

Group Composition and Learner Ability in Cooperative Learning: A Mixed-methods Study

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Nasim Ghanbari

Persian Gulf University

<btghanbari@pgu.ac.ir>

Parisa Abdolrezapour

Salman Farsi University of Kazerun

<dr.abdolrezapour@kazerunfu.ac.ir; abdolrezapour@gmail.com>

Abstract

Cooperative learning pedagogy has been in place for more than 40 years. Nevertheless, there has been no consensus on the best grouping procedure for the cooperative learning activities. To shed more light on the issue, the present study examined the language achievement of learners at different ability levels in two heterogeneous and homogenous cooperative learning groups. Furthermore, the study explored the perceptions of the learners involved in either grouping. For this aim, a body of 100 intermediate EFL learners was randomly assigned into either homogeneous or heterogeneous groups. The treatment lasted nine weeks of instruction. The results showed that while high and average-achieving learners substantially benefited from homogeneous grouping, low achievers did equally well in either groups. Also, the learners' interview statements revealed considerable differences in the way they perceived the two groupings. Findings suggest that in any CL group composition, a body of factors should be taken into account. Pedagogical implications of the study will be discussed.

Keywords: Cooperative learning, grouping strategy, homogeneous grouping, heterogeneous grouping, learners' perception, learners' language ability

From a variety of theoretical perspectives, it is claimed that learning improves when it is carried out as a constructive and social activity (Kagan, 1994; Slavin, 1995; Vygotsky, 1978). Cooperative learning (CL), originally based on the social constructivist view of learning, aims to make instruction more relevant and students more responsible (Barros & Verdejo, 1998). Also, CL, which is defined as the instructional technique or grouping structure in which students are divided into heterogeneous or homogeneous groups to complete instructional activities, has a considerable body of research validating its effectiveness (Baer, 2003; Bikarian, 2009; Gillies, Ashman & Terwel, 2008; Igel & Urquhart, 2012; Liao, 2006; Smith, Cornelius, & Hines, 2014; Valdez, Lomoljo,

Dumrang, & Didatar, 2015; Vega & Hederich, 2015; Zakaria, Solfitri, Daud, & Abidin, 2013; Zamani, 2016).

Appropriate assignment of the learners to groups is one important characteristic of CL activities. In fact, even though appropriate use of student groups for learning has been shown to yield significant learning improvement across disciplines (Adesoji, Omilani & Nyinebi, 2015; Brown & Palincsar, 1989; Freeman, Eddy, McDonough, Smith, Okoroafor, Jordt, & Wenderoth, 2014), the successful application of CL in classrooms is still a controversial issue among many educators (Chang & Brickman, 2018; Gillies & Boyle, 2010; Johnson & Johnson, 1999; Zamani, 2016; Wang, 2013). Considering that just with a change in the group composition a whole educational course can be more efficient or unsuccessful, it seems reasonable to investigate the matter empirically (Baer, 2003; Kulik, 1984; Slavin, 1993).

Homogeneous and heterogeneous grouping are two prominent CL group composition. In homogeneous groups, students are grouped according to their abilities, genders, races, etc., in a way that everyone in the group is around the same level of a criterion considered for grouping (Baer, 2003). On the other hand, its major counter-strategy (i.e., heterogeneous grouping) mixes students with a variety of ability levels, talents, interests, etc. to complete a single activity.

Although CL has been long associated with the heterogeneous grouping of the learners and for a good time heterogeneous grouping was the prevailing CL grouping structure, recently, there have been studies which have attempted to empirically investigate the difference between the two strategies of grouping mentioned (Baer, 2003; Brush, 1997; Ghanbari, 2005; Faris, 2009; Mahmoud, 2011; Saleh, Lazonder & de Jong, 2005; Shields, 2002; Wang, 2013; Wyman, 2018; Zamani, 2016).

In this regard, Baer (2003) compared heterogeneously and homogeneously grouped cooperative learning groups taught by the same professor using matching syllabi and assignments. On the whole, it was found that homogeneously grouped students significantly outperformed heterogeneously grouped ones. High and average-achieving students particularly benefited from the homogenous grouping. Low achievers performed equally well in both groups. Brush (1997) also investigated the impact of group composition on students' achievement, time on task, and group interactions when completing integrated learning system (ILS) activities in cooperative groups (i.e., homogeneous or heterogeneous). Results of the study did not find any significant differences between the two grouping structure. However, the study showed that low-ability students benefited more when working with high-ability learners (i.e., heterogeneously) than when they were put with students of the similar ability (i.e., homogeneously). In addition, high-ability students performed better in homogeneous groups. Ghanbari (2005) investigated two strategies of homogeneous and heterogeneous grouping with regard to ability and gender on the written performance and general proficiency of the learners. Results indicated that while the two grouping structure differed for the two genders; there was no statistical difference between them with regard to the ability. In another study, Faris (2009) investigated the impact of homogeneous versus heterogeneous collaborative learning grouping in multicultural classes on the students' achievements and attitudes towards learning science. The results showed that the students in the mixed-ability classes scored less than those in the other groups. However, when the same ability groups included students from different cultural backgrounds, the results were the most favorable.

