

The Effect of Self-Regulatory Learning Strategies on Academic Engagement and Task Value

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Abstract

Background and objective: Regarding the positive effect of self-regulation strategies on academic achievement, the purpose of this study was to investigate the effect of training self-regulatory strategies based on Pintrich's model on academic engagement and task value of high school students.

Materials and methods: This study is quasi-experimental with pre-test and post-test with control group design. The statistical population of this study was all male students of first grade high school students in District 3 of Tehran, in the academic year of 2010-2011. According to the size of the sample, based on the effect size and the test power, two 30-member classes as test groups and Controls were selected by random cluster sampling. The tools used in the research include the students' academic engagement questionnaire and the task value subscale in the Motivational Strategies for Learning Questionnaire. After obtaining the license to carry out the research from Tehran education department of Tehran and performing pre-test on the sample subjects, the training program of self-regulation strategies based on the Pintrich model was conducted for 8 weeks, that is, 8 sessions 90 minutes from the first half of October to the first half of December of the academic year of 2010-2011 on the subjects of the experimental group. During this period, there was no intervention in the control group. After the end of the intervention period, the level of educational engagement and task value were re-evaluated in both groups.

Results: The results of covariance analysis with the control of the pre-test variable showed that the scores of all the components of academic engagement (i.e. behavioral, cognitive and emotional engagement) and task value in the experimental group after training the self-regulation strategies significantly increased compared to the control group.

Discussion and conclusion: Self-regulation training curriculum can have a beneficial effect on students' academic achievement due to the focus on strengthening areas such as interest and motivation, concentration, scheduling and time management, taking notes and summarizing, knowing the attribution and source of control and problem solving.

Key words: Self-regulation, academic engagement, task value

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Introduction

Lack of motivation and academic failure in students are two of the main concerns of most parents, and many students have not been able to achieve their expected progress despite intelligence and aptitude because academic achievement emphasizes controllable and educable factors such as meta-cognition and learning strategies (Ruffing, Wach, Spinath, Brünken & Karbach, 2015). Academic engagement and task value are two of the interconnected structures related to motivation and academic achievement in students.

The concept of academic engagement refers to the quality of the effort, which, students take on targeted educational activities to achieve desirable results directly (Linenbrink and Pintrich, 2002) and encompasses three dimensions of behavioral, cognitive and motivational engagement. Behavioral engagement refers to visible educational behaviors such as effort and persistence when facing problems while doing homework and asking for help from teachers or peers to learn and understand the lesson. Cognitive engagement refers to the types of processes that students use to learn (Ravindran, Green, and Debaker, 2000). In addition, motivational engagement involves internal interest in content and assignments, value and importance of them, existence of positive affection and absence of negative emotions such as frustration, anxiety and anger while doing homework and learning, and includes indicators of interest, value and affection.

The internal valuation of the tasks also refers to the importance that a learner attaches to a specific assignment or course, belief in the task and the purpose of study. Students who have internal valuation use deeper and meta-cognitive strategies (Ames & Archer, 1988). According to the expectation-value theory (Eccles and Wigfield, 2002), the value that students put on their tasks act as incentives for engagement in academic activities (Wigfield and Eccles, 2000). In addition, research has shown that task value effects academic achievement indirectly by influencing the learning strategies (Gan, 2005).

Factors affecting academic achievement and failure have always been a central issue in education, but despite extensive research and large budgets, there are still a large number of students who drop out or face academic failure (Malekzadeh, 2007). It is obvious that students without the necessary motivation will not benefit from education. Such issues can be observed both in educational environments and in the context of research (Spaulding, 1998). In fact, there is a relationship between the motivation of students and use of learning strategies (Berger & Karabenick, 2010). Considering that motivation is the most important learning condition (Kadivar, 2003), we should investigate effective strategies to increase motivation in students. One of these strategies can be self-regulation learning.

The theory of self-regulation learning is rooted in cognitive psychology and its origins lie in the theory of social-cognitive learning of Albert Bandura (Bandura, 1997). Self-regulation is a cyclic process because personal, behavioral

and environmental factors usually change during learning and are reviewed. These revisions lead to changes in strategies, cognition, emotions and behaviors (Pintrich, 2007). Self-regulation learning consists of three main components: cognition, meta-cognition, and motivation (Zimmerman, 2000).

Adaptation and success in school require that students develop and reinforce their emotions or behaviors through self-regulation development or similar processes (Schunk & Zimmerman, 1997). Research conducted over the past few years has shown that successful and self-regulated students have some characteristics such as intrinsic motivation, task value beliefs and self-sufficiency and use cognitive and meta-cognitive strategies. They are confident in their ability and use more resources to achieve their goals (Pintrich & Schunk, 2002; Perry, 2008; Kwan Ning & Downing, 2010; Berger & Karabenick, 2010; Foulad Chang and Latifian, 2001; Malekzadeh, 2007; Davoudi Filabadi, 2011).

