



# The Relationship Between Resource Management Learning Strategies and Academic Achievement

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## Abstract

**Background:** Learning strategies are methods that students can use to guide their learning and thinking processes.

**Objectives:** This study aimed to explore the relationship between resource management learning strategies and academic achievement in college students.

**Methods:** This cross-sectional descriptive study was conducted among 300 students in western Iran. Random sampling was used to select participants, and a self-reporting questionnaire was used to collect data. Data were analyzed with SPSS-21 software using t-test, Pearson correlation, ANOVA and linear regression at 95% significance level.

**Results:** The mean age of respondents was 21.08 years [SD: 1.93], ranging from 18 to 29 years. We found significant correlation between mean overall score for learning resource management strategies and academic achievement of the students ( $r = 0.139$  and  $P = 0.024$ ). Linear regression analysis showed that resource management strategies accounted for 3% of the variation in academic achievement.

**Conclusions:** Based on our results, designing and implementing educational programs to promote resource management strategies for college students could have beneficial results in increasing academic achievement.

**Keywords:** Students, Medical Education, Academic Achievement

## 1. Background

Academic achievement is one of the most important academic learning and performance indicators for learners and has always attracted the attention of education science experts (1). Academic achievement is influenced by various factors such as knowledge structure and learning strategies (2). Learning strategies are methods learners' use that can guide their learning and thinking process; thus, the use of learning strategies can enhance learning (3, 4). Flaws in learning skills such as intelligence capacities and physical and mental health can have a negative impact on other factors of the learning environment and learners. Learning strategies include two general divisions: cognitive and meta-cognitive strategies and resource management strategies. Cognitive strategies realize meaningful learning through relating new information to information previously learned and help in memorizing and remembering (5, 6). Resource management strategies refer to ac-

tive controlling of various resources such as time, location, force, study environment, help-seeking from peers and instructors (7). Using learning strategies and proper processing of information, learners succeed in achieving cognitive goals, i.e., understanding and perception of information and meaningful learning (7-9). However, learning efficiency of learner's could have a positive impact on learning environment factors and even academic motivation (10). Efficient learners possess sufficient capability for understanding, monitoring and guiding their learning, and are active in the process of learning (11). Efficient learners evaluate their learning process and use appropriate strategies (12). In learning medical science, the ability to guide and adjust learning experiences is a critical issue for success, and learning strategies could be a great help to learners in acquiring cognitive and necessary skills (13). Many studies have investigated the relationship between learning strategies and academic achievement of learners, and have

declared academic achievement effective (14-17). Therefore, the first step in this regard is to identify the status of learners in relation to learning strategies for proper planning and implementation. Given the importance of this subject, the present study was conducted with the aim of examining the relationship between resource management learning strategies and academic achievement of medical sciences students of Kermanshah.

## 2. Methods

This cross-sectional descriptive study was conducted among 300 students of Kermanshah in western Iran. After removing incomplete questionnaires, 264 questionnaires were analyzed (response rate 88%). Sampling was performed in stages: various faculties were considered as clusters using simple random sampling method and with a probability proportional to the volume in each of the clusters, then participants were selected and given questionnaires for motivational strategies and demographic variables, and consequently, required information was collected in the form of self-reporting. Participants were made aware of the study method and objective, confidentiality of information was assured, and all of them participated willingly. Inclusion criterion was a student with at least one academic semester and exclusion criterion was unwillingness to cooperate with the research team. The data collection tool included three sections and information was gathered from the students in the form of self-reporting.

### 2.1. Measures

#### 2.1.1. First Section: Demographic and Background Questionnaire

Demographic and background information included nine questions on age (in years), sex (male, female), marital status (single, married), academic level (bachelor, master's, PhD), occupation (student only, student and employee), dormitory residence (yes, no), faculty of education (medicine, dentistry, pharmacy, health and nutrition, nursing and midwifery, para-medicine) and educational level of parents (up to high school, high school diploma, and academic education).

#### 2.1.2. Second Section: Academic Achievement Questionnaire of the Learners

GPA of the students (score of 0 to 20) was considered as the measurement criterion for academic achievement.

