Comparison of the Effectiveness of the Reverse Model and Cooperative Learning on Belonging to the School of Second secondary Students

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Abstract

Today, with the virtualization of education, schools no longer have their former identity and the sense of belonging to the school among students is decreasing, so it is necessary to provide educational solutions to improve the sense of belonging to the school. Collaborative learning was carried out on belonging to the school of secondary school students. The present research method was semi-experimental in terms of practical nature and in terms of the intervention method. The research population was 60 second high school students of Sanandaj city, in two intervention groups and one control group. The research tools included reverse learning package (Mahmodi et al., 2023), GI cooperative learning package (Kazemi et al., 2022) and Brown and Evans (2002) sense of belonging to school questionnaire were used to analyze the effectiveness of the analytical test. Covariance was used. Based on the results of the educational intervention, the pattern of reverse learning and cooperative learning has a positive and significant effect on students' belonging to the school (sig<0.05). Also, the findings showed that there is a significant difference between teaching the reverse learning educational program and teaching based on cooperative learning on belonging to the school of students (sig <0.05). Reverse learning is more effective on belonging to the school than cooperative learning. Therefore, based on the results of education based on reverse learning, considering the increase of student involvement in class activities and strengthening the motivations of attending the classroom, it can be effective on belonging to the school of students.

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INTRODUCTION

In today's world, everyone needs education and learning, and learning is a part of human life. Therefore, the focus of all curriculum and educational programs is on the realization of learning, and until today, no subject has transformed education as much as learning and its related issues. In the past decades when there was limited access to information, the teaching-learning method focused on memorizing and linking information together and creating new findings, but now that the amount of information available is abundant, traditional methods can become less effective. For the current mass information (Kaviani et al., 2018) there are different models for educational design and the model governing our schools is mostly based on the curriculum model related to academic subjects and scientific disciplines. The curriculum in such a model is exactly divided into course materials, which are often divided into subsections based on classrooms, curriculum, grading, and finally, course evaluation and academic progress report (Sadeghi and Mahmoudi, 2019). The reverse learning method affects the expectations of students in a way that they interact in the classroom, so this method and the effective indicators in their formation help to improve the teaching process and the effect of this program can be the legacy of education. For students throughout their lives, the model based on academic subjects and scientific fields over time turns knowledge transfer into the main educational mission of the teacher and faces problems with the development of students' individual abilities in cognitive, skill and attitude fields. and an educational vacuum is felt in these educational systems (Mahmoudi et al., 2023).

Today, integrated reverse learning is one of these new teaching methods. In the 21st century, integrated flipped learning has become the main part of teaching in universities and schools (Mortan and Nixon, 2015). This learning method became very interesting and important in the conditions of the spread of the corona virus (Masoumi Far et al., 1400). Hong states that when learners experience integrated flipped learning, they consciously experience learning in a combination of places, times, and technologies without boundaries Hong, Lai, & Wang, (2015). Integrated flipped learning can Provide continuous learning experience in different environments such as home, school, university, or workplace (Millard et al., 2013).

Based on this, it is necessary to coordinate the teaching and learning processes with these developments and move from traditional information transfer strategies to new problem solving educational strategies that lead to the growth of creative abilities in learners (Khalaf, 2018). In fact, the flipped teaching method, which is a new approach to teaching and learning based on information and communication technology, has changed the concepts of teaching and learning in the traditional classroom in a creative way and is one of the most popular models of learning enhancement in the 20th century (O'Flaherty and Phillips, 2015).

In integrated reverse learning, the learner during the learning activities can review and evaluate more of his understanding of the subjects with the help of the teacher or classmates. In this way, they can correct their misunderstandings, which can help improve the learner's awareness (Limocco and Perdotto, 2019). Reverse teaching is a relatively new approach in the world Phillips and Flaherty, (2015) that involves students in learning and if students are meaningfully involved in their learning process and its evaluation, they are more successful in the mental construction of knowledge. (Kenna, 2016). The logic of the reverse teaching approach is that this approach increases the engagement of learners with the content, improves the interaction between the teacher and the learner, and strengthens learning (Abushamla, 2019). In this approach, the provision of content in the classroom is abandoned and teachers can provide classroom activities by teaching how learners can achieve reason and apply information in real life (Roch, 2014). According to the opinion of many experts such as (Abushamla, 2019 and Kim et al., 2015), the reverse education approach is a promising alternative to traditional education that proposes a network of

combining online learning technologies with active and collaborative learning. In this way, educational materials and materials are presented before the class and during the class, activities related to advanced topics and concepts and collaborative learning are discussed. This model allows learners to independently engage with educational materials at their own time and pace (Fatuch, 2015; Delozer and Rhodes, 2017).

