



Developing a Self-Regulated Learning Program and Evaluating its Impact on the Academic Motivation in Male and Female Students of Shahed High Schools in Zahedan

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Abstract: The purpose of this study was to develop a self-regulated learning program and evaluate its impact on the academic motivation of male and female students in Shahed high schools in Zahedan (Iran). The study followed a quasi-experimental design with pre-test and post-test measurements, using two experimental and control groups. The sample population consisted of all male and female students in these schools during the academic year 2021. A multi-stage cluster sampling method was used to select 60 students (30 girls and 30 boys), who were then randomly assigned to the experimental and control groups (15 boys and 15 girls in each group). Data was collected using Academic Motivation Scale (AMS, Vallerand et al., 1989) and analyzed using analysis of covariance. The post-test mean scores of the experimental group were significantly higher than the control group in academic motivation, indicating that the self-regulated learning program had a positive impact. These findings suggest that educational organizations and public and private centers responsible for educating students can use this program to enhance academic motivation in classroom settings and educational workshops.

Keywords: Self-regulated learning program, Academic motivation, Shahed high schools' students

Introduction

In the present day, the primary goal of educational systems is to nurture future generations, preparing them for a future that promises to be considerably more advanced, intricate, and comprehensive than our current state. Within educational systems, one of the most fundamental components is the individual, with students holding a paramount position. They wield significant influence over the efficiency and effectiveness of educational systems (Biseth et al., 2022). Students exhibit substantial variations that hold a pivotal role in the realm of education. These differences encompass diverse aspects, including learning styles, logical reasoning abilities, and their approaches to tackling challenges. In essence, learners exhibit disparities in terms of their personalities, attitudes, self-assurance, emotional responses, motivation levels, motivational beliefs, and cognitive preferences (Souri, 2020). Research findings suggest that inappropriate cognitive and emotional reactions, such as feelings of sadness, anxiety, and suboptimal emotional regulation techniques, can lead to transient emotional disturbances among the offspring of veterans and individuals who have made sacrifices (Namjo et al., 2020).

Consequently, the attainment of success and advancement in education hinges on the presence of the requisite motivation within individuals. This motivation is a fundamental concept within the purview of psychologists and educators, as it elucidates various levels of performance, encompassing learning, and underscores the disparities in effort invested in academic tasks and behaviors ([Ryan & Deci, 2020](#)). In recent times, the repercussions of war on the mental and psychological well-being of adolescents have garnered significant attention. Iran, too, has reluctantly found itself embroiled in one of the lengthiest and most extensive conflicts in terms of both duration and the resulting damages. This eight-year-long war has inflicted physical injuries, undesirable psychological consequences, alterations in lifestyle patterns, and disruptions to personal and interpersonal communication dynamics, culminating in a complex existence for the children of veterans and martyrs. Wars and military violence have led to impaired communication, upheaval in family dynamics, and are likely to persist in doing so ([Esmaili & Hamidipour, 2016](#)).

Research findings have illuminated that the greater the physical and psychological burdens borne by survivors of war, the more pronounced the roles and responsibilities within families become, giving rise to intricate conflicts that eventually lead to heightened stress and disturbances in the mental well-being of children. Consequently, their success in various social interactions and psychological facets, under optimal circumstances, pales in comparison to that of their peers ([Badri et al., 2013](#)).

Imparting instruction in self-regulation strategies yields valuable outcomes in the context of teaching and learning. Achieving adaptation and success in school necessitates students' development and fortification of their self-regulation mechanisms, encompassing cognitive, emotional, and behavioral dimensions, all directed toward the achievement of their objectives ([Li et al., 2022](#)). Equipped with knowledge of self-regulation strategies, learners acquire metacognitive skills, enabling them to steer their cognitive processes towards progress and personal goals. They also become proficient in planning, self-monitoring, self-control, and self-assessment across various stages of learning ([Li et al., 2022](#)).

