



## Comparing the effectiveness of teaching study methods and time management on academic self-efficacy and academic self-regulation and biology course performance of 12th grade experimental sciences male and female students

Jafar. Saman Azari<sup>1</sup>, Sholeh. Livarjani\*<sup>2</sup> & Masoumeh. Azmoodeh<sup>3</sup>

1. Ph.D Candidate in Educational Psychology, Humanity and Educational Sciences, Tabriz branch, Islamic Azad University, Tabriz, Iran.
2. \*Corresponding Author: Assistant Professor of Psychology, Tabriz branch, Islamic Azad University, Tabriz, Iran
3. Assistant Professor of Psychology, Tabriz branch, Islamic Azad University, Tabriz, Iran

### ARTICLE INFORMATION

### ABSTRACT

#### Article type

Original research

Pages: 99-109

Corresponding Author's Info  
Email:

livarjani.sh@gmail.com

#### Article history:

Received: 2023/02/17

Revised: 2023/04/20

Accepted: 2023/06/07

Published online:  
2023/12/26

#### Keywords:

Academic Self-efficacy,  
Academic Self-Regulation,  
Biology Lesson Performance,  
Study Methods, Time  
Management, Students.

**Background and Aim:** The present research was done with the aim to compare the effectiveness of study methods and time management training, on the academic self-Efficacy, academic self-regulation and performance in biology course of female and male students of twelfth grade in experimental science major. **Methods:** The research method was quasi-experimental with a pretest and posttest design in addition to the control group. The statistical society consisted of all female and male students in twelfth grade of experimental sciences major in Tabriz city during 2021-2022; among them 52 students were selected in one step cluster sampling method as the sample case and categorized in two groups of experimental group (26 students) and the control group (26 students). In order to estimate students' academic self-efficacy, the standard questionnaire of Jinks and Morgan (1999) was applied. Savari and Arabzadeh (2013) questionnaire was used to analyze their academic self-regulation; and to evaluate students' performance, their current and previous academic year's final scores in biology course was utilized. The validity of research instruments was confirmed by the approval of specialists and the reliability was estimated and approved by calculating Cronbach alpha coefficient ( $\alpha > 0.7$ ). Prior to the study, pre-test of academic self-efficacy and academic self-regulation was implemented in both groups. The experimental group had received study methods and time management trainings through a package in 8 sessions with 60 minutes training, but the control group had not received any training therapy. After the training course in the post-test stage, both of the groups answered to the research instruments of the pre-test stage. Students' final scores in biology lesson of previous and current academic year was also gained. The research data was analyzed with analysis of covariance using SPSS. **Results:** Based on the obtained results, the study methods and time management training had the same effectiveness on female and male students' academic self-efficacy, academic self-regulation and performance in biology course. **Conclusion:** According to the results of the research, critical thinking and social cognitive training has increased the emotional readiness of female students in the first year of high school. Critical thinking training created a significant difference between the control and experimental groups in terms of the variable of emotional creativity. Also, critical thinking and social cognitive training has improved innovation in female students of the first year of high school. Teaching critical thinking and social cognition has not had a significant impact on students.



This work is published under CC BY-NC 4.0 license.

© 2023 The Authors.

#### How to Cite This Article:

Saman Azari, J., Livarjani, S., & Azmoodeh, M. (2023). Comparing the effectiveness of teaching study methods and time management on academic self-efficacy and academic self-regulation and biology course performance of 12th grade experimental sciences male and female students. *Jayps*, 4(10), 99-109.

## Introduction

In the present era, education and generally academics form a significant part of an individual's life. Moreover, the quality and quantity of education play a crucial role in a person's future. On this basis, for nearly a century, psychologists have extensively strived to identify predictors of academic achievement (Premuzic & Furnham, 2003; Lounsbury, Steel, Loveland, & Gibson, 2004). This is because not only students and their families but also society at large incur significant costs for educating students at various academic levels. Therefore, achieving positive results in education (by identifying factors influencing academic performance) can lead to the comprehensive advancement of students and society (Kamalier, Danielson & Basten, 2005).

In educational environments, we encounter students who, despite having similar talents, abilities, and learning opportunities, show significant differences in academic performance. Some individuals, with average talent, demonstrate high perseverance and performance. This indicates that in addition to personal characteristics such as intelligence, talent, and abilities, other factors exist as keys to progress in education and learning (Ghalavandi, Amani Sari Begloo, Saleh Najafi & Amani, 2013). Although ability is one of the most important predictors of students' success in school, it cannot entirely and solely predict academic performance (Sternberg, 1999; cited by Vafouri & Karamati, 2017: 3).