Since the main purpose of education is to create learning in students and this happens through education. The act of teaching is a set of regular, orderly, purposeful and pre-planned activities. An activity whose purpose is to create favorable conditions for learning. An activity that takes place in the form of interaction and mutual behavior between the teacher and the learner, that is, the characteristics and behavior of the teacher affect the activities and actions of the students and vice versa. It is affected by their characteristics and behaviors, this effect may occur independently or non-independently (Karimi and Heydari, 2018). The purpose of teaching is to increase the ability to learn, and good teaching leads to good learning. Students who develop good strategies for learning and acquiring education learn well. The teaching model helps students to develop the reserves of these strategies in themselves, these models help the development of students as individuals with the ability to increase wise thinking and behavior and create social skills and commitments, unfortunately, in existing schools, attention There is not much to this case (Kaviani et al., 2017). In this regard, reverse education includes types of learning such as active learning (Prince, 2004); learning through peers (Kong, 2014); cooperative learning (Foot and Howe, 1998); Problem-oriented learning (Trap and Sage, 1998). Therefore, as it is evident in the mentioned views, reverse education with an emphasis on student-centered, collaborative approaches Shimamoto, (2014) and approaches that create a democratic and free environment for students to create a sense of belonging to the school and increase motivation. Learning leads. In this regard, the research done (Meloni et al., 2002; Yu et al., 2008; Perry et al., 2018) says about it; A student who has a sense of

belonging to the school and class considers himself to be a participant and committed to school activities, and this increases the student's motivation to achieve the desired goals of the school, and having this feeling improves the level of education and the advancement of knowledge. becomes students Participation in school activities has an impact on student learning as well as student motivation. The feeling of belonging to the school is said to be actions that adapt the student to a certain activity or place, and then the feeling of belonging to different people, subjects and environments follows. These practices increase the feeling of relaxation, well-being and reduce the student's anxiety (Karcher, 2005). A sense of belonging is the basis of a person's decisions about regulating their relationship with a particular environment or subject. Belonging also provides the basis for cooperation and participation in social developments. Therefore, the feeling of belonging is the turning point of the process during which a person feels commitment and responsibility towards a place, object or material, in a way that creates a positive feeling towards the environment or material in question (Natiqpour, 2009).

Collaborative learning is a learning strategy that involves dividing learners with different knowledge levels into teams of mixed ability to learn and support each other by addressing a discussion or solving a problem to target common learning goals (Fu and Huang, 2018, Li et al. colleagues, 2018). This educational approach encourages and supports the learner to be more proactive and interactive during the learning process (Saputra et al., 2022). According to previous studies, collaborative learning has been recognized as an effective educational approach in education (Harrapau, 2021; Meijer et al., 2020). Collaborative learning has had a positive effect on academic performance (Chen et al., 2019). personal persistence (Leos et al., 2017), openness to diversity (Leos et al., 2018); and the ability to create creative solutions (Leos and Pascarella, 2017).

On the other hand, one of the types of active learning methods is collaborative learning. In this method, small heterogeneous groups work towards a

common goal. In group flow, the interaction of group members creates situations for important experiences, including the ability to ask questions, explain, criticize, and exemplify. Members of cooperative learning groups both in terms of knowledge and learning skills and in terms of establishing interaction and social skills during learning grow (Mahmoudi, Ebrahimzadeh, Musa Kazemi, Farajollahi and Mahmoudi, 2013). In a cooperative learning environment, students have opportunities to interact with each other to achieve common goals and academic and social progress. Through interactions, students learn to ask for clarification on issues, present their own ideas, clarify disagreements, and develop new perceptions and inferences (Kay & Carafano, 2016). Collaborative learning by forming a learning group provides learning goals by involving the student, communication, cooperation and collaborative knowledge (Huang and Liu, 2014), in which a stronger relationship is created between students and their interaction with each other. By the method of separation from others, it leads to an increase due to more mental combinations and the creation of more intellectual activities, which increases learning and the feeling of belonging to the school (Zarei Zawarki and Ghasemi, 2013).

