INCORPORATING PROBLEM SOLVING TASKS GROUPED ACCORDING TO DIFFERENT PROFICIENCY LEVELS IN COOPERATIVE LEARNING PROCEDURES TO ENHANCE QUALITY AND QUANTITY OF STUDENTS' SPOKEN INTERACTIONS

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Abstract: The aims of the current research were to investigate i) whether there was a statistically significant difference of quantity and quality of students'spoken interaction between pretest and posttest from different level proficiency groups after they were given the problem solving tasks based cooperative learning and ii) the students' perception of the use of the problem solving tasks. The research used quantitative and qualitative approaches and involved one class which consisted of 36 students who took English 1 subject as a compulsory subject at IBI Darmajaya. The used instruments were the pretest and posttest, and questionnaire. It was found that there was a significant difference in the quantity and quality of the students' spoken interaction between pretest and posttest in heterogeneous group. Most students had positive perceptions of the problem solving tasks. The findings prove that the problem solving task integrated in cooperative learning was more successful for low proficient students in the heterogeneous group. The students' responses to the questionnaire indicate that the problem solving tasks facilitate the students to be more active in the groups to complete the procedures of the task. The students enjoyed sharing sessions in building their ideas to be presented among the members of the group.

Keywords : problem solving tasks, cooperative learning, quality and quantity of students' spoken interaction

Abstrak: Penelitian ini bertujuan untuk mengukur kualitas dan quantitas dari interaksi mahasiswa setelah diterapkannya system pengelompokkan berdasarkan tingkat kemahiran mahasiswa (*proficiency levels*) dalam tugas yang berbasis pemecahan masalah (*problem solving task*) berdasarkan kerjasama (*cooperative learning)* yang digunakan pada pengajaran kemampuan berbicara (*speaking*). Pendekatan kuantitatif dan kualitatif digunakan untuk meneliti satu kelas mahasiswa yang mengambil *English 1* sebagai mata kuliah wajib di IBI Darmajaya. Instrumen penelitian yang digunakan mencakup pretest dan posttest, serta serangkaian kuesioner yang berfungsi mengetahui persepsi siswa terhadap problem solving tasks. Hasil penelitian menunjukkan adanya perbedaan signifikan antara pretest dan posttest diantara semua group. Namun yang lebih signifikan muncul di group heterogen.. Hampir semua siswa memiliki respon yang positive terhadap problem solving task. Temuan ini membuktikan problem solving tasks lebih sukses untuk siswa yang memiliki kemampuan rendah dalam bahasa inggris di dalam group heterogen serta respon siswa yang positif di dalam kuesioner membuktikan bahwa implementasi problem solving task sangat berperan positif dalam mengoptimalkan kemampuan berbicara, membuat siswa lebih aktif di kelas serta memacu interaksi yang konstruktif dan saling menguntungkan.

Kata kunci: tugas memecahkan masalah, pembelajaran kerjasama, kualitas dan kuantitas interaksi siswa dalam berbicara

INTRODUCTION

Language is very important in our lives as it is the means by which people communicate. Speaking skills are often considered the most important part of an EFL course. In foreign language teaching and learning, ability to speak is the most essential skill since it is the basic for communication. Speaking is one of the productive skills, which is the evidence of a student that how much he or she is competent in a language. Moreover, much of the communication is made through speaking. In short, learning a language remains incomplete if one does not achieve competence in speaking. Speaking can be realized as the most common way to convey the message to others and the ability to communicate effectively is a basic requirement which needs to be taken seriously in English education. When the students learn English, speaking is significant to support their ability to apply the language (Mei Leong and Ahmadi, 2016).

A recent study conducted by Maulana, Opdenakker, Stroet, and Bosker (2012) revealed that English teachers spent most of their time lecturing in front of the classroom. There is hardly any interaction with students. Most teachers showed little awareness of their students' learning process and did not pay much attention to students' mistakes and misconceptions. The researchers highlighted that although Indonesian teachers have been given more autonomy in implementing more active teaching learning practices, many of them have not taken up this opportunity. The teachers' concerns were that implementing active teaching-learning practices might increase their workload because this approach demands more of teachers' time to prepare than whole class lecturing.

