❐   216

Effect of Ability Grouping in Reciprocal Teaching Technique of Collaborative Learning on Individual Achievements and Social Skills

Sumadi, I Nyoman S. Degeng, Sulthon, Waras
Department of Instructional Technology, Postgraduate, Universitas Negeri Malang, Indonesia

Article Info	ABSTRACT
	This research focused on effects of ability grouping in reciprocal teaching technique of collaborative learning on individual achievements dan social skills. The results research showed that (1) there are differences in individual achievement significantly between high group of homogeneous, middle group of homogeneous, low group of homogeneous, and heterogeneous group in reciprocal teaching technique of collaborative learning, (2) there are differences in students social skills significantly between high group of homogeneous, middle group of homogeneous, low group of homogeneous, and heterogeneous group in reciprocal teaching technique of collaborative learning strategy. Based on the results of descriptive statistical analysis showed that individual achievements on high group of homogeneous turned out to mean the highest increase in the amount of 19.50, the second followed then a heterogeneous group with a mean increase of 15.00, the third then middle group of homogeneous with a mean increase of 13.50, and the lowest low group of homogeneous with a mean increase of 11.75; the social skills on high group of homogeneous showed mean the highest increase in the amount of 10.92, the second a heterogeneous group with a mean increase of 8.75, followed middle group of homogeneous with a mean increase of 8.55, and the lowest of the low group of homogeneous with a mean increase of 6.71.

Corresponding Author:

Sumadi,
Department of Instructional Technology,
Postgraduate, Universitas Negeri Malang,
Jalan Semarang 5, Malang 65145, East Java, Indonesia.
Email: 63sumadi@gmail.com

1. INTRODUCTION

Efforts to determine the type of grouping would need a variety of considerations, including grouping in learning, so that these efforts can improve the effectiveness and not be counterproductive. In connection with the arrangement of grouping applied in collaborative learning strategies, the group may set up one of them in a small group consisting of three members for each group based on ability.

Bruffe stated the collaborative learning is basically intended restructurization or at least compensate for the shortcomings in the classroom learning traditionally centered on the learner, by dividing the class into groups or smaller teams to get interaction among learners in certain fields intensively and extensively [1]. Through continuous interaction and thorough study of the activities of the group are expected to bond formation, experience, and learn actively. Thus, collaborative learning environment emerged as a method of teaching a student-centered, focused on sustainability and development activities and performance meaningful. Collaborative learning environment is very important to make improvements in teaching methods; the involvement of the learners become more active, as well as the improvement of knowledge and

skills. Friedman [2] argued that collaborative learning in an effort to reduce the negative effects of using educational activities that are competitive, isolatif, apatif, and mass customization.

Reforming the collaborative learning environment is basically a way to form and manage groups that are expected to perform optimal interaction. The formation of groups based on personality attributes and capability of learners is the purpose of managing collaborative learning environment. Emphasis the importance of personality attributes (personal characteristics and social) the basis for the formation of the composition of the group members. The experts argue that the level of ability, attributes such as gender, ethnic background, motivations, attitudes, interests, and personality (argumentative, extrovert, introvert, etc.) should be of concern in the process of group formation [3]. Learning conditions with appropriate member composition would allow increased optimization of the learning process. It is worth noting because a group can be formed in a state with the composition of the assortment. There is a group that if the terms of factor of capacity, then the composition of its members homogeneous conditions and some members of the group conditions of heterogeneous composition. The composition of a homogeneous group in a situation may be more optimal than the composition of a heterogeneous group. Otherwise, the composition of the heterogeneous group into a situation may be more optimal than the composition homogeneous group. The way to do is to set the initial conditions of a group, namely with the process of identification of learners properly. Differences in composition (homogeneous and heterogeneous) members of the group were the focus of this study.

Reciprocal teaching as one of the possible techniques in collaborative learning can assist in improving the understanding, critical thinking skills, problem solving skills, and communication skills of learners. As noted Doolittle *et al.* [4], that the reciprocal teaching to help learners, especially in higher education as an effort to increase the involvement of learners, both individually and socially, in exploring and critically evaluate a text. The reciprocal teaching (RT) of reading strategies was combined with explicit instruction in self-regulated learning (SRL) showed that the students in the RT + SRL condition were better able to maintain training-induced performance gains over the follow-up interval [5]. Investigate by Iserbyt P. *et al.* [6] about reciprocal learning with task cards as instructional model for teaching Basic Life Support (BLS) and the effect of instructor expertise in BLS on learning outcomes. Reciprocal learning with task cards is a valuable model for teaching BLS when instructors are not experienced or skilled in BLS.

