

The Effect of Cooperative Learning on School Connection and Academic Engagement among Students

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Many social and life skills, expression of opinion, self-expression, critical thinking, expression of feelings, and expression of logical opposition happen during collaborative learning, and the collaborative environment can play a role in improving the skills necessary for life. This study aimed to investigate the effect of cooperative learning on school connection and academic engagement components of second-grade primary students in Iranian schools. In this -experimental research (pre-test, post-test with a control group), the statistical population included all second-grade primary school students in Bandar Abbas in the academic year 2021-2022. A total of 40 students were selected through multi-stage cluster sampling and randomly divided into control (n=20) and experimental (n=20) groups. Data were collected through the Brown and Evans School Connection Questionnaires (2002) and the Academic Engagement Questionnaire (Reeve Tseng, 2011). To implement training; 16 group sessions (two 50-minute sessions each week) were conducted in the experimental group using the cooperative learning method and, in the control, group using the traditional teaching method. For analysis, data used SPSS 24 software and multivariate analysis of covariance. Results showed that, after control of the pretest scores, there was a significant difference between the posttest scores of the experimental ($P \leq .0001$)

and the control ($P \leq .0001$) groups in levels of school connection (commitment, power, belonging, and belief in rules) and academic engagement (agency, behavioral, cognitive and emotional) ($P \leq .0001$). Thus, the results of the present study confirmed the effect of cooperative learning on school connection and academic engagement in Iranian primary school students. Cooperative Learning leads to the ability and make appropriate decisions in solving complex problems, which can lead to the desire to learn, and improved attachment to school.

Keywords: school connection, students, academic engagement, cooperative learning

The most important goal of education is to prepare students for future social and family life, which can be achieved by recognizing their physical, emotional, moral, and psychosocial characteristics with the help of scientific perspectives and experts. As the school setting is a kind of laboratory and learning through trial and error, it can greatly inform people about the conditions of future social life and gradually prepare them for a desirable life, provided that the education system can strengthen the spirit of empathy, accepting views of others, and a correct understanding of the feelings of other human beings. A study conducted by Molla & Mucbe (2018) shows that participatory learning has a great impact on the interaction of people with each other and understanding and accepting others. Gillies (2016) showed that participatory learning in educational subjects, such as language, art, reading, mathematics, social sciences, and practical courses at all levels was more effective and useful than individual and competitive learning.

The educational system in Iranian schools often emphasizes individual education and individual achievement, leading to highly visible or hidden competition among students. They deal with completion instead of cooperating and thinking together,

which causes anxiety as a result of failure and creates a kind of competitive lifestyle to the extent that this competition extends to real life. As a result, a learning environment with stress and anxiety cannot be considered a pleasant setting for the student. According to Buchs, Antonietti, and Butera (2016), many social and life skills, expression of opinion, self-expression, critical thinking, expression of emotion, and expression of logical opposition occur during participatory learning and a participatory environment can play a major role in improving the necessary life skills. Hence, a learning environment attractive to the learner will create a feeling of attachment to the learning and educational setting.

Students' perceptions of the school setting, school, teachers, and textbooks are important factors in academic achievement, desire to learn, and interest in school. Students show behaviors and reactions to their surrounding environment and the events that occur to them based on their perceptions, attitudes, and experiences. Thus, students' attitudes, interests, and behaviors can be greatly influenced by teaching methods, teacher-student interaction, teaching methods, and success or failure in academic performance. One of the most important psychological and emotional issues for students during their studies is the school connection, which is one of the variables indicating the level of a student's emotional relationship with the school. Studies have revealed that participatory learning, in addition to creating a sense of sociability, has a direct effect on the sense of school connection and emotional engagement and increases academic performance, achievement goals, and self-efficacy (Panahipour, Arabzadeh & Kadivar, 2020).

Group learning was reported to improve the sense of school connection and increase academic motivation and self-efficacy,

which is achieved through creating opportunities to increase students' positive experiences in school (Kia-Keating, & Ellis 2007). School connection involves a student's sense of attachment and commitment to school, and includes the student's experience of being noticed and having a sense of closeness to school employees and the setting. This reflects the student's ability to influence activities and people in the school setting, paying attention to students' views and opinions at school, the student's belief in the school rules and regulations, and the students' attitudes about the fairness of school rules and regulations, and receptiveness of all students (Brown and Evans, 2002 quoted in Samavi, 2012).