Many learning problems in students are due to the fact that they have a passive role in the traditional lecture method and since today's teaching and learning approaches have changed and students prefer to play an active role in the classroom and learning. Today, there are fewer students who prefer a passive role in the classroom, on the other hand, learning tools and situations have also undergone a transformation and many electronic tools have entered the teaching process, and also due to the epidemic of the Covid-19 virus, many traditional teaching methods have lost their function. and all these cases have caused the education process to be disrupted and traditional education no longer meets the educational needs of students, so the teaching method of reverse learning as an attractive method that involves the student in the teaching process as well as the maximum use of educational technology methods can be a suitable alternative to traditional

education, and even methods such as cooperative education that are used these days to increase student participation. However, due to the newness of this educational method and the lack of knowledge about the manner and conditions of presenting this method in schools, it is necessary to identify the indicators and factors needed to implement this educational method in the form of a practical method. A framework as an educational package should be developed in order to fill the existing gaps in the implementation of the reverse education method as well as its effects on important educational issues such as the feeling of belonging to the school in students, which can have a direct effect on increasing academic participation and academic progress of students. the According to the mentioned materials, the researcher intends to answer the question whether there is a difference between the effectiveness of the reverse learning program and cooperative learning on the belonging to the school of the second secondary students? In order to answer the research question, the following hypothesis is tested. The first hypothesis: There is a significant difference between the effectiveness of the reverse learning educational program and the education based on cooperative learning on the belonging to the school of the second secondary students.

Litrature Review

In their research, Mahmoudi et al. (1402) compared the effectiveness of the reverse learning model and collaborative learning on the academic engagement of secondary school students; The research method was applied in terms of the objective and semi-experimental in terms of the intervention method. The research population was 60 secondary school students of Sanandaj city, who were selected in two intervention groups and one control group. The findings showed that there is a significant difference between the effectiveness of the reverse learning educational program and cooperative learning-based education on students' academic engagement only in the cognitive engagement component.

Samavi et al. (2019) compared the effectiveness of teaching based on reverse learning and teaching based on cooperative learning on academic progress, academic self-regulation and academic engagement of sixth grade elementary students in Lamard city; The target population of the present study was all sixth grade students of elementary schools in Lamard city in the academic year of 1998-99 as the statistical population of this research, and 60 students of the sixth grade who were studying in the Abu Fazel Charity School of Lamard in the academic year of 1998-99. were considered as the statistical sample of the research. The research method was quasi-experimental with pre-test and post-test. The findings of the research showed that the effect of education based on reverse learning on academic progress, self-regulation and academic engagement was more than education based on cooperative learning. Discussion and conclusion: There is a significant difference between the effectiveness of teaching based on flipped learning and teaching based on cooperative learning, on academic progress, self-regulation and academic engagement of sixth grade elementary students in Lamard city.

Otami et al. (2024) conducted a research on "the effect of collaborative learning on the ability to understand the concept of math lesson in abused children of fifth grade": the flipped classroom is a flipped learning model that requires more active participation of students. However, flipped classrooms are still rarely practiced at the elementary school level. Students should read the teaching material before the class discussion. The purpose of this systematic literature review is to analyze and evaluate the effectiveness of the flipped classroom on students' learning in primary schools. The method used is a systematic literature review with a review using 12 articles related to the effectiveness and consequences of flipped classrooms for elementary students. These articles were obtained from the Google Scholar database for the period 2016-2022. The results of the study show that learning using the classroom is effectively implemented in elementary schools. The flipped classroom can develop students' active

participation and independence. So that the teacher acts only as a facilitator. The flipped classroom can foster a sense of responsibility, critical thinking skills, curiosity, honesty, creativity, and motivate students to learn at their own pace. This study recommends that the implementation of the flipped classroom learning model should first be familiar with the learning culture. and several other components that must be mastered by teachers and students to avoid problems during flipped classroom learning. With these considerations, flipped classroom learning can be implemented optimally.