#### 2.1.3. Third Section: Learning Resource Management Strategies Questionnaire

This section included 4 subscales of: time management and study environment (8 items), effort regulation (4 items), peer learning (3 items), and help seeking (4 items). Subjects rate their responses on a 7-point Likert scale from 1 (does not apply to me at all) to 7 (completely applies to me) (Table 1) (18).

### 2.2. Data Analysis

Data were entered into SPSS edition 21 and analyzed using Pearson correlation test for evaluating the correlation between the subscale of learning strategies with academic achievement of students, and for evaluating the correlation between age and learning resource management strategies; ANOVA and independent t-test for evaluating the relationship between background factors and learning resource management strategies; and linear regression analysis for evaluating the subscale of learning resource management strategies in predicting the student's academic achievement.

## 3. Results

Age range of the participants was 18 to 29 years with a mean of  $21.08 \pm 1.93$ ; 155 were female (58.7%) and 109 male (41.3%); 246 participants were single (93.2%) and 18 (6.8%) married; 136 participants (51.5%) were undergraduates; 128 (48.5%) were doing MD. Most students (190, 72%) were residing in dormitories. 16 students (6.1%) reported that they were both studying and employed. 60 (22.7%), 89 (33.7%), and 115 (43.6%) students reported that their father's education level was high school, high school diploma, and university education, respectively. Education status of the mothers of 95 students (36%) was up to high school; 89 (32.6%) students high school diploma; and 83 (31.4%) students reported university education. Mean score for learning resource management strategies was 88.51 (95% CI: 86.51 - 90.52), showing that participants achieved 66.5% of the maximum obtainable score.

Academic achievement had a statistically significant relationship with time management and study environment ( $r = 0.175$ ). Table 2 shows the correlation between the subscale of motivational strategies and students' academic achievement (GPA).

Table 3 examines the relationship between overall score of learning resource management strategies and background factors among students. Findings revealed a significant and reverse correlation between age and learning resource management strategies: with increase in age the score for learning resource management strategies decreased ( $r = -0.165$  and  $P = 0.007$ ). In addition, there was

**Table 1.** Information Related To This Learning Resource Management Strategies Questionnaire

Component	Scale	No. of Items	Score Range	Question Sample	Cronbach's Alpha	
					Pinterich et al.	Present study
Learning resource management strategies	Time management and study environment	8	56 - 8	I usually study in a place where I can concentrate on my course work.	0.76	0.74
	Effort regulation	4	28 - 4	I work hard to do well in this class even if I don't like what we are doing.	0.69	0.63
	Peer learning	3	21 - 3	When studying, I often try to explain the material to a classmate or a friend.	0.76	0.72
	Help seeking	4	28 - 4	I ask the instructor to clarify on the concepts I don't understand well.	0.52	0.71

**Table 2.** Correlation Between the Subscale of Motivational Strategies and Student's Academic Achievement (GPA)

	Mean (Standard Deviation)	1	2	3	4
1. Time management and study environment	38.14 (7.71)	1			
2. Effort regulation	18.50 (4.15)	0.453 <sup>a</sup>	1		
3. Peer learning	12.79 (4.45)	0.560 <sup>a</sup>	0.465 <sup>a</sup>	1	
4. Help seeking	19.09 (4.79)	0.847 <sup>a</sup>	0.693 <sup>a</sup>	0.704 <sup>a</sup>	1
5. Academic achievement (GPA)	15.90 (1.66)	0.175 <sup>b</sup>	0.125 <sup>b</sup>	-0.008	0.097

<sup>a</sup> Correlation is significant at 0.01 level (2-tailed).  
<sup>b</sup> Correlation is significant at 0.05 level (2-tailed).

a statistically significant relationship between mean overall score for learning resource management strategies and academic achievement of the students ( $r = 0.139$  and  $P = 0.024$ ).

Table 4 examines the most important subscale of learning resource management strategies for predicting academic achievement in students. The optimal model was estimated in the fourth step, based on which the domain of time management and study environment were strong predictors for academic achievement.