Webb, N.M. *et al.* [7] have raised the issue of equity in learning and social behavior in heterogeneous groups and the opportunity to learn from others, which suggested that all children must participate and learn regardless of race, gender, preferences, or level of learning achievement. Macintyre & Ireson [8], distinguishes grading based on merit or ability of learners, which is placed in a group of heterogeneous (mixed ability) or homogeneous (the same ability). Heterogeneous group by Kelly [9] called with mixed ability groups. Heterogeneous grouping allows the contribution of upper ability individual to lower ability. Thus the lower ability groups compelled come slightly upward. Although, in another way it could happen upper group weighed down or even interrupted its development by having to help or wait for the progress lower group. Likewise it can occur if the group did not get help from the bottom of the group, so that it becomes increasingly lagging behind the progress, which in turn can cause stress or frustration.

Homogeneous group can be divided into high group of homogeneous, middle group of homogeneous, and the lower group of homogeneous. In a lower group and middle group of homogeneous psychologically occurs stability for the group conditions of the competition is low, so the mental pressure is low. However, the negative side is no less happening or push or pull to a higher level slightly above the group's ability, because in the group there are not members who have the high ability. However, psychologically could happen the competition is high and support to a higher level due to the ownership of upper abilities. As the state Hwang [10] in his study found that high-ability students, more competitive in nature, exhibited relatively stronger negative effects when grouped according to their own abilities. That is, if a highly competitive student is assigned to an advanced class, he or she can experience considerable negative effects on his or her academic self-efficacy. Ability grouping can cause academic self-efficacy disparity between students assigned in an honored class and those in a remedial one.

Classification of learning methods includes organizing strategies of learning, learning delivery strategy, and learning management strategies. While the classification of learning conditions includes learning objectives, karakterristik field of study, learning problems, and characteristics of learners [11]. Characteristics of learners include: talent, learning motivation, prior knowledge, locus of control, multiple intelligences, learning styles.

Explicitly social skills have become one of the achievements of instructional practices. However, aspects of the development of social skills more precisely performed and developed outside the school formal curriculum. One of the most popular examples is outbound. There are some different aspects of the development of social skills with the development of the intellectual aspect, because the aspect of social skills is very subjective and has no special material that must teach. The things above require the use of

learning strategies and evaluation of learning outcomes that are different from learning in the development of intellectual aspects. Learning strategies should be adjusted to the psychological development of learners as well as a reality in their own communities. The development aspect of social skills is expected to get a major concern in the subject and its implementation using appropriate learning strategies. Zakelj [12] showed the result study that in ability groups the strongest factor, dividing pupils according to their success, is their social background. Social background that plays an important role in the achievement of life success is the possession of social skills or ability skills in the part of soft skills [13]. The results have also highlighted the fact that the first level of difficulty involves pupils who are less motivated for their learning and their motivation mostly depends on external encouragements.

Obtaining the learning achievements and social skills can not be separated from the process through which learners are included in the learning process. Learning achievements and social skills can be obtained if there is interaction. Level of frequency of interaction possible can make a significant contribution towards the acquisition of learning achievement. There are several strategies that can be used to improve the learning achievement and to develop the social skills. However, to determine the learning strategies need to be adjusted to the characteristics of learners. Collaborative learning it based on apropriate form of grouping is one of the learning strategies that can contribute to obtaining efectivness the learning achievement and social skills.

2.   RESEARCH METHOD

This research was designed to use a quasi-experimental [14],[15]. The design was chosen for the determination of research subjects in the treatment group or the control group can not be selected at random [16]. The independent variable in this study is an ability grouping in reciprocal teaching technique of collaborative learning. The composition groups is four kinds, ie high group of homogeneous, middle group of homogeneous, low group of homogeneous, and heterogeneous group. The dependent variable is observed as a result of the independent variable is the individual achievements.

The research was conducted on students of Primary School Teacher Education Department, Teacher Training and Education Faculty, Universitas PGRI Ronggolawe, Tuban, East Java, Indonesia. The state of research subjects is determined by two classes. Classes are used as research subjects were selected randomly. While students are grouped high group of homogeneous, middle group of homogeneous, low group of homogeneous and heterogeneous group selected cluster random sampling.

The data analysis in this research included descriptive analysis and inferential analysis of data for the purposes of testing the hypothesis. Descriptive analysis is done to provide a description or illustration of the data collected without intent to generalize. Inferential analysis is used in order to test the hypothesis the researchers. To test the difference test was used Multivariate Analysis of Variance (MANOVA) [17]. Statistical hypothesis testing performed at a significance level of 5% or $\alpha = 0.05$. All statistical analysis was using SPSS 20.0 for Windows.

