KMAN PUBLISHING INSTITUTE
Journal Website

Article history:
Received 05 February 2024
Revised 10 March 2024
Accepted 22 March 2024
Published online 01 June 2024

Journal of Assessment and Research in Applied Counseling

Volume 6, Issue 2, pp 95-104

E-ISSN: 3041-8518

Comparing the Effectiveness of Study Methods and Time Management Training on Academic Self-Regulation Among Male and Female Students

Jafar. Saman Azari[1], Sholeh. Livarjani[2*], Masoumeh. Azmoodeh[2]

[1] Ph.D Candidate in Educational Psychology, Humanity and Educational Sciences, Tabriz branch, Islamic Azad University, Tabriz, Iran
[2] Assistant Professor of Psychology, Tabriz branch, Islamic Azad University, Tabriz, Iran

*** Corresponding author email address**: livarjani.sh@gmail.com

A r t i c l e I n f o

Article type:
Original Research

How to cite this article:
Saman Azari, J., Livarjani, S., & Azmoodeh M. (2024). Comparing the Effectiveness of Study Methods and Time Management Training on Academic Self-Regulation Among Male and Female Students. *Journal of Assessment and Research in Applied Counseling, 6*(2), 95-104.
http://dx.doi.org/10.61838/kman.jarac.6.2.12

A B S T R A C T

Objective: The current article aims to compare the effectiveness of study methods and time management training on the academic self-regulation of students.

Methods and Materials: The research method was quasi-experimental, employing a pre-test-post-test design with a control group. The population consisted of all twelfth-grade male and female students in Tabriz schools during the academic year 2021-2022. Fifty-two students were selected as the sample through single-stage cluster sampling and were assigned into two groups: experimental (26 students, including 13 females and 13 males) and control (26 students, including 13 females and 13 males). The Savari and Arabzadeh questionnaire was used to measure academic self-regulation. Before the intervention, a pre-test of academic self-regulation was conducted for both groups. The experimental group received training on study methods and time management through an educational package in eight sessions, while the control group did not receive any educational intervention. After the intervention, in the post-test phase, both groups again answered the pre-test instrument. Data were analyzed using one-way multivariate and two-way multivariate analysis of covariance tests.

Findings: The results of the two-way multivariate analysis of covariance also indicated that the training on study methods and time management was effective on the academic self-regulation of both male and female students and its sub-scales. It showed a higher effectiveness in overall self-regulation and particularly in the help-seeking sub-scale among males ($p < 0.05$). For other sub-scales of academic self-regulation, the effectiveness of study methods and time management training was at the same level for both genders ($p < 0.008$).

Conclusion: Therefore, it can be concluded that training in study methods and time management can be used as an effective intervention for high school students.

Keywords: *Study methods, Time management, Academic self-regulation.*

1. Introduction

The purpose of educating students and spending considerable time in school is to facilitate learning, knowledge acquisition, and successful academic performance. Various personality, academic, and social factors influence the achievement of this goal, among which academic factors are deemed the most significant. In fact, individuals' academic performance is considered the foundation of success and advancement at any educational level. Therefore, its improvement and development are among the key objectives and priorities of educational institutions. Furthermore, self-regulation is presented as a significant construct in education, receiving attention from teachers, educators, and parents (Ragusa et al., 2023). Self-regulated learning, as a contemporary learning theory, enables us to apply our knowledge and awareness in real life and cultivate students in a way that they can independently form their foundational knowledge without relying on others (Saberi Fard & Hajiarbabi, 2019; Smit et al., 2017). Self-regulated learning refers to the active participation of the learner in the learning process, behaviorally, motivationally, cognitively, and metacognitively, to maximize learning (Ziegler & Opdenakker, 2018; Zimmerman & Martinez-Pons, 1990; Zolfaghari & Elahi, 2020). This type of learning involves a combination of cognitive and metacognitive skills, such as planning and organizing strategies for learning, goal setting, self-control, self-evaluation, and resource management, where learners use emotional, cognitive, motivational, and behavioral feedback to adapt or modify their strategies and behaviors for achieving goals, controlling learning, motivation, behavior, and cognition (Vafadar et al., 2014; Versteeg et al., 2021). Moreover, the research by Missey and Pinter (2008) indicates that girls generally use self-regulatory strategies more than boys do.