By providing a successful experience for all members of the group, participatory learning eliminates a sense of negative competition and causes a positive psychosocial atmosphere among the group members. It provides an opportunity to expand critical thinking and teamwork ability to increase students' sense of school connection. Heydari and Taleb (2019) reported that using the participatory learning method reduced students' competitive interpersonal space and increased school connection in students. In addition to doing homework in participatory learning, a student pursues other goals and programs, including understanding the views of others, criticizing the views of others, and accepting social responsibility, which can strengthen the sense of school connection. Another variable that is strongly associated with students' academic performance is academic engagement, which is a conscious and purposeful partnership that plays an effective role in facilitation of learning (Backer, Miller, & Timmer, 2018). Academic engagement means a task that must be considered by students. When this task has meaning and value

to students, it can attract students' attention and create a kind of commitment to this task. This sense of commitment makes the student work diligently to complete the task. Thus, attention and commitment are two important dimensions of academic engagement that can be better manifested in participatory learning (Schlechty, 2005).

In participatory learning, students have the opportunity to share their views and opinions; besides, one can easily express their opinions in this learning style, which reduces misunderstanding of others' views (Herrmann 2013). This in turn can have a significant impact on students' efforts and requests for help from others. Other studies have shown that students can be better engaged in learning and educational activities through participatory learning (Hijzen, Boekaerts & Vedder, 2007). Behroozi, Allipour, Shehni Yailagh, and Sepahvand, (2018) found that participatory learning had a greater and deeper impact on students' academic behavioral engagement than traditional learning, and it can increase critical thinking in students. Children, adolescents, and students in any society are the social and human capital of that society. Thus, the investigation of variables related to the improvement of their social and educational conditions is one of the requirements of human science research. Since the education system in Iran is mainly based on interpersonal competition, it leads to feelings of anxiety, worry, jealousy, and even hostility among students in the school's psychosocial atmosphere. This attitude in interactions and social relationships is reflected partly in the lifestyle and behavior of students in the future and makes the competitive thinking style continue throughout life. Administrative corruption, large-scale embezzlements, indifference to social problems and harms, lack of empathy, lack of understanding of others' problems and

viewpoints, and reduced social responsibility can result from individual training, emphasis on individual success, and competition with others in this kind of learning. Therefore, this study aims to investigate the role and impact of participatory education on improving school connection components and academic engagement components in second-grade primary school students in Bandar Abbas. It is hypothesized that participatory learning will improve school connection and academic engagement.

Method

The present study is quasi-experimental research with a pre-test-post-test design and a control group. The statistical population includes all fifth-grade male primary students in Bandar Abbas during the 2021-2022 academic year. From these schools, 10 classes were randomly selected using the cluster random sampling method, and every two classes were randomly assigned to a control and a participatory experimental group each with 20 students from a total of 40 participants. The fifth-grade experimental science textbook was considered to teach experimental science lessons in the present study. To perform the education, 16 group sessions (two 50-minute sessions per week) of the participatory learning method and traditional teaching method were provided to experimental and control groups. Before teaching, a pre-test was performed in both groups, and after teaching, a post-test was performed in these groups.

The criteria for entering the research are willingness and informed consent to participate in the research, Fifth grade. The criteria for leaving the research are absence in more than one-third

of the sessions and declaration of lack of interest in participating in research.

The Brown and Evans Questionnaire (2002) was used to measure school connections. This questionnaire is designed based on the theory of attachment and has 16 items, which are scored in the range of 16-64 on a four-point scale of I strongly disagree (1), disagree (2), agree (3), and strongly agree (4). A higher score indicates a greater school connection. This tool has four subscales commitment, power, belonging, and belief in rules. The developers of this questionnaire reported a reliability coefficient of .86 using Cronbach's alpha method and confirmed the factor structure of this scale using the factor analysis method. Loukas, Roalson & Herrera (2010) reported subscale reliability coefficients between .76 and .77 and a total reliability coefficient of .76. Also, Thompson, Iachan, Overpeck, Ross & Gross (2006: 381) reported a reliability coefficient of .77 for this scale and confirmed its factor structure. In Iran, this questionnaire was standardized and its validity and reliability were determined on high school students by Samavi (2012). The reported reliability coefficients for commitment, power, belonging, and belief in the rules are .74, .74, .70, and .67, respectively, using Cronbach's alpha method. Confirmatory factor analysis also revealed that all the substances of this scale had a suitable factor, that is, all the standard coefficients were above .40.