3.   RESULTS AND ANALYSIS

3.1.   Differences in Students Individual Achievements between the High Group of Homogeneous, the Middle Group of Homogeneous, the Low Group of Homogeneous, and the Heterogeneous Group in Reciprocal Teaching Technique of Collaborative Learning

F-test results shows coeficien of 14.111 and the significant value of 0.00. This shows that there are significant differences in students' individual achievements between high group of homogeneous, middle group of homogeneous, low group of homogeneous, and heterogeneous group in reciprocal teaching of collaborative learning.

While LSD test results show that among the high group of homogeneous with the middle group of homogeneous significance value of 0.00, the high group of homogeneous with the low group of homogeneous significance value of 0.00, the high group of homogeneous with the heterogeneous group significance value of 0.002, the middle group of homogeneous with the low group of homogeneous significance value of 0.00, the middle group of homogeneous with the heterogeneous group significance value of 0,016, and the low group of homogeneous with the heterogeneous group significance value of 0,016. Test results obtained F and LSD test all minor significance value of 0.05. This shows that there are significant differences between the students achievement high group of homogeneous with the midlle group of homogeneous, the high group of homogeneous with the low group of homogeneous, the high group of homogeneous with heterogeneous group, the middle group of homogeneous with the low group of homogeneous, the middle of homogeneuous with heterogeneous group, and the low group homogenuous with the heterogeneous group. Calculation of learning achievement data obtained a mean improvement from

pre-test to post-test for high homogeneous group of 19.5, the middle group of homogeneous of 13,50, the low homogeneuous group of 11.75, and heterogeneous group of 15.0. This means that an increase individual achievements highest in the high group of homogeneous and lowest in the low group homogeneous.

3.2. Differences in Students Social Skills between the High Group of Homogeneous, the Middle Group of Homogeneous, the Low Group of Homogeneous, and the Heterogeneous Group in Collaborative Learning

F-test of students social skills gained grades F is 21.062 and significance value is 0.000. While F_{table} value for $df_1= 2$ and $df_2 = 71$ at 95% significance level is 3.1258. Therefore the value of F (21.062) > F_{table} (3.1258) and a significant value is 0.000 < 0.05, then it can be taken a decision to reject H_0. So we can conclude that there are differences in students' social skills between high homogeneous group, low homogeneous group, and heterogeneous group in collaborative learning. Based on the results of LSD test showed that student' social skills among high homogeneous group with low homogeneous group significance value of 0.00, high homogeneous group with heterogeneous group significance value of 0.001, low homogeneous group with heterogeneous group significance value of 0,016. It turned out that the significance value obtained all less than 0.05, thus, H_0 is rejected. This showed that there are significant differences of students' social skills among high homogeneous group with low homogeneous group, high homogeneous group with heterogeneous group, and low homogeneous group with heterogeneous group. Based on the results of descriptive statistical analysis showed that the social skills on high group of homogeneous showed mean the highest increase in the amount of 10.92, the second a heterogeneous group with a mean increase of 8.75, followed middle group of homogeneous with a mean increase of 8.55, and the lowest of the low group of homogeneous with a mean increase of 6.71.

4. CONCLUSION

The individual achievement between the high group of homogeneous, middle group of homogeneous, low group of homogeneous, and heterogeneous group in reciprocal teaching technique of collaborative learning differ significantly. Evidently, high group of homogeneous shows the increased values of the individual achievements of the highest, followed the heterogeneous group, middle group of homogeneous, and the low group of homogeneous shows the increase in value of the lowest on the individual achievements.

The students' social skills between the high group of homogeneous, low group of homogeneous, and heterogeneous group in reciprocal teaching technique of collaborative learning differ significantly. Evidently, the high group of homogeneous shows the value of the social skills of the highest, followed the heterogeneous group, later the middle group of homogeneous, and the low group of homogeneous shows the increase in value of the lowest on the social skills.