One of the proposed models for self-regulation is the model proposed by Pintrich (1999). In this model, learners are actively involved in their learning process, and as a result, they can direct their thoughts, emotions and actions in a way that has a positive impact on their learning and motivation (Boekaerts & Corno, 2005). Pintrich and Schunk (2002) argue that self-regulation learning is an active and practicable process in which students determine goals for their learning and then attempt to monitor and regulate their motivation and behavior.

The Pintrich model of self-regulation learning includes three general categories: a) cognitive strategies b) meta-cognitive strategies and c) resource management strategies. Cognitive strategies are such as repeating and reviewing information, expanding and adding more details to new content. Text organizing can be considered as a set of processes or actions related to acquisition, maintenance, or use of information (Pintrich & De Groot, 2010) Meta-cognitive strategies such as planning, thought monitoring, academic performance, regulate the process of learning and study, help the person to monitor their progress while learning and knowing of tasks. It also helps them to assess the results of their efforts and evaluate their own proficiency over the content they read (Seif, 2004; Pintrich, 1999). Finally, learners, in addition to self-regulation of cognition and meta-cognition, must be able to resource management strategies, manage and regulate their time and environment, monitor efforts, learn from their peers and ask for help of peers and teachers (Pintrich And De Groot, 1990; Chen, 2002). Among self-regulation models, the self-regulation model proposed by Pintrich (1999) has good experimental support (Abedini and Kadkhodaie, 2012).

According to the mentioned issues in the present study, the researcher tries to study academic engagement and task value of the students by educating self-regulation strategies based on the Pintrich model while expressing engagement between motivational and cognitive factors, which affect learning and advancement together.

Method

Society, sample and sampling method

The present study is a quasi-experimental study with pretest-posttest design with control group. The statistical population of this research includes all male students of first grade high school students in district 3 of Tehran, in the academic year of 2010-2011. To determine the sample size (two groups) based on the effect size of 40 and the test power of 78, were selected, about 30 people. In order to select the experimental and control groups, we selected two schools and from each school a class of 30 students by random cluster sampling from the list of male students of first grade high schools in district 3 of Tehran.

Tools

The tools used in this study are:

1. Academic engagement questionnaire for students

This questionnaire was developed by Kang, Wang and Lam (2003) and includes 62 questions in the 5-point Likert scale (never = 5, always = 1). The internal consistency of subscales of emotional engagement scores is 0.77, cognitive engagement is 0.73, and behavioral engagement is 0.70 (Kang et al., 2003). It should be noted that in the present study, we discarded other subscales (superficial strategy, deep strategy, trust, interest, tendency to achieve results, anxiety, despair, accuracy, assiduity and spending time), due to the fact that three dimensions of educational engagement were considered

2. Task value questionnaire

In order to measure task value, we used a task value subscale in motivational strategies questionnaire for learning (Pintrich, Smith, Garcia, and McCatchy, 1991). This subscale contains 6 items. The internal consistency coefficient of this questionnaire was 0.88 in research of Lavasani et al. (2011). In addition, Cronbach's alpha in task value questionnaire was 0.86.

Research methodology

After obtaining a license from the Department of Education in Tehran and satisfaction of Razi and Sobhan Schools' principals and consultants to conduct the research, in the pre-test phase, questionnaires containing questions related to academic engagement and task value were provided to all students (experimental and Control groups). After distributing the questionnaires, students were asked to read the questions and select the appropriate option. Students were reminded that the answer to the questions would remain confidential and had no effect on their final score or any other score. Then a training program was conducted for the experimental group. This program was previously set up by Tavakoli (2008) and is based on the Pintrich self-regulation model. This training program lasted for 8 weeks, i.e., 8 sessions of 90 minutes, and the duration of training continued from the first half of October to the first half of December in the academic year of 2010-2011. It should be noted that at each session, they were given a task to use learning strategies and asked to submit the result to the next session in the classroom. At the end of these eight weeks, we re-evaluated the educational engagement and task value test in both groups. Motivational interviewing sessions are presented in Table 1:

Findings

The mean and standard deviation of the components (behavioral, cognitive and emotional) of academic engagement and task value of students are presented in Table 2.

As it can be seen, the mean of all three components of academic engagement and task value in the post-test in the experimental group is more than the control group. The covariance analysis was used to determine the significance of the differences in the averages, which is shown in Table 4- page 246. The insignificance of Levine's test (Table 3) also indicates the homogeneity of the variances of the groups.

As it can be seen, there is a significant difference between the experimental group, who were subjected to self-regulation training and the control group who had no intervention, in terms of all components of academic engagement and task value in the post-test. In other words, self-regulation training has increased the academic engagement and task value of students.

Discussion and Conclusion

The purpose of this study was to investigate the effect of self-regulation training strategies based on Pintrich's model on academic engagement and task value of high school students. The findings indicated a significant effect of self-regulation training strategies on strengthening academic engagement and task value of students. The findings of this study can be verified in two general directions:

The results of the first direction include the effectiveness of self-regulation strategies on improving the academic engagement of high school male students in all courses. These results are in line with the studies conducted in this area (Malekzadeh, 2007; Askan, 2009; - Heikila et al., 2006). Given that self-regulating strategies predict future motivation for students, successful application of these strategies leads to an increase in student's self-efficacy beliefs, thus increasing students' academic engagement in learning lessons. Heikila et al. (2006) reported that self-regulatory strategies could increase cognitive and motivational engagement and problem solving, and lead to success and achievement in learning goals. In his study, Askan (2009) found that improving self-regulatory skills caused student motivational engagement. The skills help learners make a good choice and give more value to tasks. Therefore, learners need to know how to learn, and how learning is accomplished. It should be noted that student's involvement in the lessons was low, but the covariance analysis showed that self-regulation strategies improved students' academic engagement in the courses.