Octaviana et al. (2023) conducted a research on the topic of "Effects of the collaborative learning model based on the creator of smart programs on the physics learning output of students in Gorontalo city": the total number of participating students was 112. One class was the experimental class and the other class was the replica. Both classes acquired the collaborative learning model based on the smart app maker. Collaborative learning model based on the creator of smart apps as the independent variable, while the student's learning output acts as the dependent variable. Data collection was done by distributing questionnaires and learning outcome tests. Data analysis was done using simple linear regression technique. The results showed the effects of the collaborative learning model based on the creator of smart programs on the student's learning output with a t number of 8.208 and a significance value of 0.001 under alpha of 5%.

Ahmad (2023) conducted a research on "the effect of cooperative learning on the conceptual understanding of mathematics in neglected fifth grade children": the purpose of this study is to investigate the effect of cooperative learning on the conceptual understanding of neglected fifth grade children in mathematics and to discover the students' beliefs about mathematics. And teaching mathematics in cooperative learning environments. Both quantitative and qualitative methods have been used in this research. This study included 60 fifth grade students from Lahore Child Protection School who were divided into two control and experimental groups. The experimental group received collaborative learning treatment, while

the control group used traditional learning methods for two weeks. Quantitative and qualitative data were collected using pre-test and post-test and structured interview. The results showed that the experimental group performed better than the control group in the math achievement test and their beliefs about mathematics improved. The research findings showed that cooperative learning is a more efficient approach to increase the conceptual understanding abilities of fifth grade students compared to traditional learning methods.

Method

In the current research a semi-experimental intervention method was applied using the pre-test-post-test method and with a control group. Second secondary students of Sanandaj city were used to implement the educational intervention of reverse learning. To determine the size of the statistical sample according to the targeted research method in semi-experimental studies, the number of 60 male and female students of the second secondary school in two groups of 20 people in reverse and cooperative learning intervention and a control group according to the input and output criteria according to the method They were selected randomly as a sample. The criteria for entering the research community included the age range of 15-17 years, studying in the second secondary level, not having a history of attending similar interventions and signing a written consent form, and the criteria for leaving the research community included participating in training courses at the same time, suffering from a disease. physical problems and irregular participation in training sessions. For this research, the Code of Ethics No. 1401.097 dated 2/5/2022 was obtained from the Research Ethics Committee, Islamic Azad University, Sanandaj Branch. The research tool included a reverse learning training course based on the reverse learning training protocol of Mahmoudi et al. Reliability calculated and confirmed with P-Scott coefficient of 0.728 Mahmodi, Yarahmadi, & Moradi, (2023) is as follows:

Table 1- Description of reverse learning training package

Week	How to Learn Reverse	Description
1	The students were divided into homogeneous groups and explanations were given about how to work, and then the lessons will be introduced at the beginning of the chapter. First, the reverse learning method was explained and interpreted.	Introduction and grouping and
2	In this session, students were taught things such as efforts to improve efficiency, self-evaluation, self-efficacy, self-leadership, self-leadership, and acceptance of responsibility for their own learning	preliminary training
3	In this session, the students were introduced to such things as participation, exploration, personal support and metacognitive awareness and how to use them	Self-control of students
4	In this session, issues related to activities before and during class, activities before class, student-centered class, and during-class activities were taught along with the advantages and proper way of student-centered learning.	Self-learning skills
5	In the fifth session, activities at home and basic education outside of class time were emphasized and students' minds were prepared in this regard.	Activities during and before class
6	In this meeting, the preparation of the environment and required technologies and the type of relationships were explained and described.	Activities outside the classroom

7	In this meeting, the issue of understanding, communication and positive interaction with peer group activities and competition between students was focused	Education environment
8	In this session, they were taught how to provide inclusive learning content and diversity in content and how to access, use and exploit content	Competitive environment
9	In this session, the concepts, applications, and how to access the presentation content through video or podcast and the learners' presentations and projects were taught.	Content-based learning
10	In the last session, all the concepts were reviewed and by presenting a challenge and a group discussion, reverse education was reviewed experimentally in the class.	Technology-based learning Conclusion

Conducting a training course for 10 weeks (two 45-minute sessions per week) using the reverse method (based on the package designed and validated in this research) which was conducted by the researcher. And also conducting a training course for seven weeks (two 45-minute sessions per week) using the collaborative method GI group research: Kazemi et al., (2022); its validity is based on expert evaluation and trust based on the level of agreement between experts who 0.76 has been measured) which was done by the researcher. Which is as follows every week.

