

## Comparison of Effectiveness of Reverse and Cooperative Learning Methods on Creativity and Academic Self-Efficacy of Female Senior High School Students

### Article info

#### Article Type:

Original Research

#### Authors:

Tayebeh Fallah<sup>1</sup>,  
Fariba Hafezi<sup>2\*</sup>,  
Behnam Makvandi<sup>3</sup>,  
Sasan Bavi<sup>4</sup>,

#### Article Cite:

Fallah T, Hafezi F, Makvandi B, Bavi S, Comparison of Effectiveness of Reverse and Cooperative Learning Methods on Creativity and Academic Self-Efficacy of Female Senior High School Students, Curriculum Research 2020; 1(2): 132-140

#### Article History:

Received: 2021/05/31

Accepted: 2021/06/20

Published: 2021/06/30

#### Affiliations:

### Abstract

**Purpose:** The objective of this study was to compare effectiveness of reverse and cooperative learning methods on creativity and academic self-efficacy of female senior high school students.

**Methodology:** This was a quasi-experimental study with pre-test and post-test design and the control group. The study population consisted of female senior high school students in Ahvaz during the academic year 2019-2020. The research sample was 90 people who were randomly selected from three classes of a school and two classes were selected as experimental groups (reverse and cooperative learning) and a class was selected as a control group. Each experimental group was trained in 10 sessions of 75 min by reverse and cooperative learning methods and the control group received no training. The research tools were Abedi (1993) Creativity Test Questionnaire and Morgan-Jinks (1999) Student Efficacy Scale. The data were analyzed by multivariate analysis of covariance and Bonferroni post hoc test using SPSS-22 software.

**Findings:** The study results showed that experimental and control groups were significantly different in terms of creativity and academic self-efficacy ( $P < 0.05$ ). In other words, reverse and cooperative learning methods increased creativity and academic self-efficacy compared to the control group ( $P < 0.05$ ), but no significant difference was found between them in terms of creativity and academic self-efficacy ( $P > 0.05$ ).

**Conclusion:** Regarding the effectiveness of both learning methods and no significant difference between them, both reverse and cooperative learning methods can be used to increase creativity and academic self-efficacy.

**Keywords:** Reverse Learning, Cooperative Learning, Creativity, Academic Self-Efficacy.

1. PhD Student, Department of Educational Psychology, Ahvaz Branch, Azad University, Khuzestan, Iran.
2. Assistant Professor, Department of Educational Psychology, Ahvaz Branch, Azad University, Khuzestan, Iran (Corresponding Author). febram315@yahoo.com
3. Assistant Professor, Department of Psychology, Ahvaz Branch, Azad University, Khuzestan, Iran.
4. Instructor, Department of Educational Psychology, Ahvaz Branch, Azad University, Khuzestan, Iran.

## Introduction

Today, creativity and training creative people is one of the most important issues in educational systems. Because educational systems will be successful if creative people enter the society so that they can use their creativity to effectively face problems and challenges and cause the growth and development of society (Bultseva and Lebedeva, 2021). Creativity is a skill that students can acquire and develop in themselves, and in addition, use it in many learning settings to acquire and produce knowledge and skills (LAgua, Moriano and Gorgievski, 2019). Creativity is a mental ability that creates new, innovative and unique solutions, ideas, theories and products (Ogawa, Kanematus, Barry, Shirai, Kawaguchi, Yajima and et al., 2020). This construct can be defined as one of the most important and basic human features, meaning the use of mental abilities and skills to create a new idea or concept (Castillo-Vergara, Galleguillos, Cuello, Alvarez-Marin and Acuna-Opazo, 2018). The creative people tend to take risks, enjoy solving challenging problems, accept limitations and obstacles with difficulty and always seek to overcome them, show great effort and perseverance, and have a high ability to take advantage of environmental facilities and conditions to show their own creativity (Liu, Chen, Wang, Wu, Han, Hsu and et al., 2021).

