0.94, and 0.96 for pre-test, mid-term and final exams, respectively. The data were analyzed by the SPSS software, version 19, using independent samples t-test.

Results

This study aimed to explore the effects of CL method on pronunciation and reading comprehension of students of

medicine. All students of medicine who enrolled in ESP in February 2013 in YUMS took part in this study. The scores on oral exams and the part of written exam which was on pronunciation were of importance for the researcher. The results obtained from the analysis of the scores are shown in Table 2.

The results of analytic and descriptive statistics suggested that the students studying in the cooperative context outperformed the students in the control group, gradually, through pretest to final exam. The results obtained from independent sample t-tests yield the numbers of 0.05 for comprehension, 0.028 for writing words according to their phonetic symbols, and 0.013 for reading aloud final exams. All numbers were significant for $P \leq 0.05$ and $N=60$.

Table 2: Independent Sample Test of oral and written tests: (N=60), ($P \leq 0.05$)

Test	Group	Mean	SD	Sig.	
comprehension	Pre	Control	4.40	1.13	0.759
		experimental	4.50	1.29	
	Mid	Control	5.53	0.84	0.611
		Experimental	5.65	1.09	
	Post	Control	7.28	0.85	0.010*
		Experimental	7.84	0.84	
Writing words according to phonetic symbols	Pre	Control	6.09	1.53	0.741
		Experimental	6.21	1.47	
	Mid	Control	8.56	1.21	0.632
		Experimental	8.71	1.37	
	Post	Control	11.84	1.34	0.028*
		Experimental	12.65	1.53	
Reading aloud	Pre	Control	6.32	0.75	0.406
		Experimental	6.17	0.67	
	Mid	Control	7.09	0.62	0.294
		Experimental	7.26	0.69	
	Post	Control	8.01	0.63	0.013*
		Experimental	8.38	0.51	

* Significant resulting number

Discussion

The discussion of results will be presented in this section according to the research questions.

4.1 Effects of CL on reading comprehension.

The largest difference between the impact of the CL approach and that of traditional instruction was in the area of increasing students' reading comprehension. In the current research, discussions and questions they had after reading the texts offered students opportunities to have a deeper understanding of texts and better processing of reading materials through peer interaction. The success of CL in promoting student reading comprehension can be attributed to the cognitive processes of CL.

Group discussions 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 (7).

In other words, in a less threatening learning context as that of CL, the students in the experimental group were able to demonstrate higher oral classroom participation, which was related to their statistical significant gain in the language proficiency (19), and higher level of peer interaction, which was an essential feature of learning when the learners were in the process of interacting with

people in their environment and in cooperation with their peers (20).

4.2 Effects of CL on pronunciation

The findings on pronunciation part of the exams and reading aloud tests showed significant difference between the two groups (Table 2). Phonetic scripts were provided as a medium in order to simplify their reading and for the students to learn the rules of pronunciation in sentences. The possible reasons to account for the significant gains in the experimental group in terms of their improvement in the two areas can be the fact that the experimental group was endowed with more opportunities to frequently practice phonetic transcripts. Cooperative activities tended to integrate the acquisition of these skills and create powerful learning opportunities.

The findings that there was no significant difference between the two groups in three mid-term exams may be explained by the students interest. They usually feel an internal resistance toward any change in teaching strategies implemented by their teachers mostly because of their unfamiliarity with CL skills. This feeling was, gradually, changed into a positive one. Renninger (2009) explains that it is possible for learners to develop and deepen interest in a topic over time, and that a person's environment (teachers, peers, texts, activities, etc.) contributes to this interest development. Although by late adolescence students may be able to self-regulate behavior even in the absence of intrinsic interest, all learners can benefit from support that will help them to engage with the material (21). So, it can be said that students need a period of time to cope with the new approach, perceive the meaningfulness of learning through this approach, and grow an intrinsic interest through their engagement in learning.

Conclusion

The overall findings of this study suggest that CL is a feasible and practical teaching method that helps to improve reading comprehension and creates motivation to acquire correct pronunciation. We can conclude that the feedback they had received from their classmates facilitated their learning (learning from their errors).

If the teaching of phonetic symbols were stipulated in the curriculum, students at all levels could use them to learn the pronunciation of unfamiliar English words and avoid the bad habit of marking the words with Persian characters bearing similar sounds. Students need to understand that this latter habit will not help them learn how to correctly pronounce the target language.

A new shift is suggested to be experienced in ESP education to put learners in contexts where they can practice the motivated learning activities. In other words, ESP courses should shift from a teacher-centered approach to learner-centered approach. Learners should be placed in experienced based contexts so that they have enough opportunities to question the dispositions they hold regarding learning ESP and build curiosity accordingly. Consequently, it may empower learners and encourage them to reflect on their own learning.

It is suggested that instructors, especially ESP instructors, ESP curriculum designers and evaluators follow this pursuit and provide better opportunities for learners. Accordingly, CL approach can be implemented more fruitfully and students of medicine can apply their ESP knowledge in their entire period of education and medicine profession. Replication of this study with different sample size and different ESP courses at different faculties is recommended.

Certain limitations may have affected the generalizability of the results. First, this study was not a fully randomized control trial. The two classes were not randomly selected for intervention and comparison groups, so there may have been some differences between the two groups. Further research, employing a pre-test post- test control group experimental design, needs to be conducted to confirm the findings.

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