Factors influencing the enhancement of self-regulation and, ultimately, students' academic performance are numerous. One of these perspectives is time management. Proponents of the time management perspective emphasize that recording and managing time assists individuals in effectively and efficiently allocating their time (Pintrich & De Groot, 1990; Safarzadeh & Jayervand, 2019). Thus, time and its management are considered effective factors in learning. Time is viewed as a strategic resource for advancing goals and realizing human aspirations. McKenzie was the first to introduce the concept of a time management training program, asserting that training these skills, by providing appropriate insights about time-consuming activities, changing the amount of time spent, and prioritizing, has positive effects on time management behaviors (Agormedah et al., 2021; Bahador et al., 2023; Irwansyah et al., 2021). The belief about how individuals decide to optimally use their time forms the theoretical core of time management theory. According to this viewpoint, the purpose of management is to prevent time wastage and regulate work (Chmiliar, 2011; Freudenberg & Samarkovski, 2014; Irwansyah et al., 2021; Scherzinger & Wettstein, 2019).

Examining the behavior of successful and effective individuals reveals that time plays an unparalleled role for them; to the extent that they consider time before starting any task and aim at managing their time by eliminating unproductive and irrelevant activities. In this regard, some believe that people differ in terms of time management; some carefully plan their time and employ various time management techniques, while others do not. Therefore, given that time is a limited resource, its control and management, especially in educational environments and for students, is of great significance. Most students do not have a structured plan for managing their study time throughout the academic year, leading to regression and failure in their academic performance (Agormedah et al., 2021; Gurumoorthy & Kumar, 2020). Moreover, time management, as a method for monitoring and controlling time by enhancing learners' insights about how to use time, is considered one of the most crucial components affecting academic progress. Planning and allocating time leads to a greater understanding of the available time, thereby enabling individuals to use their time in a targeted and structured manner. Campbell and Svenson (1992) assert that effective time management strategies impact the improvement of academic performance. Additionally, time management skills include techniques for setting short-term goals, how to translate these goals into tasks and activities for quicker execution, how to plan and prioritize daily tasks, and how to prevent work interruptions that create limitations in task performance (Kordzanganeh et al., 2022; Marchant et al., 2007; Scherzinger & Wettstein, 2019).

On the other hand, in various schools, given the individual, familial, and socio-economic characteristics of students, we face issues that can individually or collectively affect students' academic performance. There are students who, despite similar talents, abilities, and learning facilities, have stark differences in academic performance. However, some students, despite having average talent, demonstrate high perseverance and performance. This could be because,

JARAC Assessment and Research in Applied Counseling
E-ISSN: 3041-8518

in addition to individual characteristics and students' personality traits, some acquired and educational factors also influence their education, learning, and academic progress, one of the most important of which is the utilization of correct study strategies. Study skills, as learning tools, help learners prepare new information to be combined with previously learned information and stored in long-term memory. Experience has shown that many students study for hours but are not satisfied with the outcomes, and the percentage of what is learned is low. These individuals, due to unawareness of the correct learning and study methods, make a lot of effort to learn and waste a lot of time and energy but do not achieve the desired result, whereas they could have learned better and more comfortably and been successful in exams by using the correct learning and study strategies (Acmed-Ismael, 2021; Baas et al., 2015; Broadbent & Poon, 2015). The use of study skills significantly impacts many aspects of daily learning and education and is one of the main frameworks for understanding students' learning. Many believe that one of the most important factors for academic success is familiarity with study skills (Broadbent & Poon, 2015; Khansir et al., 2021; Zarenezhad et al., 2019; Zimmerman & Martinez-Pons, 1990).

Study skills, as an educational approach, can enhance and develop students' self-regulated learning skills, improve students' study habits, and lead to learning in students. For example, when a student sees a classmate taking notes on their study schedule or discussing it, they feel similarly that they too have the ability to manage their study like their classmate, and approach their academic tasks with greater self-efficacy. Moreover, students who use correct study strategies achieve greater success compared to students who do not use correct study strategies (Parsakia, 2023). In today's world, which is the age of information and the battle of ideas and brains, where individuals are faced with an ever-increasing plethora of information including books, magazines, newspapers, etc., one cannot proceed with the same old methods. In today's world, studying is a necessity for progress. Study methods are separate techniques that can usually be learned in a short time and applied across all or most study areas; therefore, they should be distinguished from specific methods related to a particular study field, such as music or technology, and innate abilities of students, such as aspects of intelligence or learning styles (Dorça et al., 2013; Friedel & Rudd, 2006; Parsakia, 2023; Priyaadharshini & Sundaram, 2018). Most students, by better understanding the process of self-regulated learning, can improve their academic progress; hence, familiarity with self-regulated learning skills plays a significant role in this matter. However, for students to benefit from academic self-regulation with the aim of improving their academic performance, various methods such as time management and study skills are involved. Many students become discouraged and academically unsuccessful due to the lack of study and learning strategy skills; while learning strategies serve as tools for solving academic problems and help students develop skills needed throughout their education. Identifying and strengthening these strategies help individuals rely on their abilities, discover and enhance them, enabling them to successfully complete high school and university education; therefore, if students want to succeed, they must possess self-concept and self-regulated learning strategies (Ashrafzadeh et al., 2017; Golmohammad Nazhad Bahrami & Asghar Zadeh, 2020). The previoys findings indicate the impact of teaching study skills (reading without writing, highlighting important points, note-taking, and summarizing) on students' academic performance. Additionally, they found that teaching reading comprehension and study methods, note-taking and writing, and exam techniques and stress management, lead to increased academic progress and motivation for advancement in students (Freudenberg & Samarkovski, 2014; Golmohammad Nazhad Bahrami & Asghar Zadeh, 2020; Vafadar et al., 2014; Zarenezhad et al., 2019).