Another very important feature for the success of the educational system is academic self-efficacy of students (Ziegler and Opdenakker, 2018). Self-efficacy is one of the effective cognitive processes in many thoughts, physical, social, emotional, academic actions and behaviors and etc. (Kong, Yang, Pan and Chen, 2021). Self-efficacy means a person's overall self-confidence to successfully complete assignments, which plays an important role in achieving task success as a motivational variable (Zee, Koomen and DeJong, 2018). Academic self-efficacy is the belief of students about their abilities to understand and comprehend the curriculum and do them to achieve academic objectives (Wang, Liang, Lin and Tsai, 2017). The students with high academic self-efficacy are more capable of completing assignments, more resilient to academic challenges and barriers, more confident in their abilities to engage in academic activities, better manage their learning, and have less academic anxiety and more motivation to progress (Jhang, 2019).

Each of the learning methods has an effect on academic and non-academic features of the students and in general these methods can be divided into active and inactive methods that reverse and cooperative learning methods are active methods (D'Anselme, Pelligand, Veres Nyeki, Zaccagnini and Zilberstein, 2020). In active learning methods, students play a fundamental role; and teachers are supervisors and so-called facilitators of learning (Oz and Abban, 2021). Teaching is an interactive process in the classroom to facilitate the learning of educational objectives to change behaviors of students (Lai, Hsiao and Hsieh, 2018). Reverse learning method is a relatively new, advanced and effective method for deep and sustainable learning that allows learners to process the information before the class and then apply the information processed during the class through group discussion and activity (Goh and Ong, 2019). This method is one of the teaching and learning methods that uses technologies to facilitate learning and transfer of training. In this method, teachers change the place from direct teaching in the classroom and special attention is paid to individual learning space using educational technologies (Hoshang, Hilal and Hilal, 2021). In this learning method, in order to achieve the educational objectives, teachers provide learners with educational content or lecture files, and etc., and learners review and observe these contents before attending the classroom (Wilson, Waghel and Dinkins, 2019). Reverse learning is a method that uses group projects, exploratory activities, exploration and experimentation to achieve educational objectives (Riddle, Gier and Williams, 2020). Another active and effective learning method is the cooperative method, which is a model in which all members of the group understand each other's role and work together to achieve educational objectives (Zhang and Xiong, 2017). Collaborative learning is working together to achieve common objectives in interactive and collaborative settings, and all groups seek to achieve objectives that benefit both them and the group as a whole (Yalman and Yavuzcan, 2015). Cooperative learning is the use of small groups for learning in the form of regular and structured activities in which learners interact with each other to enhance their learning and that of the group (Liu, Chen, Lin and Huang, 2017). This method provides a good opportunity to learn objectives through communication between learners, active listening skills, logical discussion and expression and free expression of emotions (Pereira and Marques-Pinto, 2018). This learning method engages groups of learners working

together to solve problems or produce a product involved in common activities and increases their motivation to learn and academic achievement (Zhang and Xiong, 2017).

Although several studies have been conducted on cooperative learning methods, previous studies have less investigated the effectiveness of reverse learning methods and no study has been found to compare them. For example, the study results of Tien, Lin, Yin and Chang (2020) showed that reverse learning method increased students' creativity. Jafari Kamangar, Izadi and Piruz (2020) in their study concluded that reverse learning method increased the writing creativity of student-teachers. In another study, Saberi Dehkordi, Esmaeili Karani and Jazayeri Farsani (2019) reported that reverse learning method increased creativity and motivation of eighth grade students. In addition, the study results of Li and Yang (2021) showed the impact of teacher-student interaction in a cooperative classroom on increasing student self-efficacy. Nazaripour and Laie (2020) in a study concluded that reverse learning increased self-efficacy and learning math for students with learning disabilities. In another study, Ghaasemtabaar, Taghipoor and Mahdavinab (2020) reported that reverse classroom increased computer-based learning self-efficacy of positive perception of the classroom among senior high school students. Also, the study results of Catarino, Vasco, Lopes, Silva and Morais (2019) showed that cooperative learning method increased creative thinking and computational creativity in higher education. Ahmadi, Samadi and Minaee (2015) in a study concluded that cooperative learning increased students' creativity in geography. In another study, Esmaeeli and Moosavi (2015) reported that cooperative learning method through e-learning setting compared to lecturing method increased students' creativity and academic achievement. In addition, the study results of Ari and Sadi (2019) showed the impact of cooperative learning method on students' self-efficacy and academic achievement in learning the concepts of biology. Golmohammad Nejad Bahrami (2018) concluded through research that cooperative learning increased the self-efficacy of female high school students. In another study, Hajihoseinlou, Khaleghkhah, Zahedbabolan and Moenikia (2017) reported that collaborative learning with progress groups increased math academic self-efficacy of junior high school female students.