Multiple factors influence students' academic performance, especially in fundamental subjects like biology. One such factor is self-efficacy. Self-efficacy develops and influences an individual's thoughts, feelings, and behaviors. Individuals with higher self-efficacy demonstrate more effort and persistence in tasks and perform better (Parsakia, Rostami & Saadati, 2023). A strong sense of academic self-efficacy improves individual positive attitudes and enhances students' participation in academic activities (Strobel, 2011). Students with higher levels of self-efficacy are more inclined to engage in academic tasks, use deeper and more systematic strategies, show more perseverance, and achieve higher grades compared to students with lower confidence in their abilities (Bandura, 1997; cited by Seo, 2008). In fact, self-efficacy beliefs, by influencing individual

choices, the amount of effort and perseverance in facing difficulties, thinking patterns, and emotional reactions, play a fundamental role in determining behavior (Parsakia, 2023). For these reasons, high academic self-efficacy beliefs strengthen academic progress, while low academic self-efficacy beliefs weaken it (Lewis, 2006). Additionally, studies have shown that self-efficacy is an important predictor of learning, even after considering previous achievements and cognitive skills (Pintrich & Schunk, 2007). Furthermore, according to Bandura's social cognitive theory and based on numerous studies including the works of Pajares & Miller (1997), and Pajares & Graham (1999), self-efficacy plays an effective role in predicting an individual's success in employing self-regulatory skills.

Gaskill & Woolfolk (2002) stated that students' sense of efficacy is not something researchers or planners can deny. Following this, a sense of efficacy can help students maintain motivation, learn self-regulation, and perform stronger in academic subjects. Bandura's concept of self-efficacy refers to individuals' beliefs in their abilities to organize and execute actions to achieve their goals.

Bandura believes that increasing self-efficacy requires acquiring fresh skills and knowledge through several hours of hard work. Therefore, we expect students' self-efficacy to be related to their motivational beliefs and self-regulatory practices. Self-regulated learners possess skills in designing, organizing, monitoring their learning process, and modifying their learning and thinking. These skills can later be used for solving life problems, making appropriate decisions, and lifelong learning. In this case, the teacher prioritizes teaching effective thinking skills and creating interest in students over transferring information to them (Nasri & Bayanati, 2015: 15). Psychologists believe that self-regulation is a set of cognitive strategies where cognition, emotion, and performance are adjusted to achieve a goal (Boekaerts, Maes & Karoly, 2005). Thus, learning self-regulation is a vital prerequisite for achieving academic success in and out of school (Saffarian Toosi, 1996).

Teaching self-regulation ensures that students actively engage and organize their learning (Pourmohammadi & Esmaeilpour, 2015). Therefore, enhancing students' self-regulation

skills will directly lead to an improvement in their academic performance and progress.

Self-regulation is an active and organized process in which learners set goals for their learning; then they try to regulate, control, and monitor their cognition, motivation, and behavior (Moradi & Kooshki, 2008). Schunk & Zimmerman (1997) believe that adaptation and success in school require students to develop self-regulation or similar processes that expand and strengthen their cognitions, emotions, or behaviors, thereby helping them achieve their goals. Self-regulated learning is an active and self-guided process in which students control and regulate their cognition, motivation, outcomes, behavior, and environment to advance their goals.

However, to increase students' academic self-efficacy and self-regulation with the aim of improving their performance, certain factors can have a high impact. One way to increase academic self-efficacy and self-regulation is through time management skills training. In this training, individuals learn how to use their time more effectively (Trueman & Hartley, 1996). Time management, as a method for monitoring and controlling time, enhances learners' insight into how to use time and is one of the most essential components affecting academic progress. Time management involves personal discipline, goal setting, controlling interruptions, effective use of resources, and a means to achieve personal goals (Greenberg, 2000).

Time is considered a strategic resource for advancing goals and realizing human aspirations. McKinsey was the first to introduce the concept of time management training and believes that training these skills, by providing proper insight about time-consuming activities, changing the amount of time spent and prioritizing, has positive effects on time managing behaviors (Klassen, Krawchuk, Lynch, & Rajani, 2007). The idea of how individuals decide to use their time effectively forms the theoretical core of time management theory. According to this view, the purpose of time management is to prevent waste of time and regulate work activities (Koch & Kleinmann, 2002). In this context, Zhao-Hua (2007) suggested that time management is firstly a necessity, secondly a good goal, and thirdly should be taught. Time management can be considered like a vehicle that can transport a

person from where they are to where they want to be (Tracy, 2006). In fact, to benefit from academic self-efficacy and self-regulation and ultimately achieve appropriate academic performance by students; it is necessary to improve their time management. The best method for this is to provide a time management training protocol to students in the form of educational classes. In line with this opinion, research findings by Abdul Qadir & Isa (2015), Babaei Nadinlouei (2012), Babaei, Abdi & Sattari (2017), Al-Raghad, Ismail & Al-Raghad (2019), Savari & Kennedy (2011), Madbar (2020), and Dortaj, Lassani & Rostami Nasab (2013) indicate that time management training has been effective on the academic self-efficacy of students or university students. Also, the findings of Khayat (2019), Aflakifard & Akbari (2019) show the effectiveness of time management training in improving students' academic self-regulation. Research by Savari & Noori (2014), Heidari (2018), Abbasi, Fathi Azar & Hashemi (2015), and Forcione & Mafida (2018) also demonstrated that there is a significant statistical difference in time management skills between students with high and low academic performance; in fact, time management has had a significant impact on students' academic performance.