However, as observed from the research findings mentioned, there is a research gap concerning the effectiveness of time management training on academic self-regulation of students and its sub-scales. Because regarding the training of study methods and time management on students' academic self-regulation, similar researches have not been extensively conducted. The majority of research has addressed the impact of self-regulation training and its sub-scales on time management, academic success, and self-concept of students in only a few studies. Moreover, most have focused on increasing students' morale for self-regulation at school. The concept of academic self-regulation deals with acquiring skills in planning, organizing, monitoring learning flows, changing and correcting the learning process, and individuals' thinking. These skills can later be used to solve life's problems, make appropriate decisions, and for lifelong learning. In fact, self-regulated learning is a vital prerequisite for a student's success in school and their academic performance. However, combined training of study skills and time management has a higher effectiveness in academic self-regulation and

JARAC Assessment and Research in Applied Counseling
E-ISSN: 3041-8518

consequently on students' academic performance, which is also addressed in this research regarding the impact of these two factors on improving academic self-regulation. Because students across all grades and fields of study may not be able to succeed in school challenges, the reason can be sought not in the absence of ability but in the lack of application of learning and study skills and time management (Broadbent & Poon, 2015; Chmiliar, 2011).

Given the theories and research outcomes presented; for improving students' academic performance and proper utilization of students' academic self-regulation, teaching study methods and time management can be effective. Despite the established relationship between study skills and academic performance in many studies, it seems that this relationship extends beyond the realm of academic performance and also affects cognitive constructs such as academic self-regulation. Therefore, considering the role and importance of students' academic self-regulation in their academic performance, and given the significant relationship between time management and study methods with academic performance; the question that prompted the researcher to study is whether teaching study methods and time management together is effective in improving the academic self-regulation of twelfth-grade male and female students in the field of experimental sciences in Tabriz city. Additionally, considering the research gap regarding the comparison of this type of effectiveness among male and female students, this issue is also addressed in the present article. The results of this research can guide planners and school teachers in teaching time management and study methods to students with the aim of improving academic performance through academic self-regulation.

2. Methods and Materials

2.1. Study Design and Participants

The research method is based on semi-experimental designs, utilizing a pre-test-post-test design with a control group. The population included all twelfth-grade male and female students in the field of experimental sciences in Tabriz city in the academic year 2021-2022. To determine the study sample, 52 twelfth-grade students in the field of experimental sciences were selected from both girls' and boys' schools in Tabriz city through single-stage cluster sampling and randomly assigned into two separate groups of 26 [experimental group (13 girls and 13 boys) and control group (13 girls and 13 boys)], observing the entry criteria for the research and randomly replacing them. Entry criteria for the study included: twelfth-grade students in the field of experimental sciences in Tabriz city, not having participated in intervention sessions in the last six months, students' interest in participating in the research, and parents' informed consent for participation in the research. Exit criteria included: absence from more than two sessions, unwillingness to cooperate further in the research, and concurrent participation in other intervention programs.

Before conducting the research, written consent was obtained from the parents of the students involved in the study. Additionally, the American Psychological Association's ethical codes, including respect for the principle of confidentiality of results, the possibility of subjects withdrawing from the research, providing sufficient information about how the training and research are conducted, and ensuring that the intervention does not cause any physical harm, were observed. Subsequently, participating students completed the academic self-regulation questionnaire, then were randomly divided into two groups of 26. The experimental group underwent an intervention on "Study Skills and Time Management" in eight 90-minute sessions. The control group did not receive any educational intervention. After the intervention sessions, both groups again completed the academic self-regulation questionnaire. To adhere to ethical principles, training sessions were held for the control group after the completion of the research.