Today, development of any society depends on having creative and self-efficient human resources. In addition, the issue of creativity and academic self-efficacy of students has always been one of the concerns of systems, including the education system. Because these two constructs can largely guarantee their success and that of the education system and even the future of the country. As a result, it is essential to improve students' creativity and academic self-efficacy, for which there are many learning methods. One of the common learning methods for this purpose is the cooperative learning method and the other method, which is a relatively new method and about which few studies have been conducted, is the reverse learning method. Although the study results indicate the effectiveness of both methods on creativity and self-efficacy, but no study was found to compare the effectiveness of these two methods. Therefore, the objective of this study was to compare the effectiveness of reverse and cooperative learning methods on creativity and self-efficacy of female senior high school students.

## Methodology

This was a quasi-experimental study with pre-test and post-test design and the control group. The study population was female senior high school students in Ahvaz during the academic year 2019-2020. The research sample was 90 people who were randomly selected from three classes of a school and two classes were selected as experimental groups (reverse and cooperative learning) and one class was selected as the control group. In order to conduct this study, after coordination with the officials of the Education Department of Ahvaz, a list of schools was prepared and a school was randomly selected with three classes and 30 people in each class were randomly selected as a sample. The importance and necessity of the research was stated and ethical considerations such as confidentiality, privacy of the subjects, and etc. were observed. Each experimental group was trained in 10 sessions of 75 min by reverse and cooperative learning methods, the control group received no training and all three groups were evaluated at pre-test and post-test stages by the following tools.

### Creativity Test Questionnaire

This questionnaire was designed by Abedi (1993) with 60 items. The items are scored using a three-point Likert scale (low = 1, moderate = 2, and high = 3) and the score of the tool is calculated with the sum of the scores of the items. Therefore, the minimum score is 60 and the maximum score is 180, and a higher score indicates more creativity. Abedi (1993) confirmed the convergent validity of the tool by Torrance Creativity Questionnaire (1986), the construct validity of the tool was confirmed by the factor analysis method and the total reliability and its factors was confirmed by Cronbach's alpha of 0.80 and above. In the present study, the value of reliability was 0.83 by Cronbach's alpha.

### Student Efficacy Scale

This scale was designed by Jinks and Morgan (1999) with 30 items. The items are scored using a four-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree) and the score of the tool is calculated with the sum of scores of the items, and some items are scored inversely. Therefore, the minimum score is 30 and the maximum score is 120, and a higher score indicates greater self-efficacy. Jinks and Morgan (1999) confirmed the construct validity of the tool by factor analysis and its reliability by Cronbach's alpha of 0.82. In Iran, Bandak, Maleki, Abbaspour and Ebrahimi Ghavam (2016) reported the reliability of the tool by Cronbach's alpha of 0.85. In the present study, the value of reliability was 0.80 by Cronbach's alpha.

The educational content for teaching the first experimental group was provided by reverse learning method and by cooperative learning method for the second experimental group for 10 sessions of 75 min, which are described as follows. In both learning methods, the researcher first explained the method to one of the teachers in those classes and fully explained how to teach using it. It should be noted that in the first session, the teacher and the researcher, as a teaching colleague, attempted to acquaint the students with the relevant learning method.

In reverse learning method, the teacher first formed a virtual educational group and made all the students related to this educational method its members. Before entering the classroom, the teacher then provided resources including instructional videos, booklets, blogs and websites, and before each session, uploaded them to the group and made them available to all subjects. In this method, students could communicate with the teacher at any time and place and ask their questions and solve problems with the help of the teacher. In this method, students received and learned the educational content of each session before attending that session, and the virtual classroom was a scene for them to solve problems, deepen their learning, and practice through projects.