The principal self-regulation strategies of utmost importance encompass cognitive techniques, metacognitive methodologies, and resource management tactics. Cognitive strategies pertain to any actions, thoughts, or behaviors designed to facilitate learning, organization, and the retention of knowledge for future utilization ([Parbartaushi et al., 2018](#)). Resource management strategies, on the other hand, are instrumental in allowing learners to regulate and oversee their learning environment. These strategies encompass the allocation of time, effort, the selection of suitable study environments, and the utilization of external resources, such as teachers, peers, and educational materials ([De Smul et al., 2018](#)).

The results of studies have shown that teaching self-regulation strategies is effective in motivating students. [Mahghani Jamalaldin and Jenaabadi \(2019\)](#) concluded in their research that teaching self-regulated learning strategies has a positive impact on academic motivation and self-regulation of students. [Gholizadeh Moghadam \(2019\)](#) investigated the effectiveness of motivational beliefs and self-regulated learning in students and found that self-regulated learning plays a significant role in motivating and shaping the motivational beliefs of students. [Moradi et al. \(2020\)](#) demonstrated in their research that teaching self-regulation and self-directed learning improves motivational beliefs and academic motivation in students. In addition, [Ilishkina et al. \(2022\)](#) found that teaching emotional self-regulation in students increases academic motivation.

A study by [Klimova et al. \(2022\)](#) indicated that teaching self-regulated learning enhances personal competence, motivation, motivational beliefs, and academic performance, as well as awareness of strengths and weaknesses in learning and time management for study. [Martin et al. \(2022\)](#) found in their research that teaching cognitive and emotional self-regulation strategies in students leads to high academic motivation, academic progress, competence, and self-confidence.

[Bakhtiar and Hadwin \(2022\)](#) demonstrated that teaching emotion regulation to students in schools increases intrinsic motivation and desirable academic performance. Therefore, self-regulation interventions in students, under controlled conditions, enhance learning, reduce distractions, increase engagement with tasks, and, on the other hand, by improving self-regulation skills, students' motivational engagement with educational content increases, resulting in enhanced learning. These skills help learners make appropriate choices and experience less anxiety ([Li et al., 2022](#)). Furthermore, the importance of self-regulation education requires further study and deeper understanding, identifying factors that enhance motivation in students is of particular importance.

Despite the aforementioned studies, a focused intervention study on the design of self-regulated learning education for motivating Iranian students has not yet been conducted. Therefore, this research was conducted with the aim of examining the design of a self-regulated learning education intervention and its impact on the motivation of high school students who are the offspring of veterans and sacrifices in Zahedan city (Iran).

Material and Methods

The present research was a quasi-experimental study with a pre-test post-test design involving a control group. The study population consisted of all female and male students attending *Shahed and Isargar* high schools in Zahedan city during the 2021. The sample included 60 students (30 girls and 30 boys) from Shahed and Isargar high schools in Zahedan at the high school level, who were selected as

participants. The sampling method involved first approaching the Education Department of Zahedan and then selecting two Shahed high schools (one for boys and one for girls). Subsequently, all second and third-year high school students who were willing to participate voluntarily in this educational program were invited through announcements. Based on the scores obtained from the Academic Motivation Questionnaire ([Vallerand & O'Connor, 1989](#)), students were randomly divided into two experimental groups (15 boys and 15 girls) and two control groups (15 boys and 15 girls).

Inclusion criteria for the research participants were attending Shahed and Isargar high schools, complete willingness to participate in the research, and not attending other high schools or withdrawing from the educational program.

Ethical considerations: The participants' consent to participate in the research was obtained, and the research purpose was explained in a way that did not create bias in the participants. Furthermore, every effort was made to ensure that participants did not experience physical or psychological discomfort due to their participation in the research, and they were free to withdraw from the research at any time if they did not wish to continue. The participants' information was kept completely confidential and secure, and numerical codes were used instead of names.