2.2. Measures

2.2.1. Academic Self-Regulation

The Savari and Arabzadeh (2013) questionnaire, consisting of 30 items across six sub-scales: memory strategy (5 items), goal setting (3 items), self-evaluation (6 items), help-seeking (6 items), responsibility (4 items), and organization (6 items), using a five-point scale (1 to 5), was used to measure students' academic self-regulation. A score between 30 to 60 indicates low academic self-regulation, a score between 60 to 90 indicates medium academic self-regulation, and a score above 90 indicates high academic self-regulation. Its validity was examined and confirmed through confirmatory factor analysis. Additionally, the reliability of the academic self-regulation questionnaire was obtained through Cronbach's alpha, with the total questionnaire at 0.87 and sub-scales above 0.70. In the present study, the reliability of the questionnaire was confirmed using Cronbach's alpha (> 0.70) (Safarzadeh & Jayervand, 2019).

JARAC Assessment and Research in Applied Counseling
E-ISSN: 3041-8518

2.3. *Intervention*

2.3.1. *Study Skills and Time Management Training*

A protocol for teaching study skills and time management was developed over eight 90-minute training sessions (Broadbent & Poon, 2015; Chmiliar, 2011; Irwansyah et al., 2021; Kordzanganeh et al., 2022; Marchant et al., 2007). The content of the sessions was delivered to the experimental group members by the researcher, who has a long history of conducting such research:

Session One: Familiarization with the importance of correct study methods and the value of time management

Session Two: Teaching deep study methods using the PQR method

Session Three: Teaching correct study steps for mathematics

Session Four: Teaching correct study steps for biology

Session Five: Teaching principles of conceptual exams and how to approach them

Session Six: Teaching principles of proper planning and time management

Session Seven: Teaching tips and guidelines for planning lessons

Session Eight: Teaching evaluation of plans and methods

2.4. *Data analysis*

For data analysis, SPSS software version 24 was utilized. The results were analyzed in two sections: descriptive statistics, including means and standard deviations, and inferential statistics, involving assumptions and tests of hypotheses using univariate and multivariate analysis of covariance.

3. Findings and Results

In Table 1, descriptive statistics of the studied variables are presented by type of test and groups. To examine the comparative effectiveness of study methods and time management training on the academic self-regulation of male and female students, a two-way multivariate analysis of covariance was used. Initially, the assumptions of this test were examined. The assumption of normality in both groups was assessed as follows: for memory strategy (experimental group statistic = 0.19, $p > 0.05$; control group statistic = 0.16, $p > 0.05$), and similarly for goal setting, self-evaluation, help-seeking, responsibility, organization, and overall academic self-regulation, indicating no violation of this assumption. Another assumption, the homogeneity of variances, was tested with Levine's test, showing no violation across all sub-scales of academic self-regulation. The assumption of equality of variance-covariance matrices was also not violated (Box's M = 104.82, variance = 1.25, $p < 0.001$). Therefore, after all assumptions were met, a two-way multivariate analysis of covariance was conducted, and the results in Table 4 indicated a significant difference in the linear combination of variables (variance = 10.05, $p < 0.05$, Wilks' Lambda = 0.36, effect size = 0.63).

Table 1

Descriptive Statistics of Academic Self-Regulation and Its Subscales

Variable	Gender	Group	Pre-test Mean	Pre-test SD	Post-test Mean	Post-test SD
Academic Self-Regulation						
Memory Strategy	Female	Experimental	19.53	2.29	20.07	2.13
	Female	Control	17.00	4.84	16.46	3.33
	Male	Experimental	17.41	5.53	20.00	2.62
	Male	Control	16.16	6.11	15.75	3.01
Goal Setting	Female	Experimental	10.84	1.57	12.61	2.05
	Female	Control	10.07	2.92	10.53	2.53
	Male	Experimental	9.75	3.03	13.41	1.44
	Male	Control	10.25	3.51	9.66	2.22
Self-Evaluation	Female	Experimental	23.00	3.39	22.03	4.06
	Female	Control	22.76	3.46	20.92	2.56
	Male	Experimental	22.08	3.52	24.16	3.24
	Male	Control	20.00	5.68	19.08	3.52
Help-Seeking	Female	Experimental	23.15	3.02	22.00	1.87
	Female	Control	21.38	6.18	17.00	3.71
	Male	Experimental	18.83	4.82	23.83	4.28
	Male	Control	17.33	5.36	18.05	4.81
Responsibility	Female	Experimental	16.00	2.04	16.07	2.72

