

## The Effectiveness of Education of Self-Regular Learning Strategies (Cognition, Meta-cognition) on self-efficacy and Mental Health of Astara city students

DOI: [10.22098/JPC.2024.13235.1176](https://doi.org/10.22098/JPC.2024.13235.1176)

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### Abstract

**Aim:** The present research is devoted to the study of the effect of teaching self-regulation learning strategies (cognition, metacognition) on self-efficacy and mental health of students in Astara city. **Method:** The statistical population included all the female students of the first high school (second period) of Astara city in the academic year 1996-1997. Among these students, 46 students were selected by multi-stage cluster sampling method and they were randomly replaced into two experimental and control groups. The instruments used were: Pentrich and Groot's self-regulated learning strategies questionnaire (1990) and Goldberg and Hiller's general health questionnaire. (1979). The current research is semi-experimental research of the pre-test-post-test design type with a control group. After conducting the pre-test for the experimental and control groups, the experimental group was trained in self-regulated learning strategies for 10 sessions of 60 minutes based on the theoretical background of the research of Nunes et al. et al., under the title of "How to comprehensively self-regulate?" Then the post-test was done for the experimental and control groups. **Finding:** The results of multivariate analysis of variance (MANOVA) and univariate analysis of variance (ANOVA) showed a significant difference in self-efficacy in the experimental group, but this significance was not observed in mental health. The results obtained from the analysis of the findings of the study showed that the teaching of self-regulation learning strategies (cognitive, metacognitive) was effective on students in the component of self-efficacy, but it did not affect their mental health. **Conclusion:** Based on the findings of the present research, it can be said that the increase and strengthening of self-efficacy in students was due to the teaching of self-regulation learning strategies (cognition, meta-cognition).

**Keywords:** Psychological, Social, Consequence, Divorce, children, well-being, Systematic Review.

## Introduction

At this time, education should prioritize efforts to create self-efficacy and self-regulation in students. Today, efficiency and self-regulation are important for students. Self-efficacy will help students to perform their tasks well. Students who have good self-efficacy tend to be active, competitive, and creative so this issue can affect improving learning results. Self-efficacy is a construct that can have a positive effect on students, students' self-efficacy increases Students' self-confidence, and decision-making and choice are closely related to them. Students with good self-efficacy tend to work hard and finish well, while students with low self-efficacy tend to avoid difficult tasks Bandura explains that self-efficacy increases the belief in having the ability to process and take actions to achieve goals that are closely related to self-concept. Achieving self-consistency in life is an aspect of self-efficacy that plays an important role in education. The role of teachers in creating self-efficacy for students is very important. Teacher skills and planning are needed to build student self-efficacy. Teachers can design and use different approaches or create methods to create student self-efficacy, for which a competent teacher is needed. In addition to students, teachers must also have good self-efficacy in learning and establish a good mutual relationship with their students. To create self-efficacy in the student, the teacher can use a concept mapping approach that is useful to help the progress of learning. For this purpose, the teacher can use self-study, web, computer, or other software. Based on the results of the international conference on mathematics and science education, they concluded that self-efficacy is the belief that every student has in the learning process, when a student has a high level of self-efficacy, his stress level is low, and also students who have self-efficacy They have a lot of stress in the process of learning and doing a job. In addition to self-efficacy, students should have good self-regulation because it helps to solve the problem of students' ability well. Self-regulation efforts are an important activity for students. The learning process is closely related to Bandura's social cognitive learning theory. Self-regulated learning increases the student's ability to manage their learning without dependence on others. Low self-study in learning is considered one of the factors that weakens the quality of the student's learning process. (Rehmat and Kornavian, 2019)