To collect data, the Academic Motivation Questionnaire ([Vallerand & O'Connor, 1989](#)) was used. The Vallerand Academic Motivation Questionnaire was designed and developed in Canada to measure academic motivation. It consists of 28 items with a seven-point Likert scale and includes seven subscales: three types of intrinsic motivation (intrinsic motivation for knowledge, intrinsic motivation for accomplishment, intrinsic motivation for stimulation), three types of extrinsic motivation (external regulation, introjected regulation, identified regulation), and amotivation. Motivation levels can be measured using this scale. In this questionnaire, respondents are asked to express their motivation for continuing their education through a series of questions. Respondents report their level of agreement or disagreement with each item on a seven-point Likert scale, with 1 indicating complete disagreement, 4 indicating a neutral response, and 7 indicating complete agreement. The lowest score on this questionnaire is 28, and the highest score is 196. In the standardization process of the Academic Motivation Questionnaire in Iran, carried out by [Bagheri et al. \(2003\)](#), two questions, 13 and 18, did not achieve the required reliability and were excluded from the questionnaire. In their reliability assessment of the questionnaire, [Vahedi et al. \(2012\)](#) obtained Cronbach's alpha values of 0.83 for intrinsic motivation for knowledge, 0.78 for intrinsic motivation for accomplishment, 0.73 for intrinsic motivation for stimulation, 0.86 for introjected regulation, 0.81 for external regulation, 0.76 for identified regulation, and 0.83 for amotivation, respectively.

The research method involved conducting sessions aimed at enhancing self-regulation skills based on the [Bouffard-Bouchard et al. \(1991\)](#) self-regulation theory. This intervention has been adapted for female and male students attending Shahed and Isargar high schools at the high school level in Iran. The goal of the sessions was to enhance self-regulation skills, and the sessions were conducted using a question-and-answer format, group discussions, and the presentation of homework assignments. Each session lasted 90 minutes and was held three times a week for 15 sessions. At the beginning of each session, the topics and assignments from the previous session were reviewed (Table 1). After completing the sessions, a post-test was conducted using the Academic Motivation Questionnaire for students. To describe the data, descriptive statistics (frequency, percentage, mean, and standard deviation) were used. Due to the pre-test post-test design with a control group, analysis of covariance (ANCOVA) was employed to analyze the data. Data analysis was performed using SPSS-26.

Table 1. Summary of self-regulation intervention session

Session	Aim	Content
1	Getting to know and communicate with each other	Getting to know the group members with each other and starting the mutual relationship between the group leader (psychologist) and the members Expressing the main and secondary goals of the group and discussing among the members about the secondary and collective goals .Expressing the logic and stages of self-regulation training Statement of the framework and rules of participation in the group
2	The second session of question number 1 of Bouffard's self-regulation questionnaire (I spend time planning study time) Objectives 1 Teaching concepts such as planning, time management, study value and prioritization in daily academic affairs	the necessity of learning science; the necessity of planning; The necessity of time management and the necessity of educational prioritization in daily academic affairs
3	The third session of question number 2 of Bouffard's self-regulation questionnaire (when I study, they check their goals exactly) Goals: Teaching the importance of having a goal in life and not neglecting the goal in everyday life Having the goal of studying and directing educational behaviors to achieve goals	The necessity of having a goal in life; The necessity of having a goal in learning; The necessity of paying attention to educational goals and avoiding distractions
4	The fourth session of question 3 of Bouffard's self-regulation questionnaire (when I am studying, I try to make a connection between the material presented in the class and the material in the book) Goals: Teaching abstract thinking skills and its role in not connecting the educational contents of different subjects with each other Training and educational planning for how to communicate between basic practical courses and theoretical courses	The need to be aware of the role of abstract thinking; the head of educational chains; Study skills and its role in educational interventions, as well as the necessity of planning for the arrangement of courses in study planning in such a way that basic courses and specialized courses are related to each other.