JARAC Assessment and Research in Applied Counseling
E-ISSN: 3041-8518

	Female	Control	12.92	4.07	12.00	2.44
	Male	Experimental	14.08	3.60	16.00	1.85
	Male	Control	14.25	3.59	13.00	3.19
Organization	Female	Experimental	25.53	2.25	27.15	2.37
	Female	Control	23.53	5.83	22.69	4.64
	Male	Experimental	23.33	4.67	26.33	3.11
	Male	Control	22.08	7.25	18.08	5.08
Overall Academic Self-Regulation	Female	Experimental	118.07	9.34	120.23	9.12
	Female	Control	107.69	21.46	99.61	10.11
	Male	Experimental	105.05	19.05	123.75	11.52
	Male	Control	105.83	18.81	97.25	9.65

According to Table 2, results showed a significant difference in academic self-regulation among students between groups ($p < 0.05$; mean academic self-regulation of the experimental group = 121.44; mean academic self-regulation of the control group = 99.01). Additionally, a substantial part of the variance in students' academic self-regulation (0.63) in the post-test is related to the effect of study methods and time management training. Another finding indicated a significant difference in the effectiveness of study methods and time management training on academic self-regulation among male and female students, with boys showing significantly higher self-regulation than girls ($p < 0.05$; mean academic self-regulation of girls = 109.46; mean academic self-regulation of boys = 110.99). Moreover, there was no significant interactive effect of group and gender on students' academic self-regulation ($p < 0.05$), meaning there is no significant difference between the academic self-regulation scores of male and female students in the experimental group (study skills and time management training) with each other and also with the scores of male and female students in the control group.

Table 2

Two-Way Multivariate Analysis of Covariance for the Effectiveness of Study Methods and Time Management Training on Academic Self-Regulation Among Students (Wilks' Lambda)

Source	Value	Variance	P-Value	Eta Squared
Group	0.36	10.05	0.000	0.63
Gender	0.62	3.51	0.008	0.37
Group * Gender	0.74	2.02	0.08	0.25

Subsequently, in Table 3, results of the two-way multivariate analysis of covariance for academic self-regulation sub-scales in the post-test, categorized by experimental and control groups, were presented. According to Table 5, results indicated significant differences in all sub-scales of memory strategy, goal setting, self-evaluation, help-seeking, responsibility, and organization between groups ($p < 0.008$). Furthermore, a portion of the variance changes in memory strategy (0.37), goal setting (0.41), self-evaluation (0.17), help-seeking (0.32), responsibility (0.29), and organization (0.41) in the post-test is related to the effect of study methods and time management training. Other findings showed no significant gender effect on the sub-scales of memory strategy, goal setting, self-evaluation, responsibility, and organization ($p < 0.008$), indicating no significant difference between the scores of male and female students in the experimental group (study skills and time management training) with each other and also with the scores of male and female students in the control group. However, in the help-seeking sub-scale, the effectiveness of study methods and time management training was different among boys and girls, being higher among boys ($p < 0.008$; mean help-seeking of girls = 18.83; mean help-seeking of boys = 21.88).

JARAC Assessment and Research in Applied Counseling
E-ISSN: 3041-8518

Table 3

Results of Two-Way Multivariate Analysis of Covariance for Academic Self-Regulation Subscales in the Post-test by Experimental and Control Groups

Subscale	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	P-Value	Eta Squared
Group						
Memory Strategy	153.75	1	153.75	23.78	0.000	0.37
Goal Setting	119.8	1	119.8	27.87	0.000	0.41
Self-Evaluation	105.49	1	105.49	8.59	0.006	0.17
Help-Seeking	250.08	1	250.08	18.83	0.000	0.32
Responsibility	115.88	1	115.88	16.72	0.000	0.29
Organization	362.61	1	362.61	28.49	0.000	0.41
Gender						
Memory Strategy	10.58	1	10.58	1.63	0.20	0.03
Goal Setting	0.11	1	0.11	0.02	0.87	0.001
Self-Evaluation	0.03	1	0.03	0.003	0.95	0.000
Help-Seeking	93.69	1	93.69	7.05	0.007	0.15
Responsibility	8.95	1	8.95	1.29	0.26	0.03
Organization	33.14	1	33.14	2.6	0.11	0.06
Group * Gender						
Memory Strategy	4.01	1	4.01	0.62	0.43	0.01
Goal Setting	6.48	1	6.48	1.5	0.22	0.03
Self-Evaluation	50.81	1	50.81	4.13	0.04	0.09
Help-Seeking	0.88	1	0.88	0.06	0.79	0.002
Responsibility	1.92	1	1.92	0.27	0.6	0.007
Organization	27.07	1	27.07	2.12	0.15	0.05