There is no doubt that cooperative learning can be used as an effective approach to encourage students to work together as one team inside the class. Cooperative learning is acknowledged as a set of pedagogical practices in which students are grouped and encouraged to work together to facilitate active participation in discussing different perspectives on a common topic (Johnson and Johnson, 1999; Hirst and Slavik, 2005; and Chapman *et al.*, 2006) in Arumugam (2011).

Baer (2003) goes on to suggest two major ways to group students in cooperative learning which are called homogeneous and heterogeneous groupings. In homogeneous groups, students are grouped according to their abilities, genders, and/ or races so that everyone in the group is the same regarding ability level, gender, or ethnicity, etc. Its major counter-strategy, i.e. heterogeneous grouping, groups students with a variety of different ability levels, talents, and interests together to complete a single activity. The frequent practice of CL and also the necessity for an informed decision on the part of instructors require scientific research in investigating whatever happens in a cooperatively organized classroom.

A teacher needs to reflect and make a decision before carrying out a lesson involving cooperative learning on whether a heterogeneous or a

homogeneous grouping is most beneficial to a lesson. According to Davidson (1990) as cited in Sunarti (2006), when assigning groups, the teacher needs to look at the task that would be given. If the task involves working on a specific skill, procedure, or set of facts, homogeneous groups are useful. The teacher will then be able to address the low-ability students as a group when one of the members raised a question. The teacher will also be able then to have an idea on where the students are weak in collectively as a group and address the matter accordingly. However, when the task involves working on open-ended problem-solving tasks and learning how to communicate, heterogeneous groups are most appropriate. The students will learn best communicating with students of different abilities when trying to solve a problem where there is more than one correct answer as every member will be able to contribute in the brainstorming of potential solutions without taking into account if a member is of high-abilityor low-ability. However, there has not been much research done on this subject matter. So, in this research, the researcher would like to seek answers to research questions presented as follows:

1. Is there any statistical significant difference of quantity and quality of spoken interaction by different level proficiency groups ?
2. What were the students' perceptions of problem solving tasks?

METHODS

This research used both quantitative and qualitative data analysis. Both of them were partially used to answer two research questions. In the license to answer the first research questions, it needed quantitative analysis to see the comparison of significancies of the students' quality and quantity interaction among the groups. Then, descriptive qualitative method of analysis was to see the students' perception of problem solving tasks.

The researcher distributed Nelson English Language Proficiency Test (NELT) which consist of 50 items. It is adopted from Fowler and Coe as cited in Nejad and Shahrebabaki (2015) with reasonable measures of validity and reliability. The section 150A of Nelson English Language Test was administered to determine the subjects' language proficiency levels. The test includes 50 multiple-choice items testing grammatical points and knowledge of vocabulary. Students had to choose the correct answer which best completed the sentence.

In this case, the researcher would compose cooperative groups according to their proficiency levels which include high and low level. The students would be grouped with similar or mixed proficiency which suit to one of the types of groups composed of three high proficiency learners (H-H), groups composed of four low proficiency learners (L-L) and groups composed of two low proficiency learners and two high proficiency learners (H–L).

In order to see the students speaking ability before and after the treatments, the researcher conduct the pretest and postest of students' spoken interaction to in order to see the students' significant effect of the quantity and quality in students' spoken interaction production after giving three treatments. The researcher recorded the students' spoken interaction production in performing the problem solving task.

The researcher prepared problem solving tasks which were given to the students, to fulfill the content validity, materials of the task have been prepared based on English syllabus for Darmajaya Language Center (DLC).

The researcher conducted three treatments in this research. It were taken in three meetings and ninety minutes for each meeting. The researcher taught the students by using the problem solving task designs.

The researcher would give the questionnaire to the students. It consisted of three section questions they were students' perception of understanding the task, students' perception of problem solving task and students' perception of grouping. The questionnaire would be in English but the researcher would translate in Indonesia language. The students have been asked to indicate their interest based on their experience on implementing the tasks by giving checklist for yes (agree) and no (disagree) and the students also gave their reason in order to see the students' perception of the designing of problem solving tasks by the researcher.

After conducting some procedures the researcher would analyze the data. Related to this, the researcher would use paired t-test to see whether there is a significant effect of problem solving tasks based on different groups of the students' proficiency level on the quantity and quality of students' spoken interaction production.