5	The fifth session of question number 4 of Bouffard's self-regulation questionnaire (when I'm studying, I try to determine what I'm learning from the lesson rather than just reading the subject matter) Goals: Teaching cognitive thinking Teaching metacognition (that is, awareness of how to understand understanding)	Necessity of scientific assessment of courses; The necessity of learning to understand and how to understand educational content
6	The sixth session of 5 questions of Bouffard's self-regulation questionnaire (when the materials or tasks requested are difficult, they either skip reading it or I only read the easy parts of it) Goals: Problem solving training Emotion management training Hypothesis training in problem solving Teaching correct thinking using the rules of logic science	The need to be aware of exploratory methods and problem solving The need to create a constructive impact on developing self-confidence and a sense of worth through seeing one's role in solving problems and learning lessons. The necessity of teaching the rules and principles of problem solving
7	The seventh session of the sixth question design of Bouffard's self-regulation questionnaire (I am able to do the necessary tasks and assignments even when the course material is not interesting to me) Goals: Responsibility training Teaching effective communication skills	Necessity of emotion management Necessity of teaching prioritization in issues related to educational affairs
8	The 8th session of the 7th question design of the Bouffard questionnaire (I use special methods to summarize the course material) Goals: 1- Teaching the concepts of title and topic in educational issues 2- Teaching correct study techniques 3- Teaching how to take notes and summarize based on scientific experiences	Paying attention to the logic between whole and part in educational topics Paying attention to teaching why and how to learn Necessity of taking educational notes and summarizing
9	The 9th session of dealing with the 8th question of the Bouffard questionnaire (often I am busy reading the study materials for the exam until the last minute when I have time) Goals: 1- Teaching the capacities and abilities of the mind 2- Speed reading skills training 3- Teaching how to benefit from summarizing in the use of time	The need to be aware of the divine capacities that we have in the field of mind and thinking Awareness of the value of time and its role in learning Awareness of how to read in the last minutes The need to know the skills of using time
10	The tenth session dealing with question number 9 of Bouffard's self-regulation questionnaire (I try to link what they are studying to what I already knew) Goals: 1- Teaching the capacities of the cerebral hemispheres in learning various scientific problems, including memorization and inference. 2- Teaching and learning techniques	The need to know God-given talents in relation to the structure especially The need to raise awareness of techniques requires memorization techniques

11	The eleventh session of question number 10 of the Buffalo questionnaire (I have set certain hours for the exam) Goals : Raising awareness about the importance of the exam and its role in learning Teaching the role of choosing appropriate times during the day and night and its role in learning	Teaching the skills of using time to succeed in the exam Awareness of the values related to time and its role in mental productivity and thinking Necessity of informing the values of different times during the day and its role on memory Raising awareness about the right to choose and the role of mental and physical preparation in taking the test Awareness of the role of trust in God in achieving success Teaching testing skills in response to test questions and training Thinking skills in answering descriptive questions
12	The twelfth session dealing with question number 11 of the Bouffard questionnaire (sometimes I pause while studying to figure out how to connect the different parts of the lesson) Goals: 1-Teaching mental rest and its role in useful learning 2-Teaching mental review during rest 3- Learning how to relate educational materials to each other based on David Ausubel's theory	The need to be aware of the role of rest and mental relaxation in learning The need to raise awareness of the relationship between theoretical sciences and basic sciences Necessity of raising awareness of communication techniques between educational contents Necessity of having a curriculum that monitors the relationship between the educational contents of textbooks
13	The 13th session dealing with question number 12 of the Bouffard questionnaire (regarding studying, I solve various exercises or take out several questions from the lesson and answer them) Goals: 1- Teaching how to acquire skills in solving skill exercises is equal to training plus practice plus repetition of exercises. 2 Training to learn types of questions and how to design and prepare them.	Necessity of teaching study skills Summarizing Necessity of knowing about measurement in the quality of questions design
14	The fourteenth session dealing with question number 13 of the Bouffard questionnaire (learning by memorization is the best tool I know for preparing an exam) Goals: Teaching the skill of how to memorize Teaching types of memory and its role in memorization	The need to raise awareness of types of memory Necessity of raising awareness of memorizing and memorizing techniques
15	Question number 14 of Bouffard's self-regulation questionnaire (when I don't understand a subject, I don't know how to save myself from its predicament) Goals: 1- Teaching how to understand 2- Learning how to understand skills 3- Teaching how to remember and remember	The necessity of learning and how to learn is one of the most important pillars of the education system. How to understand what has been understood also requires acquiring cognitive and metacognitive skills

Results

Demographic information examination showed that the sample included 60 male and female students. In the boys' group, 60% of the experimental group and 46.7% of the control group were the children of