4. Discussion and Conclusion

This article aimed to compare the effectiveness of teaching study methods and time management on the academic self-regulation of twelfth-grade male and female students in the field of experimental sciences in Tabriz. The results indicated the effectiveness of teaching study methods and time management in enhancing students' academic self-regulation (63%), with this effect being higher among boys (mean = 121.44) compared to girls (mean = 99.01). These findings are consistent with the results of previous studies (Broadbent & Poon, 2015; Chmiliar, 2011; Irwansyah et al., 2021; Kordzanganeh et al., 2022; Marchant et al., 2007).

The use of cognitive and metacognitive strategies in academic self-regulation is among the primary abilities that students perform. Control and effort to plan time and choose an appropriate place as part of organization, how to plan and control mental processes for achieving personal goals, creating a suitable learning environment as part of memory strategies, sufficient effort to participate in controlling and regulating academic tasks and classroom atmosphere as part of responsibility in cognitive strategies take place. Setting learning goals as part of goal setting, asking questions about the material being read as part of help-seeking, and evaluating what has been read as part of self-evaluation, and regulating the pace of study and learning also occur in metacognitive strategies. Based on the discussed content and in line with the results of the mentioned studies, by teaching correct study skills and time management to twelfth-grade students in the field of experimental sciences in Tabriz, we observed higher academic self-regulation and its sub-scales compared to the control group. Indeed, after completing this training course, students learned appropriate memory strategies through summarizing and visualizing words in mind and asking questions for themselves; they also set their goals by scheduling their time and noting their academic tasks in their notebooks. Additionally, after studying a lesson, they evaluated the content and, if necessary, asked questions of knowledgeable individuals such as teachers, classmates, or parents, used various sources about the existing problem, and addressed their questions and problems. Furthermore, by doing group work with other students, they increased their responsibility. Finally, by providing a specific place for study and learning the connection between new and old materials, they organized their study.

However, as the results of the current hypothesis showed, goal setting and organization, each with 41%, and then memory strategies with 37%, were more influenced by the training of study skills and time management than other

JARAC Assessment and Research in Applied Counseling
E-ISSN: 3041-8518

components of academic self-regulation. The reason for this can be attributed to the students' grade level and their preparedness for the university entrance exam (konkur). Because in the twelfth grade, students study not only to pass that academic year but also to plan and prepare for the university entrance exam, determining their future fate, which involves a lot of mental engagement.

It is noteworthy that male students in the study showed higher effectiveness from the training of study skills and time management in the help-seeking sub-scale and in overall academic self-regulation compared to females. This could be due to the nature of male students based on their mischievousness and the lack of order and planning in daily study similar to girls, not comparing themselves with other students, and not creating intense and stressful competition with classmates for higher scores or better university rankings. With the mentioned training, these aspects showed a greater increase among boys compared to girls. However, in other sub-scales such as memory strategies, goal setting, self-evaluation, responsibility, and organization, the training of study skills and time management was equally effective for both male and female students.

5. Limitations & Suggestions

The study, despite its insights, is subject to certain limitations that must be acknowledged. These include its specific focus on twelfth-grade students in the field of experimental sciences in the city of Tabriz, which limits the generalizability of the findings to other educational contexts, ages, and disciplines. The intervention was also limited to study methods and time management training, not considering other potential factors that could affect academic self-regulation, such as emotional and social skills training. Furthermore, the reliance on self-reported measures for evaluating academic self-regulation could introduce bias. The short duration of the intervention might not capture long-term effects on academic self-regulation and performance. Additionally, the study did not account for the potential differences in the quality of teaching and learning environments among the participants.

Given the proven effectiveness of teaching study methods and time management in improving the academic self-regulation of male and female twelfth-grade students in the field of experimental sciences in Tabriz, it is recommended that informational resources, as a motivational factor, be included in students' educational programs to enhance study habits in academic self-regulation and improve students' academic performance. Furthermore, through proper training and counseling regarding study skills and methods, students' academic self-regulation can also be increased. Educational planners should incorporate training on appropriate methods and strategies for studying into school curriculums and teach correct usage of learning processes in language accessible to children and teenagers of different ages and educational levels by expert counselors.