However, in addition to familiarizing students with time management methods through training, another problem that our country's educational system faces is the lack of students' familiarity with correct study methods and habits, which is caused by various factors. Training in proper study methods can take effective steps to solve this problem. Getting used to proper study is an acquired matter, meaning that just as a person learns to read and write, they can learn study methods. The eight common study methods "Post-completion, Precise Reading, Reading Without Writing, Underlining Important Points, Margin Writing, Summary Writing, Key Taking, Creativity and Brain Network Layout" are available as a result of researchers' experience and expertise (Seif, 2012; cited by Poursaridarg & Yari, 2017). On the other hand, students at all levels and fields of study may not be able to succeed in school challenges, which can be attributed not to a lack of ability but to a lack of application of learning and study skills (Jordan, Parker, Lee, & colleagues, 2015).

In fact, to achieve successful academic performance for students; promoting academic self-efficacy and self-regulation through teaching study methods can also be effective. The best method to teach study methods to students is in the form of educational classes. In line with this view, the results of research by Taghani (2018), Noohi, Fallahnejad, Gharoosi & Haghdoost (2013), Swardal, Gromsiel, Dahl, Namkum & Gamst-Klausen (2021) regarding the impact of teaching study skills on students' academic self-efficacy. Additionally, according to Zimmerman (2000), study skills as an educational approach can strengthen and develop students' self-regulated learning skills. The findings of Saliminezhad, Sheikhi Aram & Moradian (2016), Mahmoud Taha (2021), Balan, Sterkatega & Simon (2019), Akbashli, Shahin & Yaykiran (2016) also show the impact of teaching study skills on improving students' academic performance. In this regard, the findings of Mirza, Ansari, Khatun, Patan, Arsalan Rahim & Mushtaq (2021) indicate that there is a significant difference between male and female university students in terms of study habits and consequently academic performance; with male students performing better than female students.

Considering theories and research results, for improving students' academic performance and proper use of their academic self-efficacy and self-regulation, teaching study methods and time management can be influential. Also, while the relationship between study skills and academic performance has been confirmed in many studies, it seems that this relationship extends beyond the realm of academic performance and also affects cognitive constructs like academic self-efficacy and self-regulation. Therefore, given the role and importance of students' academic performance in their educational progress, and considering that the relationship of time management and study method skills with academic performance is significant; the question that arises for the researcher is whether teaching study methods and time management is effective in improving the academic self-efficacy, self-regulation, and performance of male and female twelfth-grade science students in biology courses. Moreover, considering the research gap regarding the effectiveness of study skills and time management in improving the academic self-

efficacy, self-regulation, and performance of male and female students in biology courses; this article addresses its effectiveness among twelfth-grade science students based on their gender. The current research findings can guide planners and school teachers in teaching time management and study methods to students with the goal of improving academic performance through academic self-efficacy and self-regulation.

### Method

The research method is based on semi-experimental designs using a pre-test - post-test control group design. The statistical population consisted of all male and female twelfth-grade science students in Tabriz for the 2021-2022 academic year. To determine the study sample, using a single-stage cluster sampling method, 52 twelfth-grade science students were selected, divided by gender into separate schools in Tabriz. They were randomly placed in two separate groups of 26 [experimental group (13 girls and 13 boys) and control group (13 girls and 13 boys)], with entry criteria for the study being twelfth-grade science students in Tabriz, no participation in intervention sessions in the last six months, students' interest in participating in the research, and parents' informed consent for student participation. Criteria for leaving the study included absence from more than two sessions, lack of willingness to cooperate in further research, and simultaneous participation in other intervention programs.

### Materials

**1. Academic Self-Efficacy Questionnaire:** Jing & Morgan's (2015) 30-item questionnaire on a four-point scale (1 to 4) was used to measure students' academic self-efficacy. If questionnaire scores ranged from 30 to 52, the student's self-efficacy was considered weak. Scores between 52 to 75 indicated moderate self-efficacy, and scores above 75 indicated very good self-efficacy. In Iran, Karimzadeh and Mohseni (2006) reported desirable factor analysis validity for this scale. The reliability of this questionnaire, determined by Cronbach's alpha, was 0.76. In the present study, the questionnaire's reliability was also confirmed using Cronbach's alpha ( $\alpha > 0.7$ ).

**2. Academic Self-Regulation Questionnaire:** For measuring students' academic self-regulation, the questionnaire by Savari and



Arabzadeh (2013) consisting of 30 items across six subscales: memory strategies (5 items), goal setting (3 items), self-evaluation (6 items), help-seeking (6 items), responsibility (4 items), and organization (6 items) on a five-point scale (1 to 5) was used. Scores between 30 to 60 indicated low academic self-regulation, 60 to 90 indicated moderate, and scores above 90 indicated high academic self-regulation. Its validity was confirmed through confirmatory factor analysis. The reliability of the academic self-regulation questionnaire, obtained through Cronbach's alpha, was 0.87 for the entire questionnaire and above 0.7 for its subscales. In the present study, the questionnaire's reliability was confirmed using Cronbach's alpha ( $\alpha > 0.7$ ).