Shahed, while 40% of the experimental group and 53.3% of the control group were the children of Isargar. In the girls' group, 46.7% of the experimental group and 53.3% of the control group were the children of Shahed, while 53.3% of the experimental group and 46.7% of the control group were the children of Isargar. Regarding the grade variable, in the boys' group, 26.7% of the experimental group and 20% of the control group had grades between 10 and 13, 46.7% of the experimental group and 40% of the control group had grades between 14 and 17, and 26.7% of the experimental group and 40% of the control group had grades between 18 and 20. In the girls' group, 20% of the experimental group and 20% of the control group had grades between 10 and 13, 53.3% of the experimental group and 40% of the control group had grades between 14 and 17, and 26.7% of the experimental group and 40% of the control group had grades between 18 and 20. In terms of educational level, the results indicated that in the boys' group, 60% of the experimental group and 46.7% of the control group were in the second year of high school, while 40% of the experimental group and 53.3% of the control group were in the third year. In the girls' group, 40% of the experimental group and 46.7% of the control group were in the second year of high school, while 60% of the experimental group and 53.3% of the control group were in the third year. To investigate the effectiveness of self-regulated learning in the academic motivation of Shahed and Isargar girls and boys, analysis of covariance (ANCOVA) was used.

Table 2. Means and standard deviations of research variables in the pre-test and post-test phases

Gender	Group	Variable	N	Pretest	Posttest
				Mean (SD)	Mean (SD)
Female	Experimental	Academic motivation	15	121.20 (4.67)	132.20 (8.23)
	Control		15	128.66 (3.90)	127.60 (4.25)
Male	Experimental	Academic motivation	15	120.60 (5.23)	145.20 (11.54)
	Control		15	134.66 (12.45)	134.68 (12.69)

The results in Table 2 showed that in the pre-test conditions, there were no significant differences in the mean scores of academic motivation between the experimental and control groups for both boys and girls. However, in the post-test phase, significant differences were observed in the mean scores of academic motivation dimensions when compared to the pre-test phase between the experimental and control groups for both boys and girls.

Table 3. Levene's test results to examine the homogeneity of variances

Gender	Variable	F	DF1	DF2	p
Female	Academic motivation	3.24	1	28	0.08
Male		0.02	1	28	0.88

As shown in Table 3, Levene's test for academic motivation variable is not significant. Therefore, the assumption of variance homogeneity is confirmed, and the null hypothesis for equal variances in the academic motivation variable is accepted.

Table 4. Results of covariance analysis to compare post-test scores of academic motivation in two groups

Gender	Phase	Source	SS	DF	MS	F	p	Effect size	Power
Female	Posttest	Pretest	69.75	1	69375	1.66	0.20	0.05	0.23
		Group	288.76	1	288.76	6.87	0.01	0.20	0.71
		Error	1134.24	27	42.009				
Male	Posttest	Pretest	857.43	1	857.43	6.86	0.01	0.20	0.71
		Group	1561.78	1	1568.71	12.49	0.001	0.31	0.92
		Error	3374.30	27	124.97				

The results in Table 4 demonstrated that there is a significant difference between the mean scores of academic motivation in the pre-test [$\eta^2 = 0.05$, $p \leq 0.001$, $F(1, 27) = 6.27$] and post-test [$\eta^2 = 0.20$, $p \leq 0.001$, $F(1, 27) = 87.66$] in the academic motivation variable. Therefore, the mean scores of the post-test for the experimental group (female) are significantly higher than those of the control group. Considering the eta-squared (η^2) in the post-test phase, it can be said that 20% of these changes are due to the independent variable's effect (self-regulated learning).

In the boys' group, the results in Table 4 indicated that there is a significant difference between the mean scores of academic motivation in the pre-test [$\eta^2 = 0.20$, $p \leq 0.001$, $F(1, 27) = 6.86$] and post-test [$\eta^2 = 0.31$, $p \leq 0.001$, $F(1, 27) = 12.49$] in the academic motivation variable. Therefore, the mean scores of the post-test for the experimental group are significantly higher than those of the control group. Considering the eta-squared (η^2) in the post-test phase, it can be said that 31% of these changes are due to the independent variable's effect (self-regulated learning).