Considering that school officials, including directors, teachers, and counselors, lack some practical expertise in teaching study skills and time management, it is suggested that workshops or in-service training courses be provided according to the type of subjects and educational field so they can possess sufficient knowledge in teaching and educating students. To improve students' study methods and teach modern study techniques, proper planning and development of structured lessons in schools are recommended to assist students. Lastly, given the importance of study habits in academic self-regulation and performance improvement, it is suggested that educational and explanatory courses for parents regarding the importance of overseeing their children at home for implementing study skills and time management during study sessions be organized every few months in schools. Establishing communication between school officials and parents through educational and counseling sessions could focus on enhancing students' academic self-regulation and performance.

Acknowledgments

We would like to express our appreciation and gratitude to all those who cooperated in carrying out this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

JARAC Assessment and Research in Applied Counseling
E-ISSN: 3041-8518

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

Authors' Contributions

All authors equally contributed in this article.

References

Acmed-Ismael, F. (2021). Metacognitive learning strategies: their effects on the reading comprehension performance of grade five pupils. *International Journal of Linguistics, Literature and Translation*, *4*(5), 107-117. https://doi.org/10.32996/ijllt.2021.4.5.10

Agormedah, E. K., Britwum, F., Amoah, S., Acheampong, H. Y., Adjei, E., & Nyamekye, F. (2021). Assessment of Time Management Practices and Students' Academic Achievement: The Moderating Role of Gender. *International Journal of Social Sciences and Educational Studies*. https://doi.org/10.23918/ijsses.v8i4p171

Ashrafzadeh, S., Khezrimoghadam, N., & Manzari Tavakoli, V. (2017). Effectiveness of motivational interviewing on the academic self-efficacy and problem solving of female students [Research]. *Journal of Psychological Science*, *16*(63), 413-428. http://psychologicalscience.ir/article-1-143-en.html

Baas, D., Castelijns, J., Vermeulen, M., Martens, R., & Segers, M. (2015). The relation between Assessment for Learning and elementary students' cognitive and metacognitive strategy use. *British Journal of Educational Psychology*, *85*(1), 33-46. https://doi.org/10.1111/bjep.12058

Bahador, F., Sabahi, A., Jalali, S., & Ameri, F. (2023). Investigating the Role of Artificial Intelligence in Management of Diabetes in Iran: A Systematic Review [Review]. *Payavard Salamat*, *16*(6), 504-514. http://payavard.tums.ac.ir/article-1-7306-en.html

Broadbent, J., & Poon, W. L. (2015). Self-regulated learning strategies & academic achievement in online higher education learning environments: A systematic review. *The Internet and Higher Education*, *27*, 1-13. https://doi.org/10.1016/j.iheduc.2015.04.007

Chmiliar, L. (2011). Self Regulation Skills and the Post Secondary Distance Learner. *Procedia - Social and Behavioral Sciences*, *29*, 318-321. https://doi.org/10.1016/j.sbspro.2011.11.245

Dorça, F., Lima, L. V., & Fernandes, M. A. (2013). A New Approach to Discover Students Learning Styles in Adaptive Educational Systems. *Revista Brasileira De Informática Na Educação*. https://doi.org/10.5753/rbie.2013.21.01.76

Freudenberg, B., & Samarkovski, L. (2014). Enthusiasm and the effective modern academic. *Australian Universities Review; v.56 n.1 p.22-31; 2014*, *56*(1), 22-31. https://search.informit.org/doi/10.3316/aeipt.201719

Friedel, C. R., & Rudd, R. D. (2006). Creative Thinking and Learning Styles in Undergraduate Agriculture Students. *Journal of Agricultural Education*. https://doi.org/10.5032/jae.2006.04102

Golmohammad Nazhad Bahrami, G., & Asghar Zadeh, V. (2020). Investigate the effectiveness of critical thinking training on educational self- efficacy and learning styles of secondary high school girl students. *The Journal of New Thoughts on Education*, *16*(3), 89-115. https://doi.org/10.22051/jontoe.2020.20134.2195

Gurumoorthy, R., & Kumar, N. S. (2020). Study of impactful motivational factors to overcome procrastination among engineering students. *Procedia Computer Science*, *172*, 709-717. https://doi.org/10.1016/j.procs.2020.05.101

Irwansyah, M. R., Meitriana, M. A., & Istiqomah, N. m. (2021). Exploring Student Academic Procrastination Based on Time Management, Social Support and Self-Efficacy. https://doi.org/10.2991/assehr.k.211222.019

Khansir, A. A., Dehkordi, F. G., & Mirzaei, M. (2021). Learning Strategies and English Language Teaching. *Theory and Practice in Language Studies*. https://doi.org/10.17507/tpls.1106.19