This research would also use inter-rater in finding the quantity in term length time speaking, turn taking, c-unit and the quality of students' spoken interaction production in terms of accuracy, fluency and comprehensibility. After that the data would be scored using J. B. Heaton's rating scale of speaking test. The rating scale starts from one scale until six.

RESULTS AND DISCUSSION

RESULTS

This research was conducted in 6 meetings. The first meeting was used to measure level of proficiency test to measure the students' level proficiency which would be used for grouping the students. The next meeting, the researcher grouped the students according to their level of proficiency. There were three kinds of groups named heterogeneous groups (H-L), homegeneous groups (H-H), and homogeneous groups (L-L). In each kind of group consisted of 3 group. Then, the researcher conducted the pretest according to their group. The researcher gave

some task and the students did the speaking performance.

Furthermore, the researcher gave the students the treatments of the problem solving tasks in three meetings. The problem solving tasks were designed for the students based on cooperative learning. The researcher divided the task became 3 task. The first applied in the first meeting. There were nine groups which consisted of three groups of heterogeneous groups (H-L) , three groups of homogeneous groups (H-H) and theree groups were homogeneous groups (L-L). Each student in the groups would have different idea about the topic. The last meeting the researcher gave the students post test. It would be the same with pre test.

The result of this research consisted of two main descriptions about answering the research questions of this study. The first is about finding the quantity and quality of students' interaction based on the implementation of problem solving tasks. The second description is about finding the students' perception in term of students' understanding of task, students' views on implementing problem solving task and the students' view of grouping.

A. The Result of the First Research Question in term of Quantity of Students' Interaction

Based on the explanation above the quantity of students' utterance is measured by three elements, they were; length of speaking time; the number of turn taking and the number of c unit.

The researcher used inters- rater in order to make the result of students' speaking more reliable. There were two raters in this research; the first rater was the researcher self and the second rater was DLC lecturer. Therefore in this research the researcher also needed to find out the reliability of the interrater. Reliability of the pretest and posttest was examined by using statistical measurement. The results of the significant difference between pretest and posttest in all aspects of spoken interaction among groups can be seen in the following table.

Table 1. Significancies between Pretest and Posttest of Quality and Quantity of Spoken Interaction

Aspects of Students' Spoken Interaction	Groups (Sig. (2-tailed)		
	Heterogeneous (H-L)	Homogeneous (H-H)	Homogeneous (L-L)
Quantity in term Length Time Speaking	0.081	0.112	0.090
Quantity in term Turn Taking	0.001	0.002	0.002
Quantity in term C-Unit	0.001	0.004	0.003
Quality of speaking	0.069	0.091	0.080
Quality and Quantity of Speaking	0.004	0.132	0.166

As shown in table above,the results of quantity in term length time speaking reveal no significant difference between pretest and posttest among groups. Then for the quantity in term turn taking can be seen that all the groups are significant. But the highest correlation is in heterogeneous group (H-L).

The results of quantity in term c-unit are significant difference between pretest and posttest in all the groups and the highest correlation is in heterogeneous groups. While the results of quality of speaking are no significant in all the groups.

For the results of number quantity and quality reveal significant difference of students' spoken interaction in heterogeneous group but there are no significant difference between pretest-posttest in homogeneous groups with the pattern L-L and homogeneous groups with the pattern H-H.

B. The Result of the Second Research Question in term of Students' Perception

In order to see the students' perception based on their experience on implemeting the problem solving task based cooperative learning, the researcher gave the questionnaire by giving choice yes for agree answer and no for disagree answer. Besides, the students gave the reason to know what they excatly felt and also the researcher asked the students directly when the researcher was feeling doubt. So it would make sure that the interpretation was right.

To measure the students' perception the form of the task including the application of the task as a whole. The average respons can be concluded as the positive perception. It was seen from the percentage that most of students around 85% responded positifly to each item of the first section in questionnaire. However we found 15% out of 100% still tended to feel disappointed with the task. This led to the tendency they actually felt uncomfortable with the composition of the group instead of the matter of the task.