#### 4. Discussion

Participants achieved 67.5% of the maximum obtainable score for learning resource management strategies. There was a significant statistical relationship between the overall score of learning resource management strategies and academic achievement of the students; this finding is consistent with other studies in this regard (19-21). Given that the studied students did not achieve almost one third of the overall score for learning resource management strategies and also the positive correlation between learning resource management strategies and academic achievement, the necessity of educational programs for improving learning strategies among students is revealed.

Examining the relationship between sexes and learning resource management strategies indicated no signif-

icant statistical difference between the two sexes and use of learning resource management strategies; this finding is consistent with the study by Pokay and Blumenfeld (22). However, in some studies it has been pointed out that girls use learning strategies more than boys (23). One of the findings of the present study was the significant and reverse correlation between age and learning resource management strategies; with the increase in age, it is expected that utilization level of learning strategies would increase among students but our findings showed the opposite. It appears necessary to carry out studies in this regard to find the reason behind the negative correlation between age increase and learning resource management strategies among students so that appropriate solutions with the aim of improving learning strategies could be provided.

The results of the regression analysis showed that among learning resource management strategies, time management and study environment are the most effective variables in predicting academic achievement among students. In Filcher and Miller's studies, mental review, expansion and organization have a positive and significant relationship with academic achievement (24). Elliot and McGregor also showed that peer learning has a positive relation with academic achievement (25); whereas the present study showed that peer learning has a negative correlation with academic achievement, even though this cor-

**Table 3.** Relationship between the Status of Learning Resource Management Strategies and Background Factors among Students

Variable	Mean and Standard Deviation for the Score of Learning Strategies	Significance
<b>Sex</b>		0.565
Female	89.00 (17.37)	
Male	87.81 (15.24)	
<b>Marital status</b>		0.449
Single	85.66 (13.68)	
Married	88.72 (16.70)	
<b>Educational level</b>		0.738
BS.c	88.18 (16.13)	
MD	88.86 (16.96)	
<b>Occupation</b>		0.855
Student only	88.46 (16.47)	
Student and employee	89.25 (17.63)	
<b>Dormitory residence</b>		0.163
No	86.24 (17.09)	
Yes	89.40 (16.23)	
<b>Faculty</b>		0.227
Medicine	88.75 (17.55)	
Dentistry	88.33 (11.89)	
Pharmacy	89.76 (17.59)	
Nursing and midwifery	93.76 (14.49)	
Health and nutrition	85.02 (16.05)	
Para-medicine	86.06 (16.92)	
<b>Father's education</b>		0.911
Under diploma	88.25 (15.40)	
Diploma	88.06 (16.35)	
Academic education	89.00 (17.30)	
<b>Mother's education</b>		0.297
Under diploma	87.35 (16.22)	
Diploma	87.53 (16.79)	
Academic education	90.85 (17.49)	

**Table 4.** Linear Regression Analysis for the Influence of Learning Resource Management Strategies Subscale on Academic Achievement (GPA)

Independent Variables	Standardized Beta	P	R <sup>2</sup>
Time management and study environment	0.175	0.004	0.03

relation was not statistically significant. Explaining this result thus becomes a little difficult; it is possible for students

to transfer materials that they themselves have not properly understood.

Another finding of the present study was the correlation between time management and study environment with academic achievement of the students where time management is one of the most important academic skills of the students for achieving academic success. The importance of time management in academic achievement is to the extent that researchers have proposed time utilization as the critical difference between students and believe that this difference could be one of the features of successful students which distinguished them from unsuccessful students (26). Weak educational performance of the students and post-university entrance failures are among the critical academic problems in Iran. The result is that after entering university, many students cannot adapt themselves to the new educational status and the increased in course volumes, and often their academic levels drop severely during the first semester with some students even experiencing this until the end of their education. Also, many studies have shown that many students are not full aware of studying skills (27). One of the effective factors for academic achievement from the students' perspective has been the method of study. Therefore, providing studying skills educational programs for students could lead to useful results in order to improved academic achievement in students.

The present study had limitations such as data collection using a questionnaire, which may come with a percentage of error in reporting; also data were collected only among a group of medical science students, which poses a problem for generalizing the obtained results.

#### 4.1. Conclusion

Based on our results, designing and implementing educational programs to promote resource management strategies for college students could have beneficial results for increasing academic achievement among students.

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