In the same vein, Mahmoud (2011) studied the effect of homogeneous grouping versus heterogeneous grouping on the students' EFL achievement in writing. The findings showed that there was a significant difference between the students in homogeneous group and the heterogeneous group in favor of the homogeneous group. However, there was no significant

difference between high achievers and low achievers in the two groups. In the same line, Saleh, Lazonder de Jong (2005) examined how grouping arrangements affect students' achievement, social interaction, and motivation. Their findings revealed that while low-ability students achieved more and were more motivated to learn in heterogeneous groups, average-ability students performed better in homogeneous groups. High-ability students performed similarly in homogeneous and heterogeneous groups. Regarding the social interaction, it was found that heterogeneous groups produced higher proportions of individual elaborations, whereas homogeneous groups used relatively more collaborative elaborations. Shields (2002) also found that students in the homogeneously grouped classes demonstrated significantly more development of career interests than those in the heterogeneous classes.

Wang (2006) examined the effects of different grouping strategies on learning of college-level students in cooperative learning contexts. The findings showed that heterogeneous grouping based on student ability is more beneficial for the student achievement and satisfaction; high and medium-level ability students benefit more in homogeneous groups but low-ability students benefit more in heterogeneous groups and no consistent conclusion could be drawn about the effects of grouping from studies in which groups were based on race and culture. They also suggested that heterogeneous grouping based on learning styles is more beneficial for student satisfaction with their learning and their attitudes toward other students rather than student achievement.

In addition, Wyman (2018) who studied homogeneous and heterogeneous grouping while using cooperative learning teaching structure found no significant differences between the homogeneous and heterogeneous groups. Zamani (2016) also reported that heterogeneous grouping showed superiority over homogeneous grouping at the low level. Low students in the heterogeneous class made more relative gains than high-ability students in the same class.

Nevertheless, none of the studies have investigated the perceptions of the learners engaged in CL activities in either grouping. Drawing on a mixed-methods research design, the present study was launched to reveal the realities of CL activities in either grouping structure from the learners' point of view. It also reported on the final language achievement of the learners at different ability levels. As a result, attempts were made to answer the following research questions in this study:

1. Does grouping strategy have any effect on the language achievement of high, average, and low ability learners involved in cooperative learning activities?
2. How do high, average, and low ability learners perceive their experience of cooperative activities in their groups?

Literature review

Current scholarship on CL group composition shows two distinguished grouping strategies. In the words of Miller and Harrington (1992, p. 212) 'maximizing heterogeneity of skills and abilities' and also putting together different social groups to 'promote more favorable evaluations of out-group members' has been a major concern in structuring CL activities. The frequently-practiced heterogeneous grouping puts together different ability levels on the assumption that present homogeneity-inducing educational systems prevent them to interact. Heterogeneous grouping of learners has been widely practiced in settings which used CL as a major pedagogic technique to the extent that it has become an indispensable part of CL definition (Watson & Marshall, 1999).

Homogeneous grouping as the other CL group configuration has been the concern of several studies (Baer, 2003; Bikarian, 2009; Brush, 1997; Felder & Brent, 2001; Ghanbari, 2005; Khazaeezhad,

Barati & Jafarzade, 2012; Kulik, 1992; Kulik & Kulik, 1982; Kulik, 1984; Hopkins, 2003; Johnson, 2016; Sandler, Silverberg & Hall, 1996; Slavin, 1993; Tieso, 2003; Rosser, 1997; Wyman, 2018). This line of research advocates homogeneous grouping as it is beneficial for both teachers and students. In fact, teachers can adapt their particular teaching to the students' needs by providing learning experiences for different ability levels in the class in a way that low-achievers receive more support and related instructional input and high-achievers also face more challenging curriculum. Therefore, low-achievers by being paired with their ability peers feel more confident and high-achievers also become more stimulated and challenged (Liu, 2008).