**3. Students' Academic Performance:** For assessing students' academic performance, the biology grades of twelfth-grade science students at the end of the previous academic year (2019-2020) were used for the pre-test, and the end-term grades of the current academic year (2020-2021) were used for the post-test.

**4. Study Skills and Time Management Training Protocol:** A protocol consisting of 8 training sessions, each lasting 90 minutes, was developed for teaching study skills and time management. The content of the sessions, presented in Table 1, was conducted by the researcher with extensive experience in such research.

Table 1. Study skills and time management training protocol

Session	Content
1	Familiarization with the importance of correct study methods and the value of time management
2	Training in deep study methods using the pqr technique
3	Teaching the correct steps for studying mathematics
4	Teaching the correct steps for studying biology
5	Training on the principles of conceptual examinations and how to deal with them
6	Training on the principles of proper planning and time management
7	Training on tips and guidelines for lesson planning
8	Training on evaluating programs and methods

### Implementation

Before the study, written consent was obtained from the students' parents. Additionally, the ethical codes of the American Psychological Association, including respect for the principle of confidentiality of results, the possibility for participants to withdraw from the study, providing sufficient information about the nature of the training and research, and ensuring that the intervention does not cause any physical harm, were observed. Participants then completed the academic self-efficacy and self-regulation questionnaires. The previous year's (11th-grade science) biology grades were also considered as their academic performance. They were then randomly divided into two groups of 26. The experimental group underwent the "Study Skills and Time Management" intervention in 8 sessions of 90 minutes each.

The control group received no educational intervention. After the intervention, both groups again completed the academic self-efficacy and self-regulation questionnaires. The current year's (12th-grade science) biology grades were also considered as their academic performance. For ethical considerations, the control group received the training sessions after the study was completed. Data were analyzed using SPSS version 24. The results were presented in two parts: descriptive statistics, including means and standard deviations, and inferential statistics, including hypotheses and testing research hypotheses using two-way univariate analysis of covariance.

### Results

In Table 2, descriptive statistics of the studied variables are presented, separated by test type and groups.

Table 2. The results of descriptive statistics

Variable	Gender	Group	Pre-test		Post-test	
			Mean	SD	Mean	SD
Academic self-efficacy	Female	Exp.	97.53	7.14	97.38	7.53
		Control	92.61	13.87	90.38	9.26
	Male	Exp.	90.08	9.88	94.5	8.58

		Control	89.5	14.56	86.83	8.8
<b>Academic self-regulation</b>	Female	Exp.	118.07	9.34	120.23	9.12
		Control	107.69	21.46	99.61	10.11
	Male	Exp.	105.5	19.5	123.75	11.52
		Control	105.83	18.81	97.25	9.65
<b>Academic performance</b>	Female	Exp.	17.55	0.63	18.36	0.71
		Control	15.92	3.15	15.98	3.21
	Male	Exp.	17.83	1.19	18.55	1.32
		Control	17.27	2.42	17.37	2.44

For examining the comparative effectiveness of study and time management methods on students' academic self-efficacy, two-way univariate analysis of covariance was used. Initially, the assumptions of this test were checked. The assumption of normality in both groups was reviewed as follows (experimental group, statistic = 0.17,  $p < 0.05$ ; control group, statistic = 0.16,  $p < 0.05$ ), showing no

significant deviation from this assumption. The other assumption was the homogeneity of variance, confirmed by the Levene's test (variance = 3.74,  $p < 0.01$ ). Therefore, after confirming the assumptions, two-way univariate analysis of covariance was performed. In Table 3, the results of the two-way univariate analysis of covariance for the academic self-efficacy variable in the post-test are presented.

**Table 3. Analysis of covariance for academic self-efficacy**

Source	SS	Df	MS	Variance	P	Eta <sup>2</sup>
<b>Group</b>	479.16	1	479.16	9.05	0.004	0.16
<b>Group*Gender</b>	17.6	1	17.6	0.33	0.56	0.007

According to Table 3, the results showed a significant difference in academic self-efficacy between the groups ( $p < 0.05$ ). Additionally, a significant portion of the variance in academic self-efficacy changes (0.16) in the post-test was related to the effect of the study skills and time management training. Other research findings indicated no significant interaction effect of group and gender on students' academic self-efficacy ( $p < 0.05$ ). Consequently, there was no significant difference between the academic self-efficacy scores of male and female students in the experimental group (study skills and time management training) and those of the control group. For examining the comparative effectiveness of study and time management

methods on students' academic self-regulation, two-way univariate analysis of covariance was used. Initially, the assumptions of this test were checked. The assumption of normality in both groups was reviewed as follows (experimental group, statistic = 0.16,  $p < 0.05$ ; control group, statistic = 0.08,  $p < 0.05$ ), showing no significant deviation from this assumption. The other assumption was the homogeneity of variance, confirmed by the Levene's test (variance = 2.18,  $p < 0.01$ ). Therefore, after confirming the assumptions, two-way univariate analysis of covariance was performed. In Table 4, the results of the two-way univariate analysis of covariance for the academic self-regulation variable in the post-test are presented.