Self-regulation is a valuable process because it emphasizes how the "self" becomes the factor in creating learning goals and choosing strategies, as well as how each person's perception of himself and the task affects the quality of subsequent learning (Paris, 2003). The teaching of self-regulation strategies gives students the possibility to carry out their academic tasks and daily activities in a more task-oriented way by planning, organizing, and self-reviewing. With the help of self-regulation strategies, students can re-examine and revise their many failures and finally improve active learning in students. Through self-regulation, these students can be aware of the usefulness of specific strategies for efficient problem-solving and effective learning (Meltzer, 2004). Theorists have presented different classifications of self-regulation learning strategies, but generally, in most of these classifications, learning strategies are It is divided into three categories. The Pentridge model as one of the self-regulation education models includes three general categories: motivational beliefs, cognitive strategies and metacognitive self-regulation, learning, and resource management strategies. Metacognitive strategies in the form of

self-monitoring, self-reflection, and self-judgment play a central role in self-regulation, and cognitive factors, Resource management, and motivational beliefs interact with each other to increase ability (Pintrich, 2002). The lack of skills in task analysis, goal determination and planning, and consistency in doing the task causes students' despair in the matter of learning. Organizing and regulating the main learning processes and related activities is done through self-regulation. Strong indicators of self-regulated learning, including self-evaluation, organization and goal orientation, and seeking the help of environmental structures and memory strategies, are related to academic progress. Learning self-regulation education by students makes them actively learn and organize it (Magno, 2010).

Self-regulation is a multidimensional concept, that is, its aspects have internal and independent relationships. In addition, it refers to cognitive, metacognitive, motivational, behavioral, and emotional activities. Self-regulation learning strategies include overt approaches (controlling the work situation and others in the workplace) and hidden methods (metacognitive control, motivational control, and emotion control). Based on this, learning self-regulation strategies significantly affects the elimination or reduction of many students' academic problems, such as academic weakness and poor academic achievement, which includes a large number of female students (Khoshab et al., 2020) Montagu believes that self-regulated learning includes the skills of self-study, self-questioning, self-evaluation, and self-improvement. Therefore, self-regulated learning strategies should be taught to students so that they can learn teachable behaviors, check the effects of their behavior, and change the learning environment to make their efforts effective. Self-regulation strategies act as guides for students and teachers and include three categories: cognitive strategies, metacognitive strategies, and resource management strategies Most experts and researchers have stated that these three types of strategies are very important in the progress of education. In this field, Narimani and others showed that these strategies play a large role in self-control, self-evaluation, and self-revision. Gholami Lavasani and others found that teaching self-regulation strategies can significantly improve the academic progress of students. According to some evidence, self-regulation strategies can increase self-efficacy and motivation, which is directly related to the mental health of students (Abdolmaleki and Vanushin 2019). The basic issue of the present research is whether teaching self-regulation learning strategies affects self-efficacy and mental health. And what is the relationship between these variables? The aim of the current research is that by teaching self-regulation strategies (cognitive, meta-cognitive) to the students, they will perform the academic tasks and daily activities by planning, organizing, and self-reviewing the events in a more task-oriented way. Students can overcome their failures with the help of self-regulation, and finally, active learning improves in students.

## Methods

The present study is a semi-experimental study with a pre-test-post-test design with a control group. The research population includes all first-year female students (second term) of Astara high schools in the academic year 2016-2017. From this population, 46

people were selected by multi-stage cluster sampling; then these people were randomly divided into two groups (23 test subjects and 23 control subjects). Then, a pre-test was conducted for both groups. In the next step, the experimental group was taught self-regulated learning strategies for ten sessions of 60 minutes, and the control group did not receive any training. After the completion of the training sessions, the post-test was conducted again for both groups under the same conditions as above. The sessions of the educational program of self-regulated learning strategies were organized based on the theoretical background presented in the research of Nunes et al. The researcher's research opinion was also considered in this program.