On the other hand, heterogeneous grouping composes the groups to maximize diversities within them. The rationale for inducing heterogeneity in the structure of groups is that isolating learners of diverse abilities from each other (as practiced in homogenous grouping) can be detrimental to the academic success of these individuals, because they can become isolated, marginalized, or placed in stereotypical roles and not permitted to flourish (Baer, 2003; Çolak, 2015; Felder & Brent 2001; Rosser 1997; Sandler, 1996, Slavin, 1990). In addition, since ability grouping prevents the learners from equal educational opportunities, it has been considered as an unethical practice (Findlay & Bryan, 1970). However, other studies (e.g. Baer, 2003; Brush, 1997; Ghanbari, 2005; Liu, 2008; Saleh, et al., 2005; Thanh-Pham & Gillies, 2010; Zamani, 2016) have counted several benefits for the homogenous grouping. Results of these studies showed that while high-achievers especially benefited from the homogeneous groups, heterogeneous grouping could particularly meet the needs of the low-ability learners. For example, Khazaeenezhad, Barati & Jafarzade (2012) found that grouping the learners and dividing them into different ability groups had a significant impact on the participants' academic success in their course of general English. In addition, the results suggested that ability grouping provides sufficient ground for methodological decisions and hence sequencing of teaching materials and procedures. As an influential study in this regard, Kulik and Kulik (1982) conducted a meta-analysis of the findings of 52 studies on homogeneous grouping. They showed positive but slight effects on lower and middle level students' achievement, attitudes and self-concept. They stated that the effects of homogeneous grouping were negligible; however, there was no evidence on the detrimental effects of homogeneous grouping arrangement. In another study, Saleh, et al., (2005) studied the effect of different grouping arrangement on the achievement scores of high, average and low-ability learners. It was found that low-ability learners performed better in heterogeneous groups. They were also more willing to work with peers of different abilities. Average-ability learners, on the other hand, benefited more from the homogeneous groups, but high-ability learners achieved equally strong outcomes in both grouping structure.

Moreover, opponents of heterogeneous grouping state that the idea that lower ability students will look up to gifted ones as role models is highly questionable (Chang & Brickman, 2018). They believe that learners typically model their behavior after the behavior of other learners of similar ability. Also, research done at the elementary and secondary levels suggests a pattern similar to that found in non-CL settings: high-achievers do much better in homogenous groups and among average and low-achievers there is little difference in heterogeneous and homogeneous groups (Allan, 1991; Kulik, 1984; Slavin, 1991; Sternberg & Williams, 2002).

In addition to the advantages and disadvantages associated with either grouping structure, results of the studies might have been affected by several contextual variables (e.g. race, culture, instructional objectives, quantity and quality of the instruction) which add to the existing uncertainty (Hoffer & Gamoran, 1993). As an example, Thanh-Pham and Gillies (2010) found that heterogeneous grouping did not work in the Vietnamese context. In fact, in this particular Asian context, friendship grouping was more preferred. Their findings showed that despite the wide

practice of heterogeneous grouping in the Western educational settings, this was not advocated in the context. They reasoned that different cultures of learning can lead to different grouping orientations in team work.

Despite evaluating the achievement of different ability learners in CL homogeneous and heterogeneous groups, the way they perceive CL activities in either grouping has received scant attention. The existing studies which are mostly survey-based report mixed findings in this regard. Some studies showed the learners' positive attitudes to group/pair works (Mishra & Oliver, 1998; Roskams, 1999; Supanc, Vollinger & Bernstein, 2017), but others reported that the learners doubted the benefits of participation in CL groups. As an example, Shields (2002) investigated students' attitudes and perceptions in homogeneous and heterogeneous classes. Results of the questionnaires showed that homogeneously-grouped students perceived their teachers to have higher expectations of them than did students who were heterogeneously-grouped. Further, the researcher found no evidence indicating the negative impact of homogenous grouping on the students' attitudes toward themselves or school. As another study, high-achieving learners were found to have a poor attitude toward group work (Storch, 2005). Saleh, et al., (2005) also found that heterogeneous groups led to higher proportions of individual elaborations, whereas homogeneous groups used relatively more collaborative elaborations.

In the same vein, Liao (2006), who investigated the effects of cooperative learning on EFL students in Taiwan, found that those students at higher and lower ability levels considered CL group activities to be effective in terms of motivation and grammar achievement. Liu (2008) next explored the college students' and English teachers' attitudes toward between-class ability grouping to gain more insight into the effects of homogeneous placement on learning a foreign language. Almost all of the students and teachers in the study advocated the ability-grouped class placement. In addition, lower-ability learners were more inclined to participate in homogeneous grouping than the higher-ability learners. Faris (2009) who investigated the impact of homogeneous versus heterogeneous collaborative learning grouping in multicultural classes on the students' achievements and attitudes towards learning science and group work found a positive effect for the heterogeneous grouping compared with the homogeneous grouping.

Aside from the uncertainty reflected in the above studies, most of the studies have relied on surveys rather than conducting interviews with the learners soon after experiencing CL activities. In fact, few studies have taken a closer look inside the CL groups to gain the learners' views upon their participation in either grouping.