The Reeve and Tseng Questionnaire (2011) was used to measure academic engagement based on a 5-point Likert scale from completely disagree to completely agree. Agency engagement, behavioral engagement, emotional engagement, and cognitive engagement include two, two, three, and eight items, respectively. Reeve and Tseng reported reliabilities of .82, .94, .88, and .78 for agency engagement, behavioral engagement,

cognitive engagement, and emotional engagement, respectively. In Iran, this questionnaire was standardized on 220 students by Samavi, Ebrahimi, and Javadan (2016). To determine the validity of the questionnaire, a confirmatory factor analysis was performed on items of this questionnaire using the AMOS-21 software. It was found that all the items had suitable factor load values, which indicated an almost appropriate fit of the model with data. In this study, a reliability of .79 was obtained for the questionnaire using Cronbach's alpha method. Also, reliability values obtained for cognitive engagement, emotional engagement, behavioral engagement, and agency engagement components were .91, .89, .93, and .86, respectively. The obtained data were analyzed by descriptive (mean and standard deviation) and inferential (multivariate analysis of covariance) statistics using SPSS 28 software.

Results

Descriptive indicators of the variables of school connection and its components and academic engagement and its components at pre-test and post-test stages in control and experimental groups are presented in Tables 1 and 2.

Table 1
Descriptive Indicators of Subjects' Scores in the School Connection Variable in the Control and Experimental Groups at Pre-Test and Post-Test Stages

Variables	Group	Stage	n	Mean	SD
Commitment	Experimental	pre-test	20	11.76	1.65
		post-test	20	13.97	1.19
	Control	pre-test	20	11.03	2.32
		post-test	20	11.98	2.65
Power	Experimental	pre-test	20	10.50	2.34
		post-test	20	13.37	2.56
	Control	pre-test	20	11.13	1.86
		post-test	20	11.78	1.50
Belonging	Experimental	pre-test	20	11.46	2.16
		post-test	20	13.90	2.78
	Control	pre-test	20	10.35	1.96
		post-test	20	10.90	1.64
Belief in rules	Experimental	pre-test	20	10.65	2.24
		post-test	20	12.68	1.34
	Control	pre-test	20	10.34	1.86
		post-test	20	9.67	1.39
Total School connection	Experimental	pre-test	20	49.54	8.40
		post-test	20	58.59	2.65
	Control	pre-test	20	58.67	8.19
		post-test	20	59.34	6.45

Table 2
Descriptive Indicators of Subjects' Scores in the Academic Engagement Variable in the Control and Experimental Groups at Pre-Test and Post-Test Stages

Variables	Group	Stage	n	Mean	SD
Agency engagement	Experimental	pre-test	20	16.17	3.41
		post-test	20	19.11	2.24
	Control	pre-test	20	17.19	2.18
		post-test	20	18.76	3.65
Behavioral engagement	Experimental	pre-test	20	13.65	3.21
		post-test	20	17.23	3.95
	Control	pre-test	20	15.01	2.47
		post-test	20	15.98	3.14
Cognitive engagement	Experimental	pre-test	20	14.53	3.13
		post-test	20	17.87	2.52
	Control	pre-test	20	13.13	4.27
		post-test	20	14.29	3.86
Emotional engagement	Experimental	pre-test	20	15.18	2.12
		post-test	20	19.34	3.57
	Control	pre-test	20	15.45	3.20
		post-test	20	15.01	4.13
Total Academic engagement	Experimental	pre-test	20	83.47	11.23
		post-test	20	94.77	12.23
	Control	pre-test	20	78.16	10.94
		post-test	20	83.17	11.32