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The first session: (introducing the design and implementation of the pre-test): implementation of the learning strategies questionnaire, examination of the question "How do I study?" Second session: 1- Goal setting and planning (with three topics goal setting, time management, and ways to eliminate procrastination). 2- Training information processing (strategies of memorization, recall, understanding). The third session is learning and study strategies section (first part: knowledge). Tasks for using these strategies are given including a) simple and basic subject repetition strategies, b) semantic expansion. The fourth session (the second part of recognition) is the application of methods (coding, partitioning and conceptual mapping, summarizing a lesson and expanding with previous knowledge by students in groups by presenting a lesson example). The fifth session (metacognitive strategies): After reviewing the assignments of the previous session, the training of metacognitive strategies, collaborative study methods, motivational techniques, and working groups were discussed. Sixth session: Examining the process of the program (possible problems during the previous sessions with the help of peers and with the presence of the instructor. Three issues of problem-solving, teaching the steps of problem-solving, and suggestions for increasing the ability to solve problems were raised. Seventh session: a review of the homework of the previous

session and preparation method for the exam (as a group to examine the obstacles and provide solutions and choose a more suitable program and teach concentration methods). 8th session: review of the study plan (students with a page and alert) The ninth session: presentation of a comprehensive model (for the use of students - the plan with the conclusion of the student and the researcher) The tenth session: Implementation of the post-test and thanking the students for their participation and cooperation

### Instruments

To collect data, in this research, Pintrich and De Groot's (1990) Motivational Strategies for Learning Questionnaire (MSLQ) and Goldberg and Hiller's (1979) General Health Questionnaire (GHQ28) were used:

**Questionnaire (MSLQ):** This questionnaire has two scales of motivational beliefs (25 items) and self-regulated learning strategies (22 items) and the set of scale items is 47. It was made by Pintrich and DeGroot (1990). The motivational beliefs scale includes three subtests: self-efficacy, internal valuation, and test anxiety. regulated learning scale has two subtests of using cognitive and meta-cognitive strategies. Pintrinch and de Groot (1990) examined the validity of this questionnaire using the analysis method for the scale of motivational beliefs three factors of self-efficacy, internal evaluation, and test anxiety, and for the scale of self-regulated learning strategies two factors the use of cognitive strategies and the use of metacognitive strategies and resource management. they got The reliability coefficients of self-efficacy, internal evaluation, and test anxiety subscales, and the use of cognitive and metacognitive strategies with Cronbach's alpha method was 89% and 87%, respectively. and 75% and 83% and 74%. Determined. Mousojad (1376) used the method of content validity and factor analysis to check the validity of this questionnaire. To determine the reliability of low-level, and high-level cognitive strategies and metacognitive self-regulation, the alpha coefficients were 98% and 79%. And 84% extracted (Kajbaf, 1382))

**General Health Questionnaire (GHQ28):** This questionnaire is in the form of 12, 20, 30 and 60 questions. The 28-question form of this questionnaire was created by Goldberg and Hiller (1979) from the original form and includes 4 subscales and 7 questions about physical symptoms, anxiety, social functioning disorder, and depression. Mental health is used. Validation studies on GHQ indicate its high validity and reliability. Williams, Marie, and Goldberg, as a result of the meta-analysis of 43 studies, the average sensitivity was 84% and the average specificity was 82%.

In Yagoubi's study(1380), the sensitivity, specificity, and reliability of this questionnaire on the general population were at the best cut point of 86% and 82% , 88%. In their study, Romezpour and colleagues have determined a standard deviation above the mean as a cut-off point. In the present study, since the goal was to measure the mental state, instead of using the cut-off point, the average of the overall scores of the test and

its subscales are used by the goals. In the present study, the reliability coefficient of the general health questionnaire using Cronbach's alpha method was 81/. Was determine.

## Results

To describe the data from calculating the mean and standard deviation of the score of the dependent variables and to check the significance of the difference between the pre-test and post-test scores of the dependent variables (self-efficacy and mental health) in the experimental and control groups using the single variable variance software (ANOVA) and multivariate analysis of variance (MANOVA) were used (SPSS, version.24).