Then, the second section in the questionnaire was the students' perception on implementing problem solving task. Based on the students' answer in the questionnaire the average respons of the students can be said as the positive perception about the implementation of problem solving task. It is about 90% of 100% from each item of the questionnaire . The students understood well and felt the problem solving task help them to more active in speaking English. Although, there were about 10% of students felt uncomfortable with the task. The students still hesitated to speak up in English. They have not had willingness to be more active in the class because personally they did not interested in English.

The third section of the questionnaire measured the students perception toward the method of grouping. Most of the students felt enjoy with their groups composition. They can cooperate well to each other. But, approximately 25% of the students still complained why they were grouped with some students of whom they think not truely cooperative.

Then, It was investigated that those belong to 25% were dominated by the students coming from homogeneous group with the pattern of the group was low-low students.

DISCUSSION

The findings assume that learners boosted their quantity and quality of students' spoken interaction through problem solving task of cooperative learning with either low or high proficient learners in both homogeneous and heterogeneous groups. However, it was proved that problem solving task integrated in cooperative learning was more successful for low proficient students in the heterogeneous group. This can be explained from a sociocultural perspective, too. The result was in line with Vygotsky (1978, p. 128) who argued that, from the very beginning of life, for development to occur, a child needs to interact with a more able member of society to receive assistance, which has been referred to as "Scaffolding". The important point about the metaphor of scaffolding is that it not only helps the weaker accomplish the task at hand, but also enables the child to perform the task independently (Greenfield, 1984) cited in Stone (1998). Consequently, it can be that low students have improved more through interaction with their more capable peers. Ellis (2013) also reiterated that to benefit from interactions and exchanges, the L2 learners need to communicate with someone who has sufficient proficiency in the target language to ensure that the input is not just at the learner's level, but at times, slightly beyond it. Therefore, the researcher came into this perception that the students with a low command of English need to get more help and feedback from their partners.

On the other hand, the high proficient students in the heterogeneous group achieved as much as high proficient students in the homogeneous group despite the fact that they spent considerable time working with lower students. This finding can be explained from a sociocultural perspective as well. Lantolf (2007) cited in Memar,Memar & Baleghizadeh (2010) believes that although Vygotsky's work focused on the cognitive develop- ment of children, the theory is applicable to all learning and to both asymmetrical (i.e. expert-novice) and symmetrical (i.e. equal-ability) groupings. This way, students can learn from the act of teaching others. The act of teaching or explaining to others may help L2 learners develop their language knowledge and internalize what they learnt before (Allwright, 2014) cited in Zamani (2016). As to the effectiveness of cooperative learning practices, novice teachers are recommended to make the students cooperate with their classmates. However, Indonesian students usually do not tend to work or learn cooperatively, and they do not feel comfortable with this kind of learning. It does not imply that teachers have to give up using this approach in their classes. It means that teachers need to aware their students of the benefits and advantages of cooperative learning, and put emphasis on the importance of their participation in the classroom work, and let them get habituated to

it through practice. In the present study, the researcher observed that the discomfort which the students felt at the beginning of the semester changed dramatically. They became involved with each other very well.

The present study aimed at seeking scientifically for the superiority of two major cooperative grouping strategies (homogeneous and heterogeneous grouping) for Indonesian high and low students on their quantity and quality of students' spoken interaction. The obtained results can be considered useful and fruitful for language teachers, the great decision-makers in the classroom.

Teachers/lecturers who have sometimes large size classes are puzzled by the numerous types of students. In these classrooms more proficient students are mixed with less proficient students, and even are thrown together with less proficient ones. Therefore, teachers should ask whether peer interaction can be useful, productive, for both groups in these situations. Making better group experiences for students is essential.

According to a Vygotskian approach, in heterogeneous groups, more competent learners scaffold weaker ones and help their progression (Mynard & Almarzouqi, 2006). The pedagogical implication of the ZPD for SLA/FLA is that learners were helped in doing something will be able to do that something without help (Mynard & Almarzouqi, 2006) cited in Zamani (2016).

In a cooperative setting, the teacher is also required to monitor students' interaction (Klingner & Vaughn, 1999). Therefore, teachers need to do some courses to get familiar with appropriate teaching strategies to manage the class (Calderon, 1990) cited in Zamani (2016). So, teachers should not be left alone in this process. Support from groups, students, from policy-makers, from training courses as well as findings from empirical research on the use of cooperative learning and group composition are deemed important in this process.