Table 2- The report of the work description of teaching cooperative learning using the GI method (source: Kazemi et al., 1401)

Week	How to learn collaboratively	Description
1	Acquaintance and grouping	Students will be divided into homogeneous groups and explanations will be given about how to work, and then the lessons will be introduced at the beginning of the chapter.
2	Acceptance of teamwork	First, how to work in a group will be explained and interpreted, then lessons will be taught in the form of group work.
3	Group goals	Based on the choice of group thinking and the desire to focus on group goals instead of individual thinking, the teaching of book courses will continue
4	Solving group problems	In this session, during the teaching of lessons, students will be asked to answer the problems and challenges as a group.
5	Group encouragement and punishment	In this meeting, group members will be encouraged and punished to test the strength of the group relationship.
6	Coordination and cooperation	By using motivation and hope training methods, an attempt was made to strengthen the coordination and cooperation of the groups despite the lack of work and the results led to encouragement and punishment
7	Group grading	Students will be graded as a group and compared with individual grades and their performance.

Also, the questionnaire of feeling of belonging to school has 16 questions, which Brown and Evans (2002) mentioned the reliability coefficient of this scale using Cronbach's alpha method equal to 0.86. The factorial structure of this scale has been confirmed by applying the factor analysis method. Lucas, Rovalson and Herrera (2010) reported the reliability coefficient of this scale equal to 0.76 and the reliability coefficients of its subscales between 0.76 and 0.77. In addition, in the present study, Cronbach's alpha method was used to check the internal consistency of this tool. Cronbach's alpha coefficient was 0.84. Finally, due to the normality of the data distribution, parametric tests were used to explain the research questions. In order to check the homogeneity of the demographic characteristics in the two research groups, independent t-test was used, and to explain the research hypotheses,

the statistical method of analysis of covariance was used.

Research Findings

At first, in order to determine the normality of the distribution of the statistical sample, skewness and kurtosis tests were performed. The value of observed skewness for the studied variables was in the range (2, -2). It means that in terms of the skewness of the research variables, it is normal and its distribution is symmetrical. The stretching value of the variables was also in the range (2, -2). This shows that the distribution of the variables has a normal distribution. Also, Anowa and Chi-square tests were used to check the homogeneity and central indices were used to describe the demographic status of the samples.

Table 3- Comparison of age and gender between two control and intervention groups

Variable	control group Mean and standard deviation	Reverse learning group Mean and standard deviation	Collaborative learning group Mean and standard deviation	The result of ANOVA and chi square test
Age	15.7±1.2	16.0±1.02	15.8±1.1	F=0.373 df=59 P=0.691
gender	1.3±0.47	1.4±0.5	1.4±0.51	X_2=0.987 df=2 P=0.610

The results of the above table show that the average age of the two groups is about 16 years, and there is no statistically significant difference between the control and intervention groups in terms of age and gender (p>0.05). and gender are in the same initial situation, also the average age is about 16 years and more than 60% of the community were boys. In this research, before analyzing the data, Levine's test was used to check the homogeneity of the variance of the variables. Table 4 shows the results of Levin's homogeneity of variance test between the dependent variables of the research.

Table 4- The results of Levin's test for the homogeneity of variance of the total score

	F	df1	df2	sig
belong to school	6.210	2	57	0.104

The results listed in Table 4 show that Levine's test is not significant in the research variables. Therefore, the variance of the two intervention and control groups . in the research variables are not significantly different and the assumption of homogeneity of variances was confirmed.

Table 5- Checking the default regression slope

Source	The third type of sum of squares	df	Average average progress	F	Sig.	eta	power
Modified model	5127.7	3	1709.2	237.49	0.001	0.927	1.00
Tracking	15.16	1	15.16	2.10	0.152	0.036	1.00
pre-exam	3371.7	1	3371.7	468.48	0.001	0.893	0.926
group	1118.01	2	559	77.67	0.001	0.753	1.00
error	403.03	56	7.19				
Total	265796	60					
Total corrections	5530	59					

Table No. 5, that the interaction of the group in the pre-test is significant, and considering that the interaction of group × pre-test is significant, therefore, the data does not support the assumption of homogeneity of the regression slope.