Discussion

A review of the existing theoretical and research literature reveals that there are no comprehensive studies that align entirely with the current research in terms of methods, population, objectives, and tools. This underscores the necessity and importance of conducting the present study. Consequently, we will proceed to examine and elucidate the obtained results.

The results from the post-test phase indicated a significant divergence in academic motivation between the experimental and control groups, encompassing both male and female students, including those classified as Shahed and Isargar students. Consequently, the post-test mean scores for the experimental group in the realm of academic motivation significantly surpassed those of the control group. The outcomes of both hypotheses are in harmony with the findings of prior studies conducted by [Mahghani](#)

[Jamalaldin and Jenaabadi \(2019\)](#), [Gholizadeh Moghadam \(2019\)](#), [Moradi et al. \(2020\)](#), [Ilishkina et al. \(2022\)](#), [Klimova et al. \(2022\)](#), [Bakhtiar and Hadwin \(2022\)](#) and [Martin et al. \(2022\)](#).

[Mahghani Jamalaldin and Jenaabadi \(2019\)](#) arrived at the conclusion that guiding students in the utilization of self-regulated learning techniques has a positive impact on their motivation for academic progress and self-management. In [Gholizadeh Moghadam \(2019\)](#) investigation, the efficacy of motivational beliefs and self-regulated learning in students was explored, revealing that self-regulated learning significantly influences students' motivational beliefs. [Moradi et al. \(2020\)](#) illustrated that the instruction of self-regulation and self-directed learning serves to augment students' motivational beliefs. Additionally, the findings presented by [Bakhtiar and Hadwin \(2022\)](#) indicate that instructing emotional self-regulation to students leads to an increased intrinsic motivation and enhanced academic performance. [Ilishkina et al. \(2022\)](#) observed that providing guidance in emotional self-regulation for students results in heightened motivational beliefs. [Klimova et al. \(2022\)](#) study established that teaching self-regulated learning, fostering personal competency, motivation, motivational beliefs, and achieving high academic performance enhances students' awareness of their strengths and weaknesses in learning, as well as their effective time management for studying.

In their research, [Martin et al. \(2022\)](#) unearthed that imparting cognitive and emotional self-regulation strategies to students yields increased academic motivation, progress in academics, heightened competency, and greater self-assurance.

In explaining the findings of both hypotheses, it can be posited that self-regulated learning, in conjunction with cognitive and metacognitive strategies, coupled with effective resource management strategies, leads to heightened learning, comprehension, and concentration among students, consequently boosting their academic motivation. Furthermore, it cultivates students' task-related skills, rendering them more adept. They proactively tackle tasks and associated challenges, excel in problem-solving, develop self-assurance, and ultimately foster a sense of competence, heightened motivation for learning, and increased self-efficacy. In essence, self-regulated learners become actively engaged in the learning process. To pursue their learning objectives, self-regulated students employ a variety of learning strategies to continuously monitor their progress and adjust their approaches when necessary.

[Ramdass and Zimmerman \(2011\)](#) observed that motivation fluctuates in response to shifts in the environment and its consequences. Given that negative and irrational self-assessments constitute the primary factors that deter students from tackling tasks and challenges, and owing to the susceptibility and variability of self-assessments in response to environmental factors, it is anticipated that the implementation of specific strategies to mitigate these factors will augment students' academic motivation.

One limitation of the present study that curtails the generalizability of its findings is the sample size and its restricted scope, which exclusively encompasses high school students classified as Shahed and Isargar in Zahedan. Furthermore, the impact of the COVID-19 pandemic, which necessitated virtual classes and courses, along with the challenging circumstances of reaching students during the follow-up period, has contributed to this limitation.

It is advisable that educators and teachers are encouraged to create an enabling environment conducive to fostering academic motivation and to impart self-regulated learning strategies to their students. Additionally, by delivering course materials tailored to students' cognitive structures and providing instruction on metacognitive strategies to this student demographic, educators can establish a more suitable learning milieu.

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