Discussing the methods of grouping in cooperative learning, the researcher found that the findings support Johnson, Johnson, and Smith (2006) who categorized the types of grouping in cooperative learning. They divided them into three types: 1) formal cooperative learning group consists of students working together, for one class period to several weeks, to achieve shared learning goals and complete jointly specific tasks and assignments, 2) informal cooperative learning group consists of having students work together to achieve a joint learning goal in temporary, ad-hoc groups that last from a few minutes to one class period, and 3) cooperative base groups are long-term, heterogeneous cooperative learning groups with stable membership. The three types of cooperative learning complement and support each other (Johnson, Johnson, and Smith, 2006).

However, they preferred cooperative base groups for the students of university level. It is because Base groups give the support, help, encouragement, and assistance each member needs to make academic

progress (attending class, completing all assignments, and learning) and develop cognitively and socially in healthy ways. Base groups are permanent (lasting from one to several years) and provide the long-term, caring peer relationships necessary to influence members consistently to work hard in their academic life. Considering this idea, the researcher found that grouping using proficiency level suits the idea of cooperative base grouping. Even though it takes time in assessing the students' proficiency level, once the students are assessed, it could be time well spent in the long run. Once the proficiency level are diagnosed and gathered, the instructor of cooperative learning can group the students accordingly. Ultimately, the heterogeneity could be well defined. Moreover, correlated to the whole result of the research, positive perception from the students' responses to the questionnaire indicated that the problem solving tasks applied during the treatments encouraged the students to be more active in the groups to complete the procedures of the task. The students enjoyed sharing sessions in building their ideas to be presented among the members of the group.

The researcher hopes that the results obtained from the present study will be beneficial for those involved in language teaching to help language learners improve their language proficiency. Besides, the researcher hopes that the findings of this study will lead to more studies of cooperative learning group composition.

This chapter reported the result of the study and discussed the findings based on the theories derived from cooperative learning approach and the previous researches.

CONCLUSION AND SUGGESTIONS

Considering all the data gathered after finishing the research which was conducted in Darmajaya Language Center, some conclusions were taken.

The first research question was to find out whether there is a significant difference from different level proficiency groups between pretest and posttest of quantity and quality of students' spoken interaction after being given problem solving tasks based on cooperative learning. The analysis of this research shows there is no significant difference among groups in quantity in term length time speaking. While, for the quantity in term turn taking and c-unit, the results reveal significant difference between pretest and posttes in all the groups. The highest correlation is low students in hetrogeneous group.

The analysis of quality speaking shows there is no significant difference between pretest and posttest in all the groups. Then the results of number in quantity and quality of students' spoken interaction show there is a significant difference between pretest and posttest in heterogeneous groups. While there is no significant difference between pretest and

posttest in homogeneous goups (H-H) and homogeneous groups (L-L).

The findings assumed that learners boosted their quantity and quality of students' spoken interaction through problem solving task of cooperative learning with either low or high proficient learners in both homogeneous and heterogeneous groups. However, it was proved that problem solving task integrated in cooperative learning was more successful for low proficient students in the heterogeneous group.

Most students have positive perception about the designing problem solving task based cooperative learning. The students' responses to the questionnaire indicated that the problem solving tasks applied during the treatments encouraged the students to be more active in the groups to complete the procedures of the task. The students felt enjoy sharing sessions in building their ideas to be presented among the members of the group.

Additionally, the researcher provides some suggestions for other researchers who are interested in conducting relevant research. Considering the limitation of this research in which the research focused on the university students. The researcher would like to suggest the further researcher to impose the same field of study to the broader and more various level of samples ranging from junior high and senior high school students.

Then the researcher hopes that the results obtained from the present study will be beneficial for those involved in language teaching to help language learners improve their language proficiency. Besides, the researcher hopes that the findings of this study will lead to more studies of cooperative learning group composition.

Furthermore, researchers who are interested to do the same study dealing with cooperative learning in other English skills besides speaking may consider to use the same grouping procedure which concerns more in heterogenity principle besides proficiency level such as gender, linguistic competence, or learning strategies. The heterogenity is not only by randomizing method. However, ordinary randomizing of heterogenity itself could not fulfill the real meaning of heterogeneity

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