**Table 4. Analysis of covariance for self-regulation**

Source	SS	Df	MS	Variance	P	Eta <sup>2</sup>
<b>Group</b>	12.6392	1	12.6392	74.64	000.0	59.0
<b>Group*Gender</b>	11.164	1	11.164	66.1	2.0	03.0

According to Table 4, the results showed a significant difference in academic self-regulation between the groups ( $p < 0.05$ ). Additionally, a significant portion of the variance in academic self-regulation changes

(0.59) in the post-test was related to the effect of the study skills and time management training. Other research findings indicated no significant interaction effect of group and gender on students' academic self-regulation ( $p < 0.05$ ).

Consequently, there was no significant difference between the academic self-regulation scores of male and female students in the experimental group (study skills and time management training) and those of the control group. For examining the comparative effectiveness of study and time management methods on students' biology performance, two-way univariate analysis of covariance was used. Initially, the assumptions of this test were checked. The assumption of normality in both groups was reviewed as follows (experimental

group, statistic = 0.09,  $p < 0.05$ ; control group, statistic = 0.17,  $p < 0.05$ ), showing no significant deviation from this assumption. The other assumption was the homogeneity of variance, confirmed by the Levene's test (variance = 5.63,  $p < 0.01$ ). Therefore, after confirming the assumptions, two-way univariate analysis of covariance was performed. In Table 5, the results of the two-way univariate analysis of covariance for the biology performance variable in the post-test are presented.

**Table 5. Analysis of covariance for academic performance**

Source	SS	Df	MS	Variance	P	Eta <sup>2</sup>
Group	5.16	1	5.16	58.29	0.000	0.56
Group*Gender	0.04	1	0.04	0.47	0.49	0.01

According to Table 5, the results showed a significant difference in biology performance between the groups ( $p < 0.05$ ). Additionally, a significant portion of the variance in academic performance in biology (0.56) in the post-test was related to the effect of the study skills and time management training. Other research findings indicated no significant interaction effect of group and gender on students' biology performance ( $p < 0.05$ ). Consequently, there was no significant difference between the biology performance scores of male and female students in the experimental group (study skills and time management training) and those of the control group.

### Conclusion

The present research aimed to compare the effectiveness of teaching study methods and time management on academic self-efficacy, academic self-regulation, and biology performance of male and female twelfth-grade science students in Tabriz. The results showed that the training in study methods and time management equally increased the academic self-efficacy (16%) of both male and female students. These results are consistent with the findings of studies by Taghani (2018), Nuhi et al. (2013), Abdul Qadir and Isa (2015), Swartdal et al. (2021), Babae Nadinlooei (2012), Babae et al. (2017), Al-Raghad et al. (2019), Savari and Kennedy (2011), Madbar (2020), Babae et al. (2017), and Dartaaaj et al. (2013). Given that all cited results unanimously agree on the effectiveness of training in study methods and time management in improving

students' academic self-efficacy, it can be inferred that as students differ in talent, mental ability, and many personality traits, time management for each subject and its execution should be considered before teaching proper study skills, tailored to their individual characteristics. For instance, some students excel in technical and problem-solving subjects but not in conceptual or memorization subjects, and vice versa. Therefore, planning in study skills and optimal use of appropriate time for each subject should be leveraged based on their individual mental abilities. Proper training of students in study methods and time management, considering their individual and personality traits and mental abilities, can lead to improved academic self-efficacy.

Another result of the research indicated the effectiveness of teaching study methods and time management in increasing academic self-regulation (59%) equally for both male and female students. These findings are consistent with those of Khayyat (2019), Aflakifard and Akbari (2019), and Zimmerman (2000). Considering the direct or indirect acknowledgment of these studies on the effectiveness of teaching study methods and time management in improving students' academic self-regulation, it can be stated that study skills, as learning tools, enable students to integrate new information with previously learned information, store them in long-term memory, and help reorganize their learning process. It also enables proper use of memory strategies, self-evaluation capability,