Also, cooperative learning method with purposeful and step-by-step questions was provided by the teacher and the student answered the questions and solved the problems. In this learning method, the teacher and researcher gave the students tips on how to ask questions, how to answer, how to ask for help from the teaching colleague, how to give feedback and encourage the teaching colleague. The teacher randomly or based on the students' own interests formed two-person educational groups, in which one of them randomly played the role of teacher and the other the student, and their roles were constantly changing, so that both people have played both roles and have mastered the educational content.

The data were analyzed by creativity test questionnaire and student efficacy scale using multivariate analysis of covariance and Bonferroni post hoc test by SPSS-22 software at the significance level of 0.05.

### Findings

In the present study, we had no sample drop any of the three groups and the analyzes were performed for three  $n = 30$  groups. The mean and standard deviation of creativity and academic self-efficacy of the experimental and control groups by evaluation stages were reported in Table 1.

Table 1. Results of mean and standard deviation of creativity and student efficacy scale of experimental and control groups at evaluation stages

Variable	Stage	Reverse learning method		Cooperative learning method		Control	
		M	SD	M	SD	M	SD
Creativity	Pre-test	94.50	11.41	95.70	12.07	97.20	9.31
	Post-test	126.60	20.52	135.90	17.39	101.45	16.66
Academic self-efficacy	Pre-test	63.05	5.23	62.95	5.13	62.90	4.10
	Post-test	88.55	12.07	89.60	12.24	71.30	14.20

Before analyzing the data, its hypotheses were tested by multivariate analysis of covariance. The hypothesis of normality of variables of creativity and academic self-efficacy at pre-test and post-test stages for all three groups was confirmed based on Kolmogorov-Smirnov test, the hypothesis of regression line slope homogeneity was confirmed based on group interaction at pretest stage, the hypothesis of homogeneity of variances was confirmed based on Levine and the hypothesis of homogeneity of covariance was confirmed Box's M test ( $P > 0.05$ ). The results of multivariate analysis of covariance to compare the effectiveness of learning methods on creativity and academic self-efficacy were presented in Table 2.

**Table 2.** Results of multivariate analysis of covariance to compare the effectiveness of learning methods on creativity and academic self-efficacy

Test	Value	F-value	Significance	Effect size
Pillai's trace	1.00	12.93	0.001	0.504
Wilks' Lambda	0.07	34.77	0.001	0.736
Hotelling's trace	12.19	74.70	0.001	0.859
Roy's Largest Root	12.19	154.35	0.001	0.924

The results of all four tests indicate that a significant difference was found between the groups in terms of at least one of the variables of creativity and academic self-efficacy ( $P < 0.001$ ). Usually, in research, the results of Wilks' Lambda test are reported, according to which 73.6% of the changes were the result of the intervention i.e. learning methods (Table 2). The results of univariate analysis of covariance in multivariate text to compare the effectiveness of learning methods on each of the variables of creativity and academic self-efficacy were presented in Table 3.

**Table 3.** Results of univariate analysis of covariance in multivariate text to compare the effectiveness of learning methods on each of the variables of creativity and academic self-efficacy

Variable	Source	Total squares	Freedom degree	Mean squares	F-value	Significance	Effect size
Creativity	Group	13264.36	2	6632.18	22.60	0.001	0.956
Academic self-efficacy	Group	4064.65	2	2032.23	13.17	0.001	0.911

The results indicate that a significant difference was found between the groups in terms of both variables of creativity and academic self-efficacy ( $P < 0.001$ ). Regarding the effect size, it can be said that 95.6% of the changes in creativity and 91.1% of the changes in academic self-efficacy were the result of the intervention i.e. learning methods (Table 3). The results of Bonferroni post hoc test to compare the effectiveness of learning methods on each of the variables of creativity and academic self-efficacy were presented in Table 4.

**Table 4.** Results of Bonferroni post hoc test to compare the effectiveness of learning methods on each of the variables of creativity and academic self-efficacy

Variable	Compared groups		mean difference	Standard error	Significance
Creativity	Reverse learning	Cooperative learning	10.21	5.48	0.235
	Reverse learning	Control	25.39	5.55	0.004
	Cooperative learning	Control	35.61	5.48	0.001
Academic self-efficacy	Reverse learning	Cooperative learning	3.18	4.12	0.863
	Reverse learning	Control	15.76	4.03	0.003
	Cooperative learning	Control	18.95	3.97	0.001

The results showed that reverse and cooperative learning methods increased creativity and academic self-efficacy compared to the control group ( $P < 0.05$ ), but no significant difference was found between them in terms of creativity and academic self-efficacy ( $P > 0.05$ ) (Table 4).