Table 6-Results of covariance test

		sum of squares	df	mean square	F statistic	sig	eta	power
belong to school	Constant	1118.01	2	559.007	77.671	0.001	0.735	1.000
	error	403.03	56	7.197				

The results of Table 6, according to the significance of p=0.001 which is less than 0.05, so it can be stated that with a confidence level of 99%, the educational program of reverse learning and teaching based on cooperative learning has a significant effect on belonging to the school of the second secondary students. Also, the eta coefficient shows that the two groups of the reverse learning educational program with cooperative learning-based education explain 0.735% of the changes in the school affiliation of second-secondary students. Bonferroni's post hoc test was used to compare the effect of each two independent groups, and the results can be seen in Table 7.

Table 7- Bonferroni post hoc test results

(I) The first variable	(J) Second variable	mean difference (I-J)	Std. Error	Sig.b	Changes at the 95% confidence level	
					lower	upper
Control	Reverse learning	-10/851*	0/855	0/001	-12/691	-8/472
	group learning	-4/113*	0/849	0/001	-6/207	2/018
Reverse learning	group learning	6/469*	0585	0/001	4/34	8/588

According to the results of Table 7, a significant difference was observed between the two experimental groups and the control group, so both trainings have a significant effect on belonging to the school, as well as between reverse learning program training and training. Based on cooperative learning on the students' sense of belonging to the school. In the second period of secondary school, a significant difference was also observed that according to the averages, reverse

learning has a greater effect on belonging to school than collaborative learning.

DISCUSSION

School is a productive environment where students can feel a sense of belonging, which plays a central role in the daily life of adolescents. With the increase of virtual education and attention to it, attendance in schools decreased. In such a situation, when students are less present in school, the sense of belonging cannot be formed properly, therefore it is of great importance to pay attention to educational interventions that are effective in improving the sense of belonging to school. Therefore, this research was carried out with the aim of comparing the effectiveness of the reverse learning model and cooperative learning on belonging to the school of secondary school students, and according to the results, a significant difference was observed between the two experimental groups and the control group. are significant, so the findings of the research showed that reverse and cooperative learning has a positive and significant effect on students' sense of belonging to school (sig<0.05). Therefore, in the inverted and cooperative classroom model, the participation of learners is relatively more responsible and more interactive.

Based on the findings, reverse and collaborative learning has a positive effect on students' sense of belonging to the school. These findings are consistent with the results of Izidi et al. (2019). In the explanation of these results, it can be stated that it seems that in this approach learners are more involved in lesson concepts and this factor increases the quality of comprehensive learning and makes students feel more compatible. Also, the participation of learners by using different educational strategies improves the quality of education and optimal use of class time. Participation in school activities has an effect on students' learning as well as students' motivation to attend class and learn. Most learners prepare their homework before class and feel more comfortable, which ultimately reduces students' anxiety. Also, improving interaction with classmates and teachers and more participation in extracurricular

activities and school affairs are other consequences of implementing the flipped classroom approach in relation to students' sense of belonging to the class and school. In this regard, Izadi et al. (2019) showed that the use of the flipped classroom approach compared to the traditional approach has a positive effect on the variables of feeling of belonging to the school.

Also, the results showed that cooperative learning has a positive and significant effect on the sense of belonging to the school. These findings are consistent with the results of Kazemi et al. (2001) and Abul Qasemi et al. (2013). Using cooperative learning is effective in improving interactions and social communication. Cooperative teaching is a method in which students with different abilities work together to achieve a common goal. In this method, there is no more competitive atmosphere and destruction of others at the cost of one's own progress. Everyone works together to achieve the set goals. As a result, the use of this method, in addition to increasing the intimacy between students, improves the attitude of students towards the school environment and their presence in it. By attracting teenagers to school and school activities, this method can lead the tendency of teenagers of this age to separate from their family and peers, which not only has the least risk for the teenager, but also by creating interest in him. To ensure academic progress and improve one's attitude towards educational and educational environments by carrying out school building activities. In this regard, Kazemi et al. (1401) stated that schools can provide the necessary background for increasing the quality of teamwork and students' sense of belonging to the school by using the collaborative learning process. Abolghasemi et al. (2013) showed that the use of Jacksaw collaborative learning method in this research increases the total score calculated on the feeling of belonging to the school at the level of 0.05.