satisfaction, motivation, and increased responsibility. With help-seeking from educators and classmates, students can effectively implement proper study methods. Concurrent training in study skills with time management facilitates learning and enhances students' success. With time management training, needs and desires are classified based on priority, and time and required resources are allocated accordingly. Therefore, concurrent training in time management for students, in addition to the aforementioned features, also facilitates goal-setting. Following study skills training, students rely less on teachers and parents or other educational factors for learning, leading to self-driven and managed efforts, essentially exhibiting academic self-regulation. Another result of the study, concerning the effectiveness of teaching study methods and time management in improving biology performance (56%), was equal for both male and female students. These findings align with those of Salimi-Nezhad et al. (2016), Mahmoud Taha (2021), Balan et al. (2019), Akbashli et al. (2016), Heidari (2018), Abbasi et al. (2015), Forghioni and Mafidah (2018), Savari and Noori (2014), and are inconsistent with Mirza et al. (2021). When learners succeed in learning through study skill training, it brings them satisfaction and motivates them towards further learning. Time management training, alongside proper study methods, can act as a catalyst in improving their learning and ultimately academic performance. Students, through time management training, can plan and prioritize tasks, leading to reorganized and effective use of their time. The most crucial aspect for effective time management is to maintain a progressive mindset; the more a person is motivated to progress, the more value is placed on the efficient use of time. Therefore, considering the importance of teaching study skills and time management concurrently and based on the results of both domestic and international research mentioned in this regard, as well as the results derived from the hypotheses of the current research on the effectiveness of teaching study skills and time management in improving the performance of twelfth-grade science students in Tabriz, it can be inferred that the primary goal of students attending classes is learning and achieving suitable academic performance. Thus, schools

and parents should, as much as possible, help improve students' academic performance by planning and allocating certain educational and counseling classes. Using this type of education, students are habituated to deep reading, summarization, and regular and systematic review of learned materials. However, as the results of the hypotheses showed, the effectiveness of teaching study methods and time management for male and female twelfth-grade science students in Tabriz in academic self-efficacy, academic self-regulation, and academic performance was equally impactful. This may be due to their grade level, being the last in school with the readiness for competitive university entrance exams, and other factors like parental education level, home study environment, parents' attention to education and study methods, teachers' and counselors' attention to students' academic self-efficacy, and aiding in its enhancement, regardless of their gender. Most students, being an only child, benefitted from these conditions similarly and equally.

Considering the proven effectiveness of teaching study methods and time management in improving efficiency, self-regulation, and biology performance of male and female twelfth-grade science students in Tabriz, it is recommended that schools' curricula, planned by educators, include appropriate methods and strategies for studying and that the correct use of learning processes is taught to children and adolescents at different ages and educational stages by expert counselors. Also, since school officials, including principals, teachers, and counselors, lack practical expertise in teaching study skills and time management, it is suggested to provide this training in workshops or in-service courses, tailored to the subjects and fields of study, to ensure they are well-informed in teaching and education. Considering the importance of study habits in improving students' academic performance, it is recommended to assist in improving study methods and teaching modern techniques through the development of structured lessons in schools. With proper education and counseling on study skills and methods, students' academic self-efficacy and self-regulation can also be enhanced. Finally, considering the importance of study habits in academic self-efficacy, self-regulation, and



improving students' academic performance, it is suggested to organize educational and informative courses for parents on the importance of monitoring their children at home regarding the implementation of study skills and time management while studying, to be held every few months in schools.

### Conflict of Interest

According to the authors, this article has no financial sponsor or conflict of interest.