It seems there is a heated debate between selecting homogeneous or heterogeneous grouping strategies when deciding upon CL group structures. In other words, despite hundreds of studies in this regard, no consensus has been reached so far (Loveless, 1998, Liu, 2008). Hence, the present study was conducted to first investigate the language achievement of different ability learners in homogeneous and heterogeneous groups. Next, it tried to further validate the findings by a rigorous analysis of the participants' views reflected in their interview statements. In fact, by providing a detailed picture of the learners' performance in heterogeneous and homogeneous groups, the present study aimed to contribute to the existing literature on EFL CL group composition.

Method

Participants

A body of 110 Iranian male and female adult language learners participated in this study. They had enrolled in an English language learning program in Tehran, Iran. The participants were from two existing classes of the Center. They aged between 18 and 27 and almost all of them were university

students in different fields of study at the time. Prior to the study, the students were informed about the objectives of the study and they were assured that their identities along with the data of the study would be quite confidential.

Following the administration of the Center language placement test, the learners had been considered to study at different language proficiency levels. The learners who participated in this study had been placed at intermediate language proficiency level. One of the researchers was the teacher in both classes.

Regarding the purpose of the study which sought the effect of different grouping strategies on the students' language achievement, Oxford Placement Test (OPT) was administered to determine the range of the learners' language proficiency. Upon the administration of OPT and in order to increase the range of diverse language abilities which was the concern of the present study, the researcher considered the score of the learners who were between 3 standard deviations (SD) below and above the mean. Therefore, 10 participants failed to meet the needed criteria and their scores were not used in this study. The remaining 100 learners were assigned into either homogenous or heterogeneous groups.

Grouping was achieved as follows: In each class, those students who got top scores (about thirty percent of the class) were considered the high achievers, those who got low scores with around the same thirty percent as the low achievers and those who scored in between were considered average achievers. While a typical heterogeneous group in the study put together one high-achiever, one average-achiever and one low-achiever together (Figure 1), in homogeneously grouped classes, group composition was like forming groups of three high-achievers, three average-achievers and three low-achievers (Figure 2). There were 6 high, 6 average and 5 low groups in the homogeneous group. One of the low groups was formed with only two low-achieving members. In the heterogeneous group, 16 groups were formed. All the groups had three members but due to the unequal number of the participants in the average level, one of the groups was asymmetric to the others and included one high, one low and three average-achievers. In each of the heterogeneous and homogenous groups, these groupings remained in place until the end of the study. Table 1 below illustrates the structure of the groups in detail.

Table 1. Number of different ability levels in heterogeneous and homogeneous groups.

Type of grouping	Ability range	N
Heterogeneous	High	16
	Average	18
	Low	16
Total		50
Homogenous	High	18
	Average	18
	Low	14
Total		50

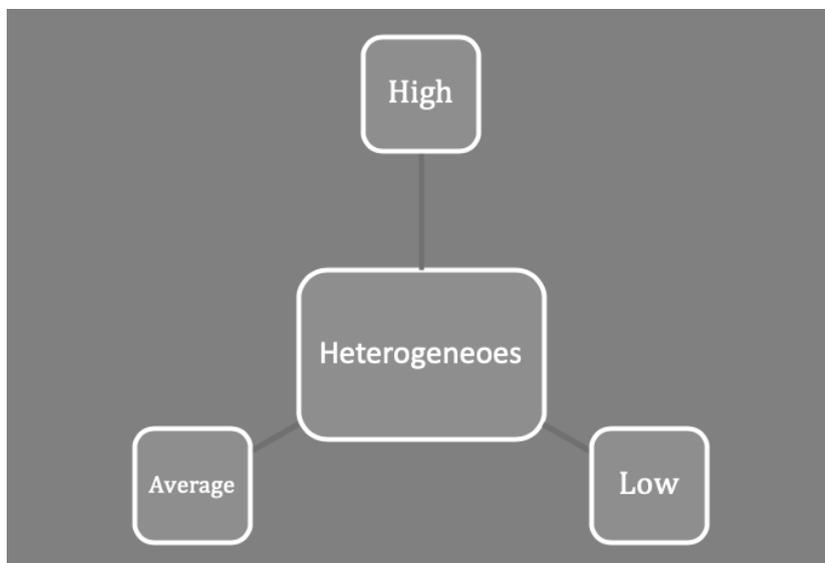


Figure 1. Structure of a heterogeneous group in the study.