## Discussion

Regarding the importance of creativity and academic self-efficacy in the academic success of students and the success of the educational system and their role in the future success of society, this study was conducted aimed to compare the effectiveness of reverse and cooperative learning methods on creativity and self-efficacy in female senior high school students.

The study results showed that reverse learning method increased creativity and academic self-efficacy of female students. The results on the effectiveness of reverse learning method on increasing creativity were consistent with the study results of Tien et al. (2020), Jafari Kamangar et al. (2020) and Saberi Dehkordi et al. (2019); and the study results of Li and Yang (2021), Nazaripour and Laie (2020) and Ghaasemtabaar et al. (2020) on effectiveness on increasing academic self-efficacy. Explaining the results, it can be said that formation of learning groups by cooperative learning method gives students the opportunity to express personality. Encouraging students to collaborate increases motivation and academic performance. In this method, skills such as listening, talking quietly, taking turns, criticizing, being criticized, and etc. are learned. All of these skills increase their motivation and interest in being able to provide various solutions to educational and even non-educational problems can increase students' creativity and self-efficacy.

In addition, the study results showed that reverse learning method increased creativity and academic self-efficacy of female students. On effectiveness of reverse learning method on increasing creativity, the study results were consistent with the study results of Catarino et al. (2019), Ahmadi et al. (2015) and Esmaeli and Moosavi (2015); and Ari and Sadi (2019), GolmohammadNejad Bahrami (2018) and Hajihoseinlou et al. (2017) on effectiveness on increasing academic self-efficacy. Explaining the results, it can be said that reverse learning method based on a psychological theory includes flexibility, motivation and change and shows a general view of the human experiences and behavior that each person can analyze his feelings and experiences. Another important point is that the objective of reverse learning is to increase the ability to learn independently and promote the acceptance of learning responsibility in which each person learns according to the speed of his learning and this method is an active method to learn. Therefore, change and flexibility at a desired and diverse time and place and using an active learning method increases creativity and academic self-efficacy of students.

The most important part of the present study was the comparison of the effectiveness of reverse and cooperative learning methods on students' creativity and academic self-efficacy. The study results showed that no significant difference was found between reverse and cooperative learning methods in increasing

creativity and academic self-efficacy of female students. No study to compare the effectiveness of both methods was found, but for explaining the results, it can be said that all active learning methods such as reverse and cooperative learning provide the ground for emotional, cognitive and behavioral participation for students, and students explore the content of learning, collaborate in groups or under the supervision of a teacher and practice advanced and practical assignments to learn and share learning with others. Also, cooperative learning methods have many advantages, the most important of which is the student's activity, which increases the belief in his abilities and promotes culture of group activities. In cooperative method, students seek to satisfy their curiosity, solve challenging problems and avoid easy tasks, instead of focusing on making teachers happy. Because easy tasks do not matter to them, and they seek to solve problems of moderate difficulty to increase their self-esteem after solving them. Another important point is that in cooperative method, students learn to plan for their learning, increase their awareness and monitor their educational activities and that of their colleague, which increase creativity and academic self-efficacy through increasing motivation and interest in problem solving and learning. In addition, reverse learning method has many advantages, the most important of which can be achievement of success due to individual differences. During reverse learning, students use active learning strategies such as debating current topics, case study, case analysis, concept map development, problem solving, short lectures, and small group discussions in class, all of which can play an effective role in increasing students' creativity and academic self-efficacy. Regarding the advantages and concepts proposed for both reverse and cooperative learning methods, it can be expected that no significant difference is found between these two methods for increasing students' creativity and academic self-efficacy.