The results of the second direction indicate the effectiveness of self-regulating strategies on increasing the task value of the students, meaning that, this training has been able to increase task value of student in all courses. Students with more task value are more motivated to learn lessons and use more and deeper learning strategies. Green's et al

Table 1: Structure of Pintrich's Self-Regulation educational Sessions (1999)

Sessions	Content and techniques	
First	Establish communication	Introduction, Establishing a friendly relationship, Students' motivation to learn lessons, Explanation of the goals and benefits of the curriculum
Second	Motivation and interest	Discussion on motivation and interest, discussion on the motivation impact on studying lessons, introducing methods for increasing motivation (identifying available goals, establishing self-reinforcement system, determining the types of thoughts and their effects, concluding a contract), homework
Third	Concentration	Discussion on focusing, affecting factors on concentration (study place, interest, beliefs and attitudes), homework tasks
Fourth	Timing	Talk about scheduling and adjusting time and its benefits, using a timetable, setting priorities, using modeling in education, homework
Fifth	Summarizing and note taking	Talking about taking notes and summarizing, learning how to use notes and summarize, homework
Sixth and seventh	Source control strategy	Discussion on the theory of documents and internal and external control source, homework
Eighth	Problem solving	Teaching problem solving strategy, homework

Table 2: Descriptive Results of academic engagement and task value of students

Variable	Group	Pre-test		Post-test	
		M	SD	M	SD
Behavioral engagement	Control	3.45	0.87	3.33	0.86
	Experiment	3.47	0.83	3.74	0.60
Cognitive engagement	Control	3.14	0.32	3.13	0.52
	Experiment	3.16	0.46	3.38	0.35
Emotional engagement	Control	3.13	0.58	3.10	0.60
	Experiment	3.11	0.29	3.37	0.31
Task value	Control	3.88	0.62	3.63	0.91
	Experiment	3.85	0.68	4.20	0.71

Table 3: Levine test for homogeneity of variances

	F	Df1	Df2	Sig.
Behavioral engagement	0.00	1	58	0.95
Cognitive engagement	0.07	1	58	780.
Emotional engagement	0.00	1	58	0.65
Task value	1.78	1	58	0.18

Table 4: The results of covariance analysis in single-variable of scores and academic engagement and task value components in students

Variable	Source of change	Sum of squares	Df	Averages of squares	F	Sig.	Test ability
Behavioral engagement	Pre test	13.83	1	13.83	42.74	0.00	1.00
	group	2.50	1	2.50	7.74	0.00	0.78
	Error	18.44	57	0.32			
Cognitive engagement	Pre test	0.00	1	0.00	0.02	0.89	0.05
	group	0.90	1	0.90	4.47	0.04	0.55
	Error	11.49	57	0.20			
Emotional engagement	Pre test	2.39	1	2.39	12.44	0.00	0.93
	group	1.21	1	1.21	6.30	0.01	0.70
	Error	10.96	57	0.19			
Task value	Pre test	2.645	1	2.645	4.176	0.05	0.52
	group	5.067	1	5.067	8.004	0.00	0.79
	Error	36.081	57	0.633			

study (2004) showed that task value of individuals, which they called "perceived usefulness," anticipates elegance choices. In addition, task value has meaningful participation in academic achievement (Hejazi and Abedini, 2008), affects academic achievement indirectly through influencing the learning strategies (Gan, 2005), and stated as an incentive for engagement in academic activities (Wigfield et al., 2006). In general, task value can be measured in different subjects and domains (for example, mathematics, chemistry, etc.) (Eccles, 2005). However, most studies (such as this study) have conducted on relationship between task value and academic performance in general (without distinction of different courses). Overall, it can be argued that training in self-regulation strategies is a way to increase task value in them due to the focus on improving students' interest and motivation and discussions with them in this field.

Limitations of the study included: 1) Information resources are limited to self-assessment tools and did not use parent or teacher information resources for the status of studied variables due to time constraints and lack of cooperation from schools. 2) Since the academic background is controlled in this study, generalization of the results to other grades and classes are limited. 3) Research has been carried out in boys' schools, so it is difficult to generalize the results to both genders and finally, (4) due to time constraints, long-term follow-up (more than two months) was not accomplished to pursuing the sustainability of the effect of education.

Finally, since these strategies are considered as general skills, they are necessary for learning all the courses. Considering the importance of teaching these skills, especially in high school, it is suggested that teachers in their in-service training should familiarize themselves with self-regulation learning strategies and provide a basis for teaching such skills in schools because learners do not use self-regulation strategies on their own unless they are taught and required to use them.

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