The research hypotheses (cooperative learning will improve school connection and academic engagement among students) were tested using MANCOVA and its assumptions were examined and confirmed before use. Shapiro-Wilk test, S-W, Kolmogorov-Smirnov test, or K-S tests were used to examine the normal distribution of school connection and academic engagement data. The results of the Kolmogorov-Smirnov and Shapiro-Wilk tests are not significant for all the variables ($P > .05$),

suggesting that the data are normal in all variables in the pre-test and post-test stages. The covariance matrix similarity was also tested with the Box's M test, which confirmed this assumption (Box's M = 7.17, F = 2.25, P = .08). The similarity of the variances was also examined with Levene's test and the similarity of the variances was confirmed for both variables of school connection (F = 1.41, P = .24) and academic engagement (F = 4.01, P = .06).

Table 3
Mancova Test Results for Differences between Groups in the School Connection and Academic Engagement Variables

	Effect	Value	F	Hypothesis df	Error df	Sig.	Effect size
Group	Pillai's Trace	.818	12.920 ^a	8.000	23.000	.001	.818
	Wilks' Lambda	.182	12.920 ^a	8.000	23.000	.001	.818
	Hotelling's Trace	4.494	12.920 ^a	8.000	23.000	.001	.818
	Roy's Largest Root	4.494	12.920 ^a	8.000	23.000	.001	.818

Table 3 shows that there is a significant difference between the experimental and control groups in terms of at least one of the dependent variables (school connection components and academic engagement components). To further investigate this difference, a one-way analysis of covariance in MANCOVA text was performed on dependent variables (Table 4).

Table 4
The Results of One-Way Analysis of Covariance in MANCOVA Test on Post-Test Scores of School Connection Components and Academic Engagement Components

Effect	Dependent variable	Sum of squares	df	Squared mean	F	Sig .	Effect size
Group	Commitment	38.035	1	38.035	13.463	.001	.310
	Power	18.120	1	18.120	13.927	.001	.317
	Belonging	69.695	1	69.695	13.461	.001	.310
	Belief in rules	22.160	1	22.160	4.862	.035	.139
	Agency engagement	98.677	1	98.677	32.219	.000	.518
	Behavioral engagement	69.822	1	69.822	19.884	.000	.399
	Cognitive engagement	49.589	1	49.589	17.103	.000	.363
	Emotional engagement	28.334	1	28.334	5.772	.023	.161

Table 4 shows that the covariance analysis test for examining the differences between groups in the post-test test for the school connection components and academic engagement components are significant. Therefore, it can be stated that there are significant differences between the experimental and control groups in both school connection components and academic engagement components. Therefore, the results of the present study show that participatory learning has been effective in school connection and academic engagement in students.

Discussion

The use of participatory learning methods in education depends on several factors, including the teacher's knowledge and character, curriculum, school policy-making, and collectivist culture. The results of the present study showed a significant

effect of participatory learning on the development of school connections and academic engagement in primary school students. The students in the experimental group who received the group participatory teaching method had higher mean scores in school connection and academic engagement components than those who received the traditional teaching method in the control group. These results are in line with those of Heidari and Taleb (2019), Abolghasemi Najafabadi, Mirali Rostami and Sheikhi Fini (2014), Sadeghi and Beyranvand (2017), Roseth, Johnson, & Johnson (2008), and Backer, Miller, & Timmer (2018). Based on these studies, using participatory teaching methods can improve school connection, interpersonal communication skills, attachment to learning, and social responsibility in students. To explain our results concerning the effect of the participatory learning method on school connection and academic engagement, it can be argued that the experimental group students who received participatory teaching were more successful than the control group students in interpersonal communication and critical thinking. The implicit results of this study also indicated that most Iranian teachers and students do not have enough skills and knowledge to implement participatory learning and need guidance, training, and acceptance of challenges related to participatory learning in this regard. Thus, when both the teacher and student have the necessary knowledge and skills to implement participatory learning, it can lead to a desire to learn and enjoy cooperative learning by being engaged in participatory learning, which plays a major role in school attachment (Casey & Goodyear, 2017).