**Table 1:** The mean and standard deviation of the score of the dependent variables in the experimental and control groups:

experimental group stage	witness group	dependent variables	Average in the experimental group	Standard Deviation in experimental group	Mean in witness group	Standard Deviation in witness group
23	23	Self-efficacy	31/9130	7/11537	26/7826	10/40523
Pre-test		Mental health	27/5217	12/19481	29/9565	12/59682
23	23	Self-efficacy	36/91300	10/13451	25/8696	10/13681
Post-test		Mental health	25/3478	10/73486	10/9253	10/92537

As can be seen in Table No.1, the average scores of the experimental group in the post-test compared to the pre-test in the self-efficacy component increased, and decreased

in the mental health component. The normality of the data distribution, which was confirmed by performing the Kolmogorov-Smirnov test, and the homogeneity of the variance of the data in the experimental and control groups, which was confirmed by performing the Levine test, were all the results. A variable (manga) was conducted (Table 2), and then the research hypotheses were tested

Test	value	F	HypothesDF	ErrorDF	Sig
Pillai's Trace	/428	3/357	6/000	83/000	<b>./002</b>
Wilks'	/598	2/602	6/000	83/000	<b>./001</b>
Lambda					
Hotelling's	/628	2/848	6/000	83/000	<b>./001</b>
Trace					
Roy's Largest	/549	7/777	6/000	83/000	<b>./001</b>
Root					

According to Table 2, the effect of the group on the linear combination of the dependent variables is significant (598.%= Wilks's test), in other words, between the students in the control group and the experimental group at least in one of the dependent variables .Table results of univariate analysis of variance (ANOVA) on the difference between post-test and pre-test scores of dependent variables.

Source	Square total	df	squaremean	F	Sig
variant					
	261/1801	3	600/420	**	./001
Self- efficacy				7/684	
Mental	277/913	3	92/638	/684	./564
health					
Self- efficacy	6876/174	88	78/138		
				6876/174	

mental health	913/6923	88	135/499
Total	435/8677		
Self- efficacy		91	
mental health	826/12201		
		91	

As can be seen in Table No. 1, the average scores of the experimental group in the post-test compared to the pre-test in the self-efficacy component increased and decreased in the mental health component. The normality of the data distribution, which was confirmed by performing the Kolmogorov-Smirnov test, and the homogeneity of the variance of the data in the experimental and control groups, which was confirmed by performing the Levine test, were all the results. A variable (manga) was conducted (Table 2) and then the research hypotheses were tested

## Discussion

The general purpose of the present study was to determine the effect of teaching self-regulation learning strategies (cognition, metacognition) on the self-efficacy and mental health of students in Astara city.

First hypothesis:1- There is a significant difference between teaching self-regulation learning strategies and self-efficacy of students.

Table number 3 shows that according to the results obtained with ( $F=7.684$ ) and ( $P \leq 0.1$ ) at the significance level for the self-efficacy variable, there is a significant difference between the scores of the experimental group and the control group. Therefore, it can be certainty said that there is a meaningful relationship between teaching self-regulation learning strategies and students' self-efficacy, and this training has been able to increase students' self-efficacy. Therefore, the first hypothesis is confirmed. The results obtained in this section show alignment with some other research results, for example, Fernandez and Javier (2017) concluded in their study that the levels of self-regulated learning and collaborative learning are similar, and there is a positive and significant relationship between these variables and academic self-efficacy, and it has the highest significance. It was also observed that self-regulated learning and academic self-efficacy. In a research conducted by Ramdas and Zimmerman (2008) on the effectiveness of self-regulation strategies training on students' self-efficacy and self-evaluation, the results showed that students who used self-regulation strategies use, have better self-efficacy and evaluated themselves in a more positive way and as a result have a higher motivation to learn (Mohammadi Darwish Bakhal, 2012). Self-efficacy is aligned. For example, Mohammad Yusuf (2011) showed in a study that there is a significant relationship between self-efficacy, motivation to progress, and self-regulated learning strategies of undergraduate students