Kordzanganeh, Z., Bakhtiarpour, S., Hafezi, F., & Bozorgi, Z. D. (2022). Mediating Role of Self-Efficacy Beliefs in the Relationship Between Family Emotional Climate and Time Management With Academic Stress in University Students. *Journal of Research and Health*. https://doi.org/10.32598/jrh.12.3.1958.1

Marchant, M. R., Solano, B. R., Fisher, A. K., Caldarella, P., Young, K. R., & Renshaw, T. L. (2007). Modifying socially withdrawn behavior: A playground intervention for students with internalizing behaviors. *Psychology in the Schools*, *44*(8), 779-794. https://doi.org/10.1002/pits.20265

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. https://doi.org/10.61838/hn.1.1.14

Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, *82*(1), 33-40. https://doi.org/10.1037/0022-0663.82.1.33

Priyaadharshini, M., & Sundaram, B. (2018). Evaluation of Higher-order Thinking Skills Using Learning Style in an Undergraduate Engineering in Flipped Classroom. *Computer Applications in Engineering Education*. https://doi.org/10.1002/cae.22035

Ragusa, A., González-Bernal, J., Trigueros, R., Caggiano, V., Navarro, N., Minguez-Minguez, L. A., Obregón, A. I., & Fernandez-Ortega, C. (2023). Effects of academic self-regulation on procrastination, academic stress and anxiety, resilience and academic performance in a sample of Spanish secondary school students [Original Research]. *Frontiers in psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1073529

Saberi Fard, F., & Hajiarbabi, F. (2019). The relationship between family emotional climate with emotional self-regulation and resilience in university's students [Research]. *Shenakht Journal of Psychology and Psychiatry*, *6*(1), 49-63. https://doi.org/10.29252/shenakht.6.1.49

Safarzadeh, S., & Jayervand, H. (2019). Prediction of Academic Self-efficacy Based on Self-regulated Learning Strategies, Metacognition Strategies And Goal-Progress Orientation In Students. *Rooyesh-e- Ravanshenasi*, *8*(11). http://frooyesh.ir/browse.php?a_code=A-10-1822-1&slc_lang=fa&sid=1

Scherzinger, M., & Wettstein, A. (2019). Classroom disruptions, the teacher–student relationship and classroom management from the perspective of teachers, students and external observers: a multimethod approach. *Learning Environments Research*, *22*(1), 101-116. https://doi.org/10.1007/s10984-018-9269-x

Smit, K., de Brabander, C. J., Boekaerts, M., & Martens, R. L. (2017). The self-regulation of motivation: Motivational strategies as mediator between motivational beliefs and engagement for learning. *International Journal of*

JARAC Assessment and Research in Applied Counseling
E-ISSN: 3041-8518

Educational Research, *82*, 124-134. https://doi.org/10.1016/j.ijer.2017.01.006

Vafadar, Z., Reazei, R., & Navidian, A. (2014). Effectiveness of motivational interviewing on the weight self-efficacy life style in overweight and obese teenager boys. *International Journal of Behavioral Sciences*, *8*(2), 185-193. https://www.behavsci.ir/article_67871_dcb43d654d33eaf100de6b4846669eb5.pdf

Versteeg, M., Bressers, G., Wijnen-Meijer, M., Ommering, B. W. C., de Beaufort, A. J., & Steendijk, P. (2021). What Were You Thinking? Medical Students' Metacognition and Perceptions of Self-Regulated Learning. *Teaching and Learning in Medicine*, *33*(5), 473-482. https://doi.org/10.1080/10401334.2021.1889559

Zarenezhad, S., Soltanikouhbanani, S., & Karshki, H. (2019). The Effectiveness of Self-Regulatory Learning Strategies on Working Memory and Inhibiting the Response of Dyslexic Students. *Neuropsychology*, *5*(18), 109-130. https://doi.org/10.22098/JSP.2020.1062

Ziegler, N., & Opdenakker, M.-C. (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. https://doi.org/10.1016/j.lindif.2018.04.009

Zimmerman, B. J., & Martinez-Pons, M. (1990). Student differences in self-regulated learning: Relating grade, sex, and giftedness to self-efficacy and strategy use. *Journal of Educational Psychology*, *82*(1), 51-59. https://doi.org/10.1037/0022-0663.82.1.51

Zolfaghari, A., & Elahi, T. (2020). Children's level of anxiety in relation to their level of awareness and attitude towards corona virus based on the health belief model and the level of stress, anxiety and depression of mothers. *Journal of Research in Psychological Health*, *14*(1), 40-55. https://www.magiran.com/paper/2161473

JARAC Assessment and Research in Applied Counseling
E-ISSN: 3041-8518