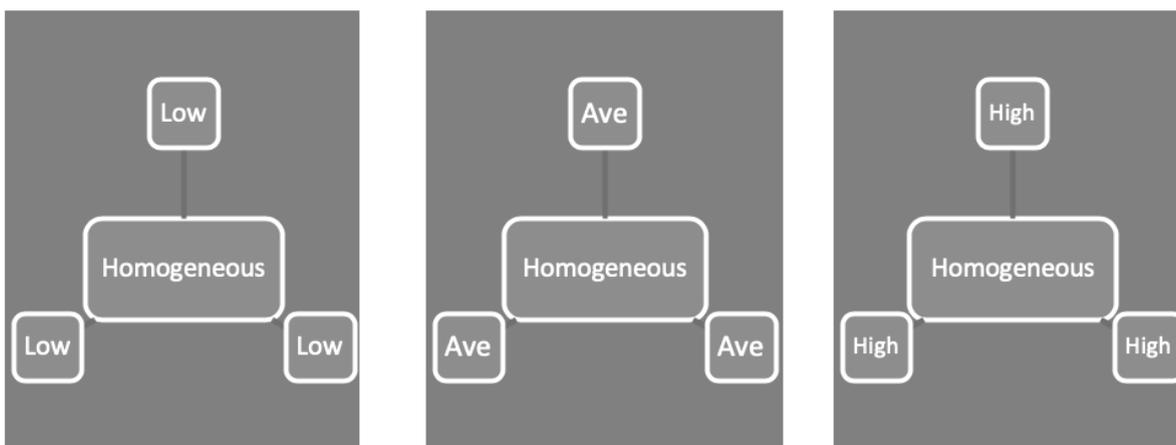


Figure 2. Structure of homogeneous groups in the study.

Instruments

Two major instruments were used in this study:

Oxford Placement Test: The first measure used was the Oxford Placement Test. This test is both a placement test and a reliable measure of general language ability. It consists of two sections: *Use of English* and *Listening*. It gives both an overall score and individual scores for each section. In fact, the test not only does test grammar and vocabulary, but also tests how learners use that knowledge in order to understand the meaning in communication. Thus, it was administered prior to the study and at the end of it. OPT scores were also used to identify the learners at different language ability levels (i.e. high, average and low) in this study. The reliability coefficient obtained through the split-half method (Cronbach Alpha) was 79.8, indicating an acceptable level of the reliability estimate. Also running the extraction method of principal component analysis, two factors were extracted and the items loaded on both. These two factors were considered the same as the listening and language use sections of OPT, confirming its construct validity.

Semi-structured interview protocol: A semi-structured interview protocol was prepared in order to investigate the perceptions of the learners in their groups. The interview items were prepared in Persian (i.e., native language of the participants) to prevent any probable language hindrances. Each interview took between 8 and 10 minutes. The interviews conducted and audio-recorded by the researcher were next transcribed for further investigation ([Appendix](#)).

Data collection

Upon the administration of OPT and forming the groups, the treatment began. It lasted nine weeks, including eighteen sessions of instruction (two 90-minute sessions per week). First and last sessions were also considered for the administration of OPT as the pre- and post-test measure.

The teacher-researcher provided the learners in both homogenous and heterogeneous groups with detailed instruction on cooperative activities. They were reminded that simply sitting together in groups did not create a cooperative atmosphere, rather to develop a kind of positive interdependence they should significantly contribute to the common goal of their own groups. The researcher also changed the traditional setting of the class in a way to facilitate cooperation, though some of the learners did not feel relaxed with the new arrangement of the class environment.

Moreover, to make the group members responsible for the tasks which they dealt with in the class and also to avoid any probable behavior clashes, the teacher assigned a role to each of the students in the groups. Also, since language ability of the learners was a significant factor in the construction of the groups, role assignment to the group members encouraged all the group members to have their own share in the group activities. Some of the assigned roles included leader who organized the group activities in the implementation of the assignment, time-keeper who managed the time of doing tasks and encourager who motivated group members to fulfill their group roles. The role assignment was flexible and for any task, the group members shifted their roles accordingly.

As an example, a group writing task proceeded as follows. Every session the learners in their groups were asked to write a group composition. The researcher chose the topics in a way which had an interactive nature to elicit the views of all the group members. For example, one of the topics was, 'write about the side-effects of being overweight'. First, learners discussed it in their groups, brainstormed their ideas, wrote a rough draft and finally after peer reviewing, wrote the final draft. For any group activity, the members selected their roles to fulfill their portion of the task. The researcher observed some differences in different groups' activities. For example, homogeneous groups experienced less group clashes compared to heterogeneous ones. However, the students' gradual progress in CL group activities could be observed.

At the end of the treatment sessions, OPT was administered again to find any probable changes in the language ability of the individual learners at different ability levels in the study. Next, the researcher selected some of the learners in each of the groups to participate in an interview. The participants were asked on different aspects of CL experience they had in their groups. The interviews were also conducted in Persian to reduce the possible language interference effect.

Data analysis

Regarding the dual aim of the present study in investigating both the effect of grouping strategy on the language achievement of high-, average-, and low achieving learners and also probing their perceptions when involved in CL group activities, different analytic measures were used. For this aim, the performance of the learners at each ability level in the two groups was compared through several independent-samples t-tests.

Students' interview statements were carefully transcribed and later they were translated into English for the thematic analysis. To check for the reliability, an experienced translator analyzed the interview translations. The analysis of the interviews was quite exploratory and data-driven. In other words, the researcher explored the interview data to get access to meaningful patterns and no particular code or theory determined the analysis procedure.

