Study and Comparison of learning strategies in successful and unsuccessful students

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Introduction: The main purpose of the present research was to compare learning strategies used by successful and unsuccessful students. Studying the relation between the learning strategies and academic achievement is another purpose of this research.

Material and methods: 200 students girls (100 successful and 100 unsuccessful) in high school were selected by cluster multistage sampling method. In this research, students in each of group were compared (using t-tests and discriminate analysis) for their use of five learning strategies: rehearsal, elaboration, organization, metacognition, and motivation. In order to match these two groups Raven's Progressive Matrices test have been used for measuring intelligence and Learning Strategies Inventory which measures learning strategies. It has been made by researchers.

Results: In each of groups, there were significant differences between the successful and unsuccessful students in the use of learning strategies. In two groups, successful students relied more than unsuccessful students on rehearsal, elaboration, motivation, and metacognition but there was no difference in the use of Organization.

Conclusions: Learning strategies make a difference for academic achievement. Therefore, we must familiarize ourselves with a variety of learning strategies, learn them and teach them to our students.

Key words: Learning strategies, successful, unsuccessful students, academic achievement.

I.   INTRODUCTION

Recent years have witnessed a growing interest in exploring the role of learning strategies in student learning (Lai, 2009; Macaro, 2001; Wen & Wang, 2004). Scarcella & Oxford (1992) define learning strategies as "specific actions, behaviors, steps, or techniques used by students to enhance their own learning (Altunay, 2014).

The spectrum of learning strategies expands from simple repetition to internal motivation of learners. Weinstein and Mayer (1986) classify them into five major groups. These groups include strategies of rehearsal, elaboration, organization, metacognition, and motivation. The present study employed these five major groups of strategies. Rehearsal strategies cover activities for identifying and repeating important segments of the given material. Memorizing, loud-reading, listing concepts, highlighting, putting special marks, underlining, using mnemonics, and taking personal notes are some examples of the strategies in this category. Elaboration goes beyond the given content and extends it with additional information coming from the student. Using new words in a sentence, paraphrasing information, summarizing, matching, applying analogies, generating metaphors, making comparisons, writing questions, and forming mental images are some examples of elaboration strategies. Organization includes activities of reviewing and restructuring the presented material. The student finds the existing structure of the content inappropriate and produces alternative structure. Outlining, creating tables, classifying, re-grouping, connecting pieces, generating concept maps, and listing differently are common strategies in this category. Metacognition usually deals with self-awareness of a student about his/her own capability in a particular learning area. The student evaluates his/her performance and tries to come up with better ways of learning. Self-critique, taking responsibility, personal reflection, individual monitoring, and changing study habits are some examples of metacognitive strategies. Motivational strategies contain the

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student's perceptions and conscious efforts to perform and feel better. Attention focusing, directing anxiety, effective time management, reducing stress, developing interest, encouraging internal motivation, and setting meaningful ideals are several examples of strategies in this category (Simsek, 2006; Simsek & Balaban 2010). There are experimental studies examining the effects of strategies on learning.

Yusuf (2011) indicated the effects of self-efficacy beliefs, achievement motivation, and self learning strategies on academic achievement. Mohammadi, Thaghinejad, Suhrabi and Tavan (2017) investigated the relationship between learning study strategies and academic achievement of nursing students in 2013. Considering positive and significant correlation between learning and study strategies with academic achievement in nursing students, so, they suggested that students and teachers use these strategies to improve academic achievement and reduce the academic loss of students. Braten and Olaussen (1998) investigated the relationship between motivational beliefs and the use of learning strategies. They found that when students work hard toward accomplishing a goal, they employ more and better strategies. McWhaw and Abrami (2001) confirmed that students with high level of interest use more strategies than those with low level of interest in a learning area. This is consistent with the result that students have more power or control over the use of strategies than teachers (Eshel & Kohavi, 2003). Hezar Jaribi and Naghipour (2014); Ruffing and et al (2015) showed that the students' learning styles according to academic performance and gender is different, but these differences were not significant according to the grades of students.

Simsek and Balaban (2010) Yip (2013), Zhou (2016) examined the most commonly used learning strategies of undergraduate students and how these strategies were related to their academic performance. The results overall imply that certain strategies contribute to student performance more than other strategies, and majority of university students are aware of this situation. The findings Ingrid and Reginald research (2015) supported the need for teachers to be situational in their application of instructional strategies. First, they need to assess the instructional needs of each student, then, align the appropriate strategy with the assessed needs. Nzesei (2015) investigated the relationship between learning style and academic achievement among secondary school students in Kenya'. This research showed strong positive and statistically significant relationship between learning styles and academic Achievement. Result of Eskandari, Baloei & Zamani research showed (2015) that with 95% confidence, it can be claimed that self-regulation learning strategies are effective on students' academic achievement.