Based on the findings, reverse and collaborative learning has a positive effect on students' sense of belonging to the school. These findings are consistent with the results of Izidi et al. (2019). In explaining these results, it can be stated that reverse learning

transforms traditional teaching methods; In this way, classroom training is available to students electronically and outside of the classroom, and assignments that were previously done at home are solved in the school and classroom. Flipped learning as a unique method transforms the classroom and school activities. In the traditional teaching method, students learned new knowledge in class through lectures and practiced them at home. In the flipped learning method, students learn the material at home through videos and practice the skills in the classroom. "This shift creates an active and interactive learning environment in which the teacher plays a role as a guide and leader of learning and students while they apply the concepts and are actively and cooperatively involved in the subjects guides

Finally, according to the findings, a significant difference was observed between teaching the flipped learning program and teaching based on collaborative learning on the sense of belonging to secondary school students, and according to the averages, flipped learning has a greater effect on belonging to the school than collaborative learning In the explanation of this finding, it can be written that when the teacher designs and implements a file suitable for the lesson (video or in Power format) in the class; In fact, class time focuses on student-to-student, student-to-teacher, and student-to-teacher interactions with content and learning topics. Learning is brought up through questions, class discussions, innovative and creative activities, art and the application of ideas, which leads to the participation and active academic engagement of students, which is basically the same as the reverse learning approach and its principles. On the other hand, reverse learning is not just about spending time on individual learning; Rather, this method includes the use of various types of education and learning problems, encouraging students to accept responsibility, group activities, solving class problems according to the students' abilities, performing class activities in the form of groups or teams, examining proposed solutions. by the student in order to achieve learning and mastering the content

presented in the class. This content is confirmed by Helgeson (2015). Supporters of this method confirm that flipped learning improves student-teacher interaction, makes classroom learning easier, increases motivation, and helps students understand and motivate themselves.

The research was faced with limitations, including the problem of generalizing the results to other levels of education, because at a very young age, students need more guidance from the teacher. Also, this research has been associated with limitations such as normalization and the loss of the reverse class effect for long-term use of this method. In this case, students' commitment to time and effort will be challenged.

The results of this research can have scientific and practical implications for the educational system. The following suggestions are in this direction; Implementation of in-service courses for teachers to familiarize them with reverse learning; Creating a database and various educational videos for teachers and students in addition to making videos by teachers to be used in the course implementation process; Considering the role of note-taking and summarizing in the flipped learning process, it is recommended that teachers improve these skills in students. Also, the use of this method by teachers for students' academic involvement, creating and strengthening essential academic skills in the age of science explosion. It is also suggested that studies with the long-term effects of reverse learning, the implementation of similar researches in societies with different grades, disciplines and study units, and its study in other educational areas are among the suggestions for future researchers.

References

Abbasi, Z. (2017). The Impact of Organizational Silence on Employees' Job Performance (Case Study: Saveh Municipality Employees), Management and Entrepreneurship Studies, 3(1), 103-113.

Abili, K., & Mazari, E. (2014). Human Resources Development (Vol. I: Emphasizing self-development, self-leadership, and self-management). Tehran: Omid Publications.

Arabfaizabadi, H., Karimzadeh, S., Shahrakipoor, H., & Nastizaei, N. (2014). Predicting Teachers' Job Performance Based on Walton's Quality of Work Life Model, The Journal of Modern Thoughts in Education, 10(1), 63-78.

Baqi Nasrabadi, A., & Behzadnia, M. (2020). The Relationship between Strategic Human Resource Management and Job Performance: The Mediating Role of Moral Atmosphere, Organizational Culture Management, 18(4), 751-774.

Boyce, L.A., Zaccaro, S.J., & Wisecarver, M. (2010). Propensity for self-development of leadership attributes: Understanding, predicting, and supporting performance of leader self-development, Leadership Quarterly, 21(1), 159-178.

Boyce, L. A. (2004). Propensity for self-development of leadership attributes: Understanding, predicting, and supporting leader self-development performance. George Mason University.