The result of the present study showed that the effect of cooperative learning increases the improvement of learning through academic engagement in participating students, which

occurs through the use of more cognitive and metacognitive strategies. Research by (Tran et al., 2019) also confirm this issue. In their research, they concluded that collaborative learning and group work increase positive skills, including time management, better study methods, cooperation and support of others, and creating positive relationships with classmates that increase academic engagement for students.

Among the benefits of cooperative learning is to strengthen social and interpersonal communication skills, and to express their ideas, suggestions, and thoughts in a clear way, which strengthens the social communication of students. These activities make students communicate better with each other and understand the importance and benefits of social communication. Establishing a friendly relationship and understanding peers to create empathy and get to know each other more, improving the spirit of criticism and critical thinking accepting weaknesses and trying to strengthen the positive points and creating a spirit of teamwork and getting to know this skill that in addition to studying in personal life It is useful for them.

Studies conducted by Balocheh and Brody (2017), Ghaith (2018), and Buchs, Filippou, Pulfrey & Volpé (2017) are in line with the results of the present study. They found that participatory learning had a positive effect on motivation to progress, motivation to learn, attachment to school, interpersonal communication, creative thinking, critical thinking, and problem-solving. Overall, the present study demonstrates that the educational setting, type, and way of interaction and interpersonal communication have significant impacts on learning styles. People's lifestyles can affect their learning styles. In a society where competition and overpowering others are always

emphasized from childhood, this hidden competition and desire to overcome others become a part of the personality traits, thinking style, and learning style of individuals. One way to correct this view of life and improve communication skills is to teach participatory learning skills since this type of group learning helps students be able to make appropriate decisions in solving complex problems, which can lead to motivation to learn, willingness to do teamwork, and improved attachment to school. Thus, it is possible to increase the level of academic engagement and attachment to learning and school by strengthening the appropriate methods of learning in competitive educational settings and enhancing the intellectual and mental abilities of students. Similarly, Fernández-Río, Sanz, Fernández-Cando, and Santos (2016) also found that participatory learning could increase students' motivation, attachment to school, and academic engagement.

In cooperative learning, students may not reach an understanding with each other on various issues and have differences that cause the stages of learning and performing various activities to not go well. For example, some students may not want to do anything and leave the group, or they may not be able to communicate well with each other. To solve this problem, the teacher must play the role of mediator. This means that the teacher should ask the group members about the reason for the problem and guide them with a simple conversation so that they can resolve the differences that have arisen. Some other students have low motivation and may not succeed in group work due to this individual characteristic and may not be noticed by other group members or be accused of laziness, which reduces their self-confidence. In addition to the mentioned cases, in group work, there is no possibility of equal activities for group

members, and each student succeeds according to his motivation, interest, and spirit of learning.

In general, the results of the research showed that cooperative learning can make the learning process of students more productive and useful. Cooperative learning leads to better learning of lessons and increased student participation in the class. Research shows that collaborative learning is many times more effective than individual learning methods (Lestari et al., 2019). Since cooperative learning can strengthen a wide range of skills, most of the advanced countries in education encourage students to participate in group activities from the very first years of teaching.

Collaborative learning, with all its strengths, also has weaknesses, among which we can mention the individual differences of the group members. Some students may not have the spirit and desire to work in a group, and in some subjects, it is not possible for them to reach an understanding, which causes conflict between members and differences, and slows down or disrupts the learning process. Of course, in such a situation, the teacher can guide the students and play the role of mediator. Weak students generally do not want to do assignments that cause learning disorders. In other words, in addition to academic weakness, they have a low sense of responsibility, which makes weak students entrust their homework to others. Of course, in such a situation, the teacher can strengthen the sense of responsibility in weak students by guiding them and encouraging them to do group work.

A limitation of this type of study is the limited number of samples, which can lead to caution in generalizing the results of such studies. Also, individual differences should be considered in

generalizing the results of these studies. Since the results of this study show the effect of participatory learning on increasing motivation to learn, attachment to school, academic engagement, and improving interpersonal relationships, it is recommended for curriculum planners and school policy-makers to use this participatory learning method to increase the skills and knowledge of teachers and students in the optimal use of this method.

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