Within the context of the above results, this study examines whether successful students and unsuccessful students at the high school use different learning strategies and to what extent their preferences are related to their performance. More specifically, empirical answers to the following questions were investigated: (a) Do successful students employ different strategies than unsuccessful students? (b) Is there a meaningful correlation between students' use of various strategies and their achievement?

II.   Material and methods

Using the cross-sectional method, learning strategies were studied in successful and unsuccessful girl students in third grade high school. In order to match these two groups Raven's Progressive Matrices test has been used to measuring intelligence. Criteria for choosing successful students was 1-score IQ test more than of 110 and 2- GPA for two semester more than 17. The population of focus in this project consisted of all girl students in third grade of high school. Of this population, 200 students girls (100 successful and 100 unsuccessful) in high school were selected by cluster multistage sampling method.

III.   Learning Strategies Inventory

In order to study learning strategies, the"Learning Strategies Inventory" was administered. It is based on the cognitive learning theory of Weinstein and Mayer (1986) and developed by researcher. This inventory contains 33 items which measure learning strategies that use a 5-level Likert response scale (always, usually, sometimes, seldom, never). The reliability of this inventory was calculated by determining Cronbach's α and found to be good: 0.78 (current research).

IV. Results

Table1.Comparison of learning strategies used by successful and unsuccessful students

Learning strategies	group	Mean	Sd	S2	SE	t	p
Rehearsal	successful	3/52	0/30	0/55	0/08	3/73	0/00*
	unsuccessful	3/21	0/30	0/55	0/08		
Organization	successful	3/37	0/89	0/94	0/08	2/31	0/02
	unsuccessful	3/08	0/83	0/91	0/08		
Elaboration	successful	3/61	0/89	0/94	0/09	4/61	0/00*
	unsuccessful	3/01	0/87	0/93	0/09		
Motivation	successful	3/30	0/69	0/83	0/07	2/74	0/007*
	unsuccessful	3/00	0/82	0/91	0/83		
Metacognition	successful	4/28	0/87	0/93	0/08	4/64	0/00*
	unsuccessful	3/62	1/11	1/05	0/11		

Table 2: Discriminate Analysis by the Wilks lambada

Learning strategies	Mean of successful	Mean of unsuccessful	Wilks lambada	f	p
Rehearsal	3/54	3/21	0/92	15/29	0/000*
Organization	3/39	3/13	0/97	4/01	0/047
Elaboration	3/63	3/05	0/90	19/59	0/000*
Motivation	3/30	3/04	0/97	5/07	0/026*
Metacognition	4/48	4/03	0/94	10/41	0/001*

Table3: Analysis steps

Analysis steps	Learning strategies	Mean of successful group	Mean of unsuccessful group	Wilks lambada	f	p
1	Elaboration	3/63	3/05	0/900	19/598	0/000
2	Motivation	3/30	3/04	0/920	19/147	0/000
Correlation coefficient =			29/39			

Based on the result: two learning strategies Elaboration and Motivation are Discriminative strategies between successful and unsuccessful students. In fact, this research show successful students more than unsuccessful student use from these strategies.

V. Conclusions and Discussion

Learning strategies have long been an important issue in the field of education. It is generally accepted that instructional practices should assess and accommodate learning strategies of individual students. This study examined learning strategies used by successful and unsuccessful students. Studying the relation between the learning strategies and academic achievement is another purpose of this research. Given the research results it can be seen how learning strategies significantly correlated with students' performance This is similar with the results of Renzulli (2015); Muelas & Navarro (2014); Nzesei (2015); Mohammadi and et al (2017) indicated that when students employ more strategies, they are likely to be more successful. In this study determined that successful students used more learning strategies than unsuccessful students. This is consistent with the existing literature (Fathi-Ashtiani, Hasani, Nabipoor-Ashrafi, Ejei, & Azadfallah (2007); Simsek & Balaban (2010); HezarJaribi1& Naghipour (2014); McWhaw and Abrami (2001); Ruffing & et al (2015);

Yip (2013) and Zhou (2016).

Considering the results of the present study, further research is needed in several areas. First, preferred strategies of elementary and secondary students should be studied based on the fact that those students are not as capable as high school students in deciding and employing proper learning strategies. Secondly, the effects of various strategies on learning of different types of contents should be examined under experimental conditions; such studies may reveal interactions between strategies and types of contents. Third, new studies should focus on why and to what extent successful students use different strategies than unsuccessful students. Fourth, possible links between students' use of preferred strategies and basic elements of an educational system should be explored. Fifth, future research should examine what really happens if all students go through strategy training as early as possible in their educational experiences. Finally, more experimental research is needed on the role of learning strategies on both cognitive and affective outcomes in technology-based learning environments. The results of the recommended studies may have great influences and serious implications both for educational researchers and practitioners.

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