The most important limitations of this study included lack of control over some variables affecting the results such as IQ, other training by teachers and differences in personality traits, conducting research on senior high school students in Ahvaz and unisex. Therefore, it is recommended to control the variables affecting the results of subsequent studies, conduct research on students of other grades and even other cities, control personality traits, and conduct this study on male students. Another suggestion is to compare the effectiveness of these two methods with other active learning methods such as concept map, group discussion, and etc. According to the results of the present study i.e. the effectiveness of both reverse and cooperative learning methods on increasing students' creativity and academic self-efficacy and no significant differences between them, both reverse and cooperative learning methods can be used to increase creativity and academic self-efficacy. Another suggestion to the officials and planners is to hold in-service courses by cooperative learning methods for teachers and include these methods in the syllabi of the student-teacher learning method. Regarding the effectiveness of both methods, which are part of active learning methods, it is recommended that officials and experts hold national and international conferences on learning methods or even a festival of active learning methods.

## References

- Abedi J. (1993). Creativity and a new way in measuring it. *Psychological Research*, 2(1-2), 46-54.
- Ahmadi P, Samadi P, Minaee M. (2018). The effect of cooperative learning method on fostering students' geography creativity. *Quarterly Journal of Innovation and Creativity in Human Sciences*, 8(1), 1-22.
- Ari D, Sadi O. (2019). Effectiveness of cooperative learning on students achievement in genetics, self-efficacy and conceptions of learning biology. *Inquiry in Education*, 11(2), 1-20.
- Bandak M, Maleki H, Abbaspour A, EbrahimiGhavam S. (2016). Investigating the impact of life skills training on academic self-efficacy. *Educational Psychology*, 11(37), 19-33.
- Bultseva MA, Lebedeva NM. (2021). The role of intercultural competence, in the relationship between intercultural experiences and creativity among students. *International Journal of Intercultural Relations*, 82, 256-264.
- Castillo-Vergara M, Galleguillos NB, Cuello LJ, Alvarez-Marin A, Acuna-Opazo C. (2018). Does socioeconomic status influence student creativity? *Thinking Skills and Creativity*, 29, 142-152.
- Catarino P, Vasco P, Lopes J, Silva H, Morais E. (2019). Cooperative learning on promoting creative thinking and mathematical creativity in higher education. *Revista Iberoamericana sobre Calidad, Eficacia y Cambio en Educación*, 2019, 17(3), 5-22.
- D'Anselme O, Pelligand L, Veres-Nyeki K, Zaccagnini A, Zilberstein L. (2020). Analysis of teaching methods in anaesthesia in the undergraduate curriculum of four veterinary universities. *Veterinary Anaesthesia and Analgesia*, 47(5), 657-666.
- Esmaeeli E, Moosavi F. (2015). A comparison of the cooperative teaching method through the e-learning environment with lecture method and its impact on creativity and educational development. *Quarterly Journal of Educational and Scholastic Studies*, 4(1), 97-109.
- Ghaasemtabaar SA, Taghipoor K, Mahdavinassab Y. (2020). Flipped classroom affecting computer self-efficacy and classroom perception among high school students. *Quarterly Journal of Education*, 36(3), 91-112.
- Goh CF, Ong ET. (2019). Flipped classroom as an effective approach in enhancing student learning of a pharmacy course with a historically low student pass rate. *Currents in Pharmacy Teaching and Learning*, 11(6), 621-629.
- GolmohammadNejad Bahrami G. (2018). The effect of cooperative learning with achievement groups on self-efficacy and self-concept of student's mathematics. *Journal of Instruction and Evaluation*, 11(41), 35-54.
- Hajihoseinlou Kh, Khaleghkhal A, Zahedbabolan A, Moenikia M. (2017). The effect of cooperative learning with achievement groups on self-efficacy and self-concept of student's mathematics. *Educational Psychology*, 13(43), 119-139.
- Hoshang S, Hilal TA, Hilal HA. (2021). Investigating the acceptance of flipped classroom and suggested recommendations. *Procedia Computer Science*, 184, 411-418.
- Jafari Kamangar F, Izadi S, Piruz Gh. (2020). Comparison of the effect of flipped classroom teaching with lesson study method on writing creativity of teacher students in creative writing. *Research in Curriculum Planning*, 17(39), 195-214.
- Jhang F. (2019). Life satisfaction trajectories of junior high school students in poverty: Exploring the role of self-efficacy and social support. *Journal of Adolescence*, 75, 85-97.
- Jinks J, Morgan V. (1999). Children's perceived academic self-efficacy: An inventory scale. *The Clearing House*, 72(4), 224-230.
- Kong L, Yang L, Pan Y, Chen S. (2021). Proactive personality, professional self-efficacy and academic burnout in undergraduate nursing students in China. *Journal of Professional Nursing*, 37(4), 690-695.
- Laguia A, Moriano JA, Gorgievski MJ. (2019). A psychosocial study of self-perceived creativity and entrepreneurial intentions in a sample of university students. *Thinking Skills and Creativity*, 31, 44-57.
- Lai H, Hsiao Y, Hsieh P. (2018). The role of motivation, ability, and opportunity in university teachers' continuance use intention for flipped teaching. *Computers & Education*, 124, 37-50.
- Lin L, Yang S. (2021). Exploring the influence of teacher-student interaction on university students' self-efficacy in the flipped classroom. *Journal of Education and Learning*, 10(2), 84-90.
- Liu C, Chen W, Lin H, Huang Y. (2017). A remix-oriented approach to promoting student engagement in a long-term participatory learning program. *Computers & Education*, 110, 1-15.
- Liu H, Chen N, Wang I, Wu S, Han C, Hsu D, et al. (2021). Predictors of individually perceived levels of team creativity for teams of nursing students in Taiwan: A cross-sectional study. *Journal of Professional Nursing*, 37(2), 272-280.
- Nazaripour A, Laie S. (2020). Reverse learning on academic self-efficacy and mathematical learning in students with learning disabilities. *Middle Eastern Journal of Disability Studies*, 10(7), 1-5.