Campbell, J. P. (1990). An overview of the army selection and classification project (Project A), Personnel Psychology, 43(2), 231-9.

Ellinger, A. D. (2004). The concept of self-directed learning and its implications for human resource development, Advances in Developing Human Resources, 6(2), 158-177.

Goodarzi, M., & Mazari E. (2019). Explaining Organizational Learning through Managers' Self-Developing Behaviors, Journal of Education in the Humanities.

Madigan, J. C. (2016). Self-Development and the Art of Battle Command. Operational Architecture, TRADOC Program Integration Office for Army Battle Command Systems, Avilable at: www.dodccrp.org/events/1999_CCRTS/pdf_files/track_3/058madig.pdf

Malam, S. S., Daji, L. B. D., & Ladan, A. A. (2019). The Relationship between Organizational Culture and Employee Performance in Nigerian Tertiary Institutions: A Proposed Theoretical Framework. Asian Journal of Multidisciplinary Studies, 7(7), 12-17.

Masa'deh, R. (2017). The impact of knowledge management on job performance in higher education. Journal of Enterprise Information Management, 30(2), 244-263.

Mazari, E. (2013). A Study of the Relationship between Principals' Self-Development and Their Performance and a Presentation of Strategies for Improving the Status of School Principals in Rey in the Academic Year of 2012-2013, M.Sc. Thesis, Faculty of Psychology and Educational Sciences, University of Tehran.

McLean, K. C., Pasupathi, M., & Pals, J.L. (2007). Selves creating stories creating selves: a process model of self-development. Personality and Social Psychology Review, 11, 262-276.

Mestry, R., & Grobler, B. R. (2004). The Training and Development of Principals to Manage Schools Effectively Using the Competence Approach. ISEA, 3(32), 2-19.

Mushaandja, J. (2013). In-Service Professional Development Approaches for Principals in Namibia. International Journal of Social Science Tomorrow, 2(2), 1-9.

Nesbit, P. L., & King, E. (2013). Self-development capacity of leaders: its nature and measurement. In UFHRD Conference 2013 (pp. 262-263). Edward Elgar Publishing.

Newman, D. A. (2004). Job performance ratings, Comprehensive handbook of psychological assessment, 4, 373-89.

Orvis, K. A., & Leffler, G. P. (2011). Individual and contextual factors: An interactionist approach to understanding employee self-development. Personality and individual differences, 51(2), 172-177.

Peadler, M., Burgoyne, J., & Boydel, T. (2001). A manager gauide to self-development. Forth edition London. Mc Grawhill.

Pourkarimi, J., Mazari, E., Khabareh, K., & Farzaneh, S. (2016). A Study on the Relationship between Self-development Meta-qualities, Basic Knowledge, and Information of Administrators and Their Performance (Case Study: School administrators

of Rey city). Journal of New Approaches in Educational Administration, 7(25), 63-86.

Pourkarimi, J., & Mazari, E. (2017). The mediating role of self-development in the relationship between transformational leadership and human capital agility. Organizational Behavior Studies, 6(2), 103-126.

Reichard, R. J., & Johnson, S. K. (2011). Leader self-development as organizational strategy. The Leadership Quarterly, 22, 33-42.

Ren, S., Collins, N., & Zhu, Y. (2014). Leadership self-development in China and Vietnam. Asia Pacific Journal of Human Resources, 52, 42-59.

Sabiu, M. S., Ringim, K. J., Mei, T. S., & Joarder, M. H. R. (2019). Relationship between human resource management practices, ethical climates and organizational performance, the missing link: An empirical analysis. PSU Research Review.

Shirbagi, N., Zebardast, M., & Amani, S. (2016). The Study of Self-development of Principals, Leadership and its Relationship with Motivational Factors and Self-regulatory Skills. Journal of Management and Planning in Educational System, 9(2), 111-130.

Yeh, H., & Hong, D. (2012). The mediating effect of organizational commitment on leadership type and job performance. The Journal of Human Resource and Adult Learning, 8(2), p 50.

Yektaei M., Alipour M., Khosravi A., & Bazrafshan H. (2015). The effect of spiritual intelligence on job performance (Case study: Tehran Department of Education, District 6). Journal of Organizational Culture Management, 13(4), 1267-1287.

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