Results

First research question

To address the first research question of the study, which asked for the probable differences in the language achievement of high, average and low learners in either homogenous or heterogeneous groups, the researcher ran an independent-samples t-test. Table 2 below provides general descriptive statistics of the learners.

Table 2. Descriptive statistics of all learners before and after the study.

Test	Homogeneous Group (N= 50)	Heterogeneous Group (N=50)	t	P
Pre-test	71.02	68.82	.706	.482
Post-test	76.42	70.26	2.002	.048

As Table 2 shows, learners in both groups performed similarly prior to the beginning of the study. However, after the treatment sessions learners in the homogeneous groups outperformed their counterparts in the heterogeneous group on the post-test. Regarding the concern of the present study to find how different ability groups performed in either grouping, the researcher used several independent-samples t-tests to investigate the matter.

Table 3. The performance of high-achievers in homogenous and heterogeneous groups before and after the study.

Test	Homogeneous Group (N=18)	Heterogeneous Group (N=16)	t	P
Pre-test	88.44	87.25	.140	.889
Post-test	95	87.88	4.055	.000

As Table 3 shows, high learners in both groups performed similarly prior the experiment; however, learners in the homogenous group strikingly outperformed the ones in the heterogeneous group.

Table 4. The performance of average-achievers in homogenous and heterogeneous groups before and after the study.

Test	Homogeneous Group (N= 18)	Heterogeneous Group (N=18)	t	P
Pre-test	69.78	68.39	1.095	.273
Post-test	75.56	68.50	4.49	.000

Average-achievers also significantly benefited from homogenous grouping ($p < .00$) (Table 3). However, this pattern of performance did not stand for the low-achieving learners. In fact, while

participation in cooperative group activities improved their performance, there was not any significant difference between homogeneous or heterogeneous grouping of this kind of learners.

Table 5. The performance of low-achievers in homogenous and heterogeneous groups before and after the study.

Test	Homogeneous Group (N=14)	Heterogeneous Group (N= 16)	t	P
Pre-test	50.21	50.88	.272	.786
Post-test	53.64	55.25	.983	.326

Second research question

To address the second research question, which aimed to explore the perceptions of the learners about CL activities in their groups, the analysis of semi-structured interviews yielded the following patterns:

- Overall positive view of all learners to CL group work
- Disparities between the learners' views in different groups
- Cultural grounds

All learners in either grouping considered CL as a useful pedagogic practice. They stated that CL activities created rigor and motivation in their settings which was mostly teacher-fronted. As evidence, S2 (for reasons of anonymity the interviewees' extracts are named as Ss here) a high-achiever from the heterogeneous group clearly pointed to positive interdependence created among the members:

I think a kind of mutual partnership was created among the members in the group. All the time we thought of competing with other groups. This was missing in our ordinary classes where our teacher determined everything in class and we just obeyed him/her!

Low-achieving learners also preferred CL to traditional whole-class teaching. They believed that CL groups provided safe learning opportunities for them which they could access to all the time without their permanent fear of facing the whole class. For example, S7, a low-achieving learner from the heterogeneous group stated:

I enjoyed working in group. In fact, when facing a difficulty, I could ask the strong member of the group. All group activities were coordinated to increase the final group performance and not showing the weaknesses of the members!

Low-achieving learners in the homogenous group also maintained that CL group activities provided a friendly environment in which they could negotiate their thoughts when doing class assignments.

Average-achievers in both homogeneous and heterogeneous groups preferred CL to individualistic mode of learning. In their interview statements, two of them described their group work experience as so:

S5: Cooperation, I think, is self-rewarding. I mean as you learn to work in groups, the outcomes you receive at different stages of the group work promote you for further interaction with the members.

S6: For me language learning has always had a threatening aspect. Group work hides the fearful face of operating in the foreign language by providing a supportive environment.

Although students in both homogenous and heterogeneous groups generally had positive views to CL, they held different views about the particular CL grouping they were placed in. Based on their statements, high achievers in homogenous groups were the most satisfied learners. As evidence, S3 a high-achiever from the homogenous group stated that:

The group enjoyed a great deal of harmony. Similar ability level of the teammates considerably facilitated the group work.

Because high-achieving learners were quite satisfied with their same-ability grouping, they did not think of adding any heterogeneity to their groups. So, in their idea, this kind of grouping was a fair cooperative practice. However, high-achievers in the heterogeneous groups were not as satisfied as their homogenous peers. As evidence, S4 mentioned that:

Although I like working together, the particular selection of our group members somehow negatively affected the performance of the group. All the time we had to stop for either correcting or answering the questions of the weak peers!