REFERENCES

[1] J. Kelly, "Collaborative Learning: Higher Education, Interdependence, and the Authority of Knowledge by Kenneth Bruffee: A Critical Study," *Journal of the National Collegiate Honors Council,* vol. 82, 2002.
[2] T. Friedman, "Developing a culture of inquiry for equity: One school's story," in Working toward equity, Berkeley, CA: National Writing Project, 2006.
[3] E. Martin and P. Paredes, "Using learning styles for dynamic group formation in adaptive collaborative hypermedia systems," in *Proceedings of the First International Workshop on Adaptive Hypermedia and Collaborative Web-based Systems*, *2004. AHCW* 2004, pp. 88-198, 2004.
[4] P. E. Doolittle, *et al.,* "Reciprocal Teaching for Reading Comprehension in Higher Education: A Strategy for Fostering the Deeper Understanding of Texts," *International Journal of Teaching and Learning in Higher Education*, vol/issue: 17(2), pp. 106–118, 2006.
[5] N. Schünemann, *et al.*, "Integrating self-regulation in whole-class reciprocal teaching: A moderator–mediator analysis of incremental effects on fifth graders' reading comprehension," *Contemporary Educational Psychology*, vol/issue: 38(4), pp. 289–305, 2013.
[6] P. Iserbyt, *et al.*, "Reciprocal Learning with Task Cards for Teaching Basic Life Support (BLS): Investigating Effectiveness and the Effect of Instructor Expertise on Learning Outcomes. A Randomized Controlled Trial," *The Journal of Emergency Medicine*, vol/issue: 46(1), pp. 85–94, 2014.
[7] N. M. Webb, *et al.*, "Teachers' Grouping Practices in Fifth Grade Science Classrooms," *The Elementary School Journal*, vol/issue: 98(2), pp. 91-113, 1997.
[8] H. Macintyre and J. Ireson, "Within-class Ability Grouping: placement of pupils in groups and selfconcept," *British Educational Research Journal,* vol/issue: 28(2), pp. 249-263, 2002.
[9] A. V. Kelly, "Mixed-Ability Grouping," Theory and Practice. 2nd ed. London, Harper & Row Ltd., 1978.
[10] Y. J. Hwang, "Effects of Ability Grouping on Middle School Students," *Affective Outcomes*, in H. Park & K. Kim, "Korean Education in Changing Economic and Demographic Contexts," Springer Singapore, pp. 127–149, 2014,

[11] I. N. S. Degeng, "Ilmu Pembelajaran," Klasifikasi Variabel untuk Pengembangan Teori dan Penelitian, Bandung, Aras Media, 2013.

[12] A. Žakelj, "The Impact of Level Education (Ability Grouping) on Pupils' Learning Results," *The 3rd World Conference on Psychology, Counseling and Guidance, WCPCG-2012*, vol. 84, pp. 383–389, 2012.

[13] Waras, "Active learning di antara idealisasi dan realitas praktik pendidikan. Disampaikan dalam Seminar dan Lokakarya Nasional," *Peningkatan Kualitas Pembelajaran melalui Active Learning Menuju Profesionalisme Guru,* UNS Surakarta, 2009.

[14] J. W. Creswell, "Research Design. Qualitative, Quantitative, and Mixed Methods Approaches," 4th Ed. Thousand Oaks, CA, SAGE Publications. Inc., 2009.

[15] J. W. Creswell, "Educational Research," Planning, Conducting, and Evaluating Quantitative and Qualitative Research, 4th Ed. Boston, MA, Pearson Education, Inc., 2012.

[16] B. W. Tuckman, "Conducting Educational Research," (5th Edition), Sea Harbour Drive, Orlando, Harcourt Brace & Company, 1999.

[17] J. F. Hair, *et al.*, "Multivariate Data Analysis," (6th Edition), Upper Saddle River, N.J., Person Prentice Hall, 2006.

BIOGRAPHIES OF AUTHORS

Sumadi is a doctoral candidate in the Department of Instructional Technology, Postgraduate, Universitas Negeri Malang, Indonesia.
63sumadi@gmail.com

I Nyoman S. Degeng is Professor in the Department of Instructional Technology, Postgraduate, Universitas Negeri Malang, Indonesia. He is also Director of Postgraduate, Universitas Negeri Malang, Indonesia. His researchs and books interests include the instructional technology.
nyoman.sudana.d.fip@um.ac.id

Sulton is a lecturer in the Department of Instructional Technology, Postgraduate, Universitas Negeri Malang, Indonesia. He is also Chairman of the Development Institute of Education and Instructional, Universitas Negeri Malang, Indonesia. Him researchs interests include the instructional technology.
Sulton.fip@um.ac.id

Waras is Professor in the Department of Instructional Technology, Postgraduate, Universitas Negeri Malang, Indonesia. He is al so Chairman of the Indonesian Consortium for Learning Innovation Research (I-CLIR). His researchs and books interests include the instructional technology.
waraskamdi@gmail.com