### References

- Abbasi, F., Fathi Azar, A., & Hashemi, T. (2015). The impact of time management training on the academic performance of sixth-grade students in Tabriz. Second National and First International Conference on Modern Research in Science, Tehran, 1-11. (In Persian)
- Abdul Kader, F.A.H. & Eissam M.A. (2015). The effectiveness of time management strategies instruction on students' academic time management and academic self-efficacy. *International Journal of Psycho-Educational Sciences*, 4(1), 43-50.
- Aflaki Fard, H., & Akbari, M. R. (2019). The relationship between time management and creativity and self-regulation in sixth-grade elementary students of Saadabad. *Scientific-Promotional Journal of Education Research*, 5(18), Summer 2019. (In Persian)
- Akbasli, S., Sahin, M. & Yaykiran, Z. (2016). The effect of reading comprehension on the performance in science and mathematics. *Journal of Education and Practice*, 7(16), 108-121.
- Al-Raqqad, Y.M., Ismail, H.H. & Al-Raqqad, K.M. (2019). The impact of reading strategies on EFL students: A research Review. *International Journal of English, Literature and Social Sciences (IJELS)*, 4(6), 2042-2048.
- Babaei Nadelooei, K. (2012). The effectiveness of time management skills training on procrastination, self-efficacy, and academic time management. Master's thesis in Psychology, Mohaghegh Ardabili University. (In Persian)
- Babaei, K., Abdi, H., & Sattari, M. (2017). The effectiveness of time management skills training on procrastination, self-efficacy, and academic time management in high school students. 4th International Conference on Recent Innovations in Psychology, Counseling and Behavioral Sciences, Tehran, 1-5. (In Persian)
- Balan, S., Esther Katenga, J. & Simon, A. (2019). Reading Habits and Their Influence on Academic Achievement among Students at Asia Pacific International University. *Abstract Proceedings International Scholars Conference*, 7 (Issue 1), 1490-1516. <https://doi.org/10.35974/isc.v7i1.928>.
- Boekaerts, M., Maes, S. & Karoly, P. (2005). *Self-regulation across domains of applied psychology: Is there an emerging consensus?* *Applied Psychology: An International Review*.0225; 54(2): 149-154.
- Claessnes, B.T.C., Rutte, C.G., Van Eerd, W & Roe, R.A. (2007). Reviw of the time management literature personnalereviw *Journal of organizational behavior*, 36, pp: 255-276.
- Dartaaj, A., Lesani, M., & Rostami Nasab, A. (2013). The effect of time management skills training on self-efficacy of psychology students of Shahid Bahonar University of Kerman. *Research in Educational System*, 7(21), 44-56. (In Persian)
- Furqoni, Y. & Mufidah, L. (2018). The Effect of Time Management on Academic Achievement among University Students Who Memorizing Qur'an (Hifdz). *4th ASEAN Conference on Psychology, Counselling and Humanities, Advances in Social Science, Education and Humanities Research (ASSEHR)*, 304, 150-153.
- Gaskill, P. J., and Woolfolk H.A. (2002). "Self-Efficacy and self-regulated learning: The dynamic duo in school performance. In Aronson, J., and Cordova, D. (eds.), *Improving Education: Classic and Contemporary Lessons From Psychology*". Academic Press, New York, pp. 183–206.
- Greenberg J. (2000). *Comprehensive Stress Mangement*: Mcgraw-hill Higher Education; 2000.
- Heidari, R. (2018). The relationship between study approaches and time management with academic achievement in first middle school students of Tabyad city. Islamic Azad University, Tabyad Unit. (In Persian)
- Jinks, J. L., & Morgan, V. (1999). *Children's perceived academic self-efficacy: An Inventory Scale. The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 72:4, 224-230, DOI: [10.1080/00098659909599398](https://doi.org/10.1080/00098659909599398).
- Jordan, J., Parker, M., Li, X. et al. (2015). Effect of Study Skills Program Participation on Undergraduate Student Academic

- Performance. *International Journal of Education* ISSN 1948-5476. Vol. 7, No. 1.
- Karimzadeh, M., & Mohseni, N. C. (2006). Investigating the relationship between academic self-efficacy and academic achievement among second-year high school girls in Tehran (specializing in mathematics and humanities). *Social-Psychological Studies of Women*, 4(2), 29-45. (In Persian)
- Kemmelmeier, M. Danielson, C. & Bastten. J. (2005). *What in a grad?* Academic success and political orientation. *Personality and social psychology Bulletin*, 31, 1386-1399.
- Khiat, H. (2019). Using automated time management enablers to improve self-regulated learning. *Active learning in higher education*, 00(0), 1-13.
- Koch, C. J., & Kleinmann, M. (2002). Astich in time saves nine. Behavioral decision making explanations for time management problems. *European Journal of work&organizational psychology*, 11, pp: 199-217.
- Lewis, C. A. (2006). *Academic notivation among college student graguate school*, fwayne university.
- Lounsbury, J. W. Steel, R. P. Loveland, J. M. & Gibson, L. W. (2004). An investigation of personality traits in relation to adolescent school absenteeism. *Journal of Youth and Adolescence*, 33, 457- 466.
- Madbar, A. (2020). The effectiveness of time management and self-regulation training on purposefulness, motivation, and academic self-efficacy of students in Tehran. Master's thesis in Educational Psychology, Payame Noor University. (In Persian)
- Mahmoud Taha, A. (2021). Reading Habits among Students and Their Effect on their Academic Performance: A Study of Students of a Public School in Al Ain City in the UAE. *Global Scientific Journals*, 9(Issue 6) 402-421.
- Mardali, L., & Koushki, S. (2008). The relationship between self-regulation and academic achievement. *Thought and Behavior*, 7(2), 69-78. (In Persian)
- Mirza, Q., Ansari, S., Khatoon, S., Pathan, H., Arslan Raheem, M. & Mushtaq, F. (2021). Gender Impact on Engineering Students' Reading Habits and Performance: A Study of Pakistani University Students. *The Asian ESP Journal*, 17(Issue 3,2), 128-144.
- Nasri, S., & Bayanati, M. (2015). Modeling the structural relationships of motivational styles, self-efficacy with academic self-regulation in students. *Research in Education Journal*, Volume 1, Issue 5, 13-31. (In Persian)
- Noohi, E., Fallah Nejad, N., Gorusi, B., & Haghdoost, A. A. (2013). Investigating the effect of study skills training on learning and study strategies, self-efficacy, and satisfaction of new nursing and midwifery students at Kerman University of Medical Sciences. *Steps to Development in Medical Education*, 10(4), 321-331. (In Persian)
- Pajares, F. & Miller, M. D. (1997). "Mathematics self-efficacy and mathematical problem solving: Implications of using different forms". *Journal of Experimental Education*, 65(3), 213-229.
- Pajares, F., & Graham, L. (1999). "Self-efficacy, motivation constructs, and mathematics performance of entering middle school students". *Contemporary Educational Psychology*, 24, 124-139.
- Parsakia, K. (2023). The Effect of Chatbots and AI on The Self-Efficacy, Self-Esteem, Problem-Solving and Critical Thinking of Students. *Health Nexus*, 1(1), 71-76.
- Parsakia, K., Rostami, M., & Saadati, S. M. (2023). Validity and reliability of digital self-efficacy scale in Iranian sample. *Journal of Adolescent and Youth Psychological Studies*, 4(4), 152-158.
- Pintrich, P. A., & Schunk, D. A. (2007). *Motivation in education*. Translated by Mehrnaz Shaharay. Tehran: Elm Publication. (Original work published 2002). (In Persian)
- Pourmohammad Z, Esmailpour K. (2015). Effectiveness of Self-Regulation Training on the Academic Achievement of Technical High School Male Students of Tabriz. *Journal of Instruction and Evaluation*. 2015; 8(31): 93-102. [In Persian]
- Poursaridarg, K., & Yari, J. (2017). Investigating the effect of study methods on exam anxiety in female high school students in District 3 of Tabriz. *Women and Family Studies*, 10(38), 7-23. (In Persian)
- Premuzic, T. & Frunham. A. (2003). Personality traits and academic examination performance. *European Journal of personality*, 17, 237-250.
- Qalavandi, H., Amani Sari Begloo, J., Saleh Najafi, M., & Amani, H. (2013). The relationship between learning component strategies and academic performance components of students. *New Educational Approaches*, Faculty of Educational Sciences