Al-Otibi and Thomas (2017) found in their research that there is a positive and meaningful relationship between self-regulated learning and the academic progress of students. Ghadampour (2014) also showed in his research that the variables of academic motivation, self-efficacy, and test anxiety are significant predictors. They are for academic performance. On the other hand, the results of this research are consistent with the findings of Mousavi and Abdini (2016). In a study, they found that learning strategies and self-perception have a positive effect on the motivation of third-grade girls' academic progress.

Second hypothesis:2- There is a significant difference between teaching self-regulation learning strategies and students' mental health

Table number 3 shows that according to the results obtained for the variable of mental health ( $F=.684$  and ( $p\leq.564$ ) at the significance level ( $.564$ ) there is no significant difference, so it can be said that there is no significant difference between self-regulation strategies and mental health, and this training has not been able to increase the mental health of students in the experimental group. This result is based on the results of Tavaklizadeh's research (2019) on the effect of teaching self-regulation learning strategies on the mental health of second-year male students. The results of his study showed that the training of self-regulated learning strategies in the experimental group compared to the control group did not result in a significant difference in terms of mental health status. On the other hand, the result of his present study is not consistent with the findings of Asgari et al. (2010). In their research, they found that there is a positive and meaningful relationship between metacognitive beliefs and the components of students' mental health. Also, the results of the present study are not consistent with the findings of Mohammad Amini (2008). In his research, he showed that metacognition is related to mental health and academic progress. It has a positive and meaningful correlation. Overall, the result of this study showed that teaching self-regulation learning strategies (cognitive, meta-cognitive) to students increased and strengthened their self-efficacy, but it had no effect on their mental health. The present research had limitations which are:

1-Establishing communication and organizing training sessions

Limitation on the time and place of training sessions 2-

3-Lack of prior familiarity of subjects with the subject of training sessions

The current research has been conducted in Astara city and the sample is female students in the first year (second grade) of high school, which is why the generalization of the results is limited. It is suggested:

1-Researches about the comparison of these variables in male students should also be done

2- Most of the studies on the effectiveness of self-regulation strategies have been on students, it is suggested to be done with students as well.

3-According to the results of the research, it is suggested that self-regulation training should be included in the extra curriculum of schools as a necessary educational skill, and teachers and counselors should be provided with the necessary training for the successful use of self-regulation training to use cognitive strategies and metacognitive strategies by students

4- To make the best use of resource management strategies (school and home environment and human resources including peers and teachers), self-regulation training should be provided for students.

## Conclusion

The results of his study showed that teaching self-regulation learning strategies in the experimental group compared to the control group did not result in a significant difference in terms of mental health status. On the other hand, the result of the present study is not consistent with the findings of Asgari et al. (2019). In their research, they found that there is a positive and meaningful relationship between metacognitive beliefs and the components of students' mental health. Also, the results of the present study are not consistent with the findings of Mohammad Amini (2006). In his research, he showed that metacognition has a positive and meaningful correlation with mental health and academic progress. Overall, the result of this study showed that teaching self-regulation learning strategies (cognitive, metacognitive) to students increased and strengthened their self-efficacy, but it has not affected their mental health.

The current research has been conducted on the students of Astara city and the investigated sample is female students in the first year (second grade) of high school, which is why the ability to generalize the results is limited. Students can also be done. According to the results of the research, it is suggested that self-regulation training should be included in the curriculum of schools as a necessary educational skill, and for teachers and counselors, the necessary training should be provided for the successful use of self-regulation training to use cognitive strategies and metacognitive strategies by students, and for optimal use. From the possibilities of resource management strategies, school and home environment, and human resources, including peers and teachers, self-regulation training should be provided for students.

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