It seemed that the wide gap in the ability levels of learners in this group had negatively affected the high-achievers' view in the heterogeneous group. In addition, average-achieving learners who worked in homogenous groups had a more positive attitude compared with their counterparts in the heterogeneous groups.

Low-achieving learners had serious reservations about the type of groups they had been assigned to. Those working in homogenous groups strongly believed that the particular structure of their group was not fair. They claimed that homogenous grouping did not differ basically from the whole-class, teacher-fronted teaching as they were still dependent on the teacher helps. However, those low ability learners who were members of heterogeneous groups stated that although they could receive the help of more able peers, they experienced severe behavioral clashes. S8 explained his group work experience in a heterogeneous group as so:

I like group work. I could continually share my understanding with the group members, but I felt I was somehow bothering them. Sometimes they even ignored me and quickly did the group tasks themselves. Those times I felt as an outsider!

The final pattern emerged from the analysis of the learners' interviews revealed strong cultural orientations which considerably affected the way learners in different CL groups reacted to the practice. S1, a high-achiever from the homogenous group stated that, 'we could compete with other groups. We decided and acted like each other.' S5, an average-achiever from the homogeneous group noted that, 'There was no clash among us as we could share equally.' On the other hand, there were instances of covert within-group clashes in heterogeneous groups. The climax of these was observed in two ends of the ability continuum (i.e. high- and low-achievers). The following interview extracts provide evidence in this regard:

At times I preferred the old teacher-fronted class to answering the so easy questions of some members. It really slows down the rate of group work (S2, high-achiever, heterogeneous group).

I think before any group work, teacher should explain that all members are equal and should be treated equally. I think there was no mutual acceptability by some members. When facing the strong group mates, I was not as self-confident as before! S8 (low-achiever, heterogeneous group)

The instances of behavioral clashes observed by the teacher and confirmed by the students' interview statements indicated that the learners were operating in a cultural atmosphere which was not quite in line with the cultural assumptions of heterogeneous grouping as the heart of cooperative learning.

Discussion

Results of the present study revealed that the two CL grouping strategies led to substantial differences among the learners at different ability levels. The analysis of the interviews with the learners also yielded patterns that advocated the obtained findings. The study supports setting up groups of learners in CL activities that are of the same ability level which supports what is referred to as ability grouping in the literature (Liu, 2008). In fact, levels of statistical significance obtained strongly suggest that the observed differences were not the result of chance, but rather represent real differences. Also, as the only systematic difference between the groups was the type of grouping, it is reasonable to conclude with some confidence that the differences in how students were grouped caused the observed differences in achievement. Moreover, the use of OPT as an objectively-scored test avoided the possibility that any subjective judgments of the researcher-instructor may have had influenced the outcome.

Similar findings to the present study have been reported by some scholars. Baer (2003) found that in college classrooms with fairly wide range of student ability, homogeneous grouping could result in significant achievement gains among average-and high-achieving learners, while doing no harm to the achievement of low-achieving learners. Martin (2012) also found while CL provided more learning gains for the students in both homogenous and heterogeneous groups, there was not any priority for the long-practiced heterogeneous grouping. In fact, no significant difference between the two grouping structure was observed. In the same line, Saleh, et al. (2005) found that while low-ability learners performed better in heterogeneous groups, average-ability learners benefited more from the homogeneous groups, and high-ability learners achieved equally strong outcomes in both grouping structure. Similarly, Zamani (2016) found that CL improved the learners' performance in both groups, but low-ability learners made more gains in the heterogeneous group while there was no difference between heterogeneous and homogenous grouping of the high-ability learners. Some other studies (Bikarian, 2009; Liu, 2008; Wyman, 2018) also found no evidence for the superiority of the heterogeneous grouping in the CL activities.

Results of the one-to-one interviews with the learners in this study revealed that while the participants considered CL as a beneficial activity, a group of educational, social and cultural realities of the particular pedagogical context should be taken into account while setting up cooperative learning groups. In fact, in an individualistic context where personal accomplishment is rewarded, infusing CL as a socially-constructed instructional strategy demands a good deal of time. Several instances of behavioral clashes in the learners' interview statements can be named. Koh, Tan, Wang, Ee and Liu (2007) found that participating in group project work considerably improved the low-ability learners' competence in interacting with others; however, there were some organizational and instructional hindrances in the Singaporean educational context that prevented these learners to fully benefit from CL activities. In fact, the authors believed that a restructuring of the educational context was needed to meet the needs and aptitudes of the students.