- and Psychology, University of Isfahan, 18(2), 55-72. (In Persian)
- Saffarian Tousi, M. R. (1996). Investigating the relationship between self-regulatory learning strategies and academic performance of male third-year guidance students in Mashhad. Master's thesis, Tarbiat Moallem University. (In Persian)
- Salimi Nezhad, S., Sheikh Aram, A., & Moradian, A. (2016). The impact of teaching study methods (reading without writing, underlining important points, note-taking, and summarizing) on academic engagement and academic achievement of sixth-grade students in Kuhdasht. First International Conference on Management, Accounting, Educational Sciences, and Economic Resistance; Action and Operation, Sari, 1-15. (In Persian)
- Schunk, D.H. & Zimmerman, B.J. (1997). *Social origins of self-regulatory competence*. Educational Psychology, 32, 195-208.
- Seo, E. H. (2008). *self efficacy as a mediator in the relationship between perfectionism and academic procrastination*.
- Sevari, K., & Kandy, M. (2011). Time management skills impact on self-efficacy and academic performance. *Journal of American Science*, 7(12), 720-726.
- Sowari, K., & Arabzadeh, S. (2013). Construction and determination of psychometric properties of Karim Sowari and Shima Arabzadeh's Academic Self-Regulation Questionnaire. *School Psychology Journal*, Summer 2013, 2(2), 75-92. (In Persian)
- Sowari, K., & Nouri, A. (2014). Comparison of time management skill and achievement motivation between students with high and low academic performance. *Educational Psychology Quarterly*, 31st issue, 10th year, Spring 2014. (In Persian)
- Strabeel, T (2011). Development and datametric properties of a scale measuring students perception of the classroom assessment environment. *International Journal of Instruction*. Vol 4, No 1, 106- 120.
- Svartdal, F., Grom Sale, R., Dahl, T.I., Nemtcin, E. & Gamst-Klaussen, T. (2021). Study Habits and Procrastination: The Role of Academic Self-Efficacy. *Scandinavian Journal of Educational Research*, 1-20. DOI: 10.1080/00313831.2021.1959393.
- Taghani, A. (2018). The effectiveness of study skills on self-efficacy, academic enthusiasm, and academic performance. Master's thesis in Educational Planning, Islamic Azad University, Tabyad Unit. (In Persian)
- Tracy, B. (2006). Time is money. Translated by Monireh Etezadi. Tehran: Rashin Publications, Third Edition. (Original work published 2004). (In Persian)
- Trueman, M & Hartely, J. (1996). A comparison between the time management skills & academic performance of mature & traditional entry university students. *Journal of Higher Education*. 32, 2. 199-215.
- Vafouri, J., & Karamati, H. (2017). The effect of teaching study methods with an emphasis on cognitive and metacognitive strategies on the academic progress and achievement motivation of students. *Cognitive Psychology Quarterly*, 5(2). (In Persian)
- Xiao-hua, Y. (2007). *Developing time-management skills in the foreign language classroom* 4, g (serial NO.43).
- Zimmerman B. J. (2000). *Attaining self-regulation: A social cognitive perspective*. In M. Boekaerts, M. Zeidner, P. Pintrich (Eds.). *Handbook of self-regulation* (pp. 13–39). California: Academic Press.