- Ogawa N, Kanematus H, Barry DM, Shirai T, Kawaguchi M, Yajima K, et al. (2020). Active learning classes (in KOSEN colleges of Japan) using ICT and tools for obtaining biological information to enhance the creativity of engineering design students. *Procedia Computer Science*, 176, 2108-2116.
- Oz GO, Abaan S. (2021). Use of a flipped classroom “Leadership in Nursing” course on nursing students' achievement and experiences: A quasi-experimental study. *Journal of Professional Nursing*, 37(3), 562-571.
- Pereira NS, Marques-Pinto A. (2018). Development of a social and emotional learning program using educational dance: A participatory approach aimed at middle school students. *Studies in Educational Evaluation*, 59, 52-57.
- Riddle E, Gier E, Williams K. (2020). Utility of the flipped classroom when teaching clinical nutrition material. *Journal of the Academy of Nutrition and Dietetics*, 120(3), 351-358.
- Saberi Dehkordi A, Esmaceli Karani R, Jazayeri Farsani S. (2019). The effect of reverse teaching method on students' creativity and motivation Eighth grade in work and technology. *Journal of Research and Islamic Sciences Studies*, 1(5), 14-28.
- Tien L, Lin S, Yin H, Chang J. (2020). The impact of a flipped classroom on the creativity of students in a cake decorating art club. *Frontiers in Psychology*, 11(533187), 1-13.
- Wang Y, Liang J, Lin C, Tsai C. (2017). Identifying Taiwanese junior-high school students' mathematics learning profiles and their roles in mathematics learning self-efficacy and academic performance. *Learning and Individual Differences*, 54, 92-101.
- Wilson JA, Waghel RC, Dinkins MM. (2019). Flipped classroom versus a didactic method with active learning in a modified team-based learning self-care pharmacotherapy course. *Currents in Pharmacy Teaching and Learning*, 11(12), 1287-1295.
- Yalman Z, Tavuzcan HG. (2015). Co-design practice in industrial design education in Turkey a participatory design project. *Procedia – Social and Behavioral Sciences*, 197, 2244-2250.
- Zee M, Koomen HMY, DeJong PF. (2018). How different levels of conceptualization and measurement affect the relationship between teacher self-efficacy and students' academic achievement. *Contemporary Educational Psychology*, 55, 189-200.
- Zhang Y, Xiong Y. (2017). Interdisciplinary understanding of place in tourism education: An approach of participatory learning in China. *Journal of Hospitality and Tourism Management*, 30, 47-54.
- Ziegler N, Opdenakker M. (2018). The development of academic procrastination in first-year secondary education students: The link with metacognitive self-regulation, self-efficacy, and effort regulation. *Learning and Individual Differences*, 64, 71-82.