Although CL as a scaffolding learning strategy has been encouraged by many scholars in different contexts, its rationale of heterogeneity for putting diverse ability learners together has faced serious challenges in the individualistic cultures. In fact, the strong tendency to sameness and avoiding diversities were vividly observed among the more gifted learners in the study. The instances of behavioral clashes confirmed the fact that the success of educational practices remarkably correlates with the amount of congruent cultural grounds. As an example, Thanh-Pham and Gillies (2010) discuss two learning orientations of Western and Asian students. Drawing on Schwartz (1994), they state that Western cultural values emphasize independence, equality and mastery, whereas Asian cultures appreciate conservatism, hierarchy and harmony. As a result of these

cultural characteristics, Western learners advocate independent thought, creativity and seek any opportunity to achieve the power and influence over others. Therefore, group members tend to choose the ones who can help them achieve the highest academic standards. In fact, cognitive ability rather than personal relationship matters. Apparently, these features are in line with the rationale of mixed-ability or heterogeneous grouping.

The situation is different among Asian learners. Being interdependent, Asian learners tend to select group members who can understand them well. In other words, Asian learners prioritize solidarity over other cognitive factors when forming their groups (Thanh-Pham & Gillies, 2010). Findings of the present study also showed that the learners in heterogeneous groups experienced the highest number of behavioral clashes. In fact, the analysis of interview transcripts showed that factors other than language ability caused the clashes inside the groups in this particular CL grouping structure. Homogeneous groups, on the other hand, by creating intimacy and solidarity provided an appropriate psychological space that ultimately helped the group members (in particular high and average learners) for higher language achievements.

In the same vein, Wang (2013) found that high and medium level ability students benefited from homogenous grouping and low-ability learners benefited in heterogeneous groups. Nevertheless, he claimed that when race and culture affect the structure of the cooperative groups, no consistent conclusion can be drawn regarding the importance of cultural grounds in the success of CL activities for different grouping.

In fact, cooperative learning pedagogy developed and later grew within learning communities in which ability-grouping had remained lots of failures (Boaler, Wiliam and Brown, 2000). The educational practice of ‘streaming’ or segregation by ability of the students gradually revealed the inequitable nature of this strategy for students who had diverse educational, social, etc. profile. The late 1970s and early 1980s witnessed an enhanced interest for providing equal educational opportunities for all learners. In this context, everything was prepared to maximize heterogeneity to the extent possible. However, the heterogeneous or mixed-ability grouping, as mentioned above, was mostly concerned with cognitive abilities and considered ultimate educational attainment as their ideal (Le, Janssen, & Wubbels, 2018) probably ignoring other influential factors except cognitive abilities led the educationalists to seek for the ‘academic success’ rather than just pursuing the democratic value of equity in education in the next decades. Findings of the present study provided evidence that when it comes to within-class grouping, ability is not the only determining factor. Rather, other contextual factors such as cultural background should be taken into account.

Conclusion

In sum, findings of the present study would suggest that claims made by studies which denounce homogeneous grouping as undemocratic and unfair and support heterogeneous grouping of the learners instead can be disputed (Boaler, Wiliam, & Brown, 2000; Miller & Harrington, 1992; Watson & Marshall, 1999). Results of the present study imply that high learners could best perform when sitting with their ability peers in the group. Same-ability grouping can be a serious alternative when excellence or academic success is the ultimate goal of the educational system in the context. In fact, the voice of learners as important stakeholders in any educational context should be considered to make a practice ethical and fair. The suggestion here is not to ignore diversity in the group composition, rather to consider same-ability grouping as a viable option when using the CL within the classes. In this way, individual differences in ability would best correspond with the most efficient group composition. Furthermore, the context would not face a sudden educational option which is not culturally prepared for. Rather, the readiness for receiving group diversities will be allowed to develop throughout the time.

The present study also faced some limitations. Use of intact classes which hindered the random selection of the learners affects the generalizability of the findings of the study. Furthermore, unequal number of learners at some ability levels was another limitation of the study. Increasing the sample size and also using a randomized selection procedure can considerably improve the study. Future studies can also include other factors such as gender and educational background to study whether they affect the individual and group performance in different CL grouping arrangement.

About the Authors

Nasim Ghanbari holds a PhD in English Language Teaching (ELT). Currently, she works as an assistant professor in the English language and literature department of Persian Gulf University in Bushehr, Iran. Upon joining the department in 2012, she has been teaching research methodology, language testing and advanced writing courses. Her areas of interest are mainly academic writing assessment, language assessment, and second language acquisition.

Parisa Abdolrezapour got her PhD in Applied Linguistics from the University of Isfahan, Iran and is now an assistant professor and also the head of English department at Salman Farsi University of Kazerun, Iran. She has published in many academic journals like *Discourse Studies*, *ReCALL*, *Psycholinguistic Research*, and *Australian Journal of Linguistics*. Her research interests lie primarily in cognitive and emotional aspects of language teaching and learning as well as cross-cultural studies.

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Appendix

Interview items

1. How do you think of cooperative learning in your group?
2. Did you face any problems when cooperating with other members?
3. Can you describe your feeling about cooperative activities in your group?
4. How do you think of your group mates?
5. Do you prefer to be in the same group for the rest of your cooperative activities?

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