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Relationship of Cognitive, Emotional and Behavioral Engagements with Students' Academic Achievement

Ramezan Raisi^{1*} and Mousa Javedan²

1. Department of Psychology, Bandar Abbas Branch, Islamic Azad University, Bandar Abbas, Iran.

2. Hormozgan University, Bandar Abbas, Iran.

A B S T R A C T

The aim of this study was to determine the relationship between cognitive, emotional and behavioral engagements and academic achievement of high school students in Bandar Abbas (Iran) in the academic year 2014-2015. In order to determine the sample size according to Morgan Table, 200 subjects were selected using random sampling method. To collect data regarding the cognitive, emotional and behavioral engagements Fredericks et al Questionnaire (2004) was used and to collect data regarding the academic achievement, Hermans Questionnaire was applied. Data were analyzed by descriptive and inferential statistical tests of Pearson and regression. Regression analysis results show that cognitive engagement at the level of $p < 0.0587$, behavioral engagement at the level of $p < 0.082$ and emotional engagement at the level of $p < 0.001$ significantly explain students' academic achievement. Finally, it can be concluded that cognitive, emotional and behavioral engagements have a significant relationship with academic achievement and they are good predictors for it.

Keywords: Academic Achievement, Cognitive Engagement, Emotional Engagement, Behavioral Engagement.

INTRODUCTION

All amazing advances in modern world are generated by human learning. Environment is constantly subject to change. In order to match the changes, or to confront and fight with them, or to understand the changes and provide suitable solutions to adapt and to survive, human beings constantly try to learn and to increase their knowledge. Acceleration of changes and evolutions in today's world in areas such as information technology, has created a complex situation¹. Success in this situation cannot be guaranteed by the use of a set of knowledge and skills. But rather it is possible by the human ability to learn from this situation. Increasing production of knowledge, information and technological advancement has caused the life of knowledge and information to be too short. Therefore, in order to

* . Corresponding Author: amirahmadraisi@gmail.com

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Relationship of Cognitive, Emotional and Behavioral Engagements with Students' ...

overcome this situation, instead of transferring a set of knowledge and information to the individuals, they should be taught how to learn and how to access the information quickly. Since the factors affecting learning is broad, recognition of these factors is very important in solving the problems and deficiencies in the education system².

Skinner believes that a real and effective educational system cannot be created unless the process of learning and teaching is well known and understood. Many factors can affect the learning process. Some of these factors are related to the learner's characteristics and other factors are related to social backgrounds of learning. The first factor, learner's characteristics, refers to individual differences. Learning style is a part of learning differences concept that can be defined as a way through which the person organizes and processes the information and new experiences in his/her mind³.

Learning can be daringly known as the most fundamental process as a result of which, a powerless and helpless being over time and interaction and physical growth becomes a developed person whose cognitive abilities and thoughts power know no borders. Wide diversity and temporal development of human learning, which is as wide as his life, has caused, despite many differences in learning, some people have difficulty in the normal course of learning and teaching^{4, 5}.

Another thing that should be pointed out is that in assessing the pre-teaching factors, two fundamental issues are importance. First is the cognitive and knowledge factor that the learner brings to the learning environment, which is the input behavior, i.e. what the learner already learned and is a prerequisite to learning new things. The second factor is learning styles. Learning styles are the person's preferences and not his/her learning abilities? That is why, these characteristics of individuals are called learning styles, rather than learning capabilities⁶.

Social cognitive theory suggests that human behavior is influenced by person, behavior and the environment. In other words, each individual affects these triple factors, as he/she is influenced by them. Based on social cognitive theory, every person uses a self-regulation system that affects the learner's motivation. The self-regulation system shows a process by which the multilateral relationship between the person's experiences, behavior and environment is influenced. The interaction of three factors of behavior, person and environment is called mutual coercion (reciprocal determinism)⁷.

As mentioned before, cognitive engagement is one of the components of academic engagement and it has been emphasized in most of studies as mediator variables⁵.

Cognitive engagement is the level of psychological investment that needs learning purpose and also it is giving priority to hard work (Friedrich et al., 2004).

In addition, many of the human behaviors are motivated and controlled by mechanisms of self-influencing. One of the mechanisms of self-influencing is personal self-efficacy. According to the social cognitive theory of Bandura, the

renowned psychologist, self-efficacy refers to the person's beliefs or judgments about his/her abilities to perform the duties and responsibilities. If a person believes that he/she cannot achieve the expected results, or believes that he/she cannot prevent unacceptable behaviors, his/her motivation to do the task will be reduced. Although there are other factors that act as human behavior motivators, all of them are function to the person's beliefs. According to Bandura, knowledge, skills and previous achievements of the persons are not good predictors of the persons' future performance, but rather the persons' beliefs in their abilities to perform their tasks are effective⁸.

One of the most important indicators in evaluating the education system is the students' academic achievement and all efforts in this system are to achieve these goals. The whole of society in general, and specifically education system are interested in and concerned about the fate of children, their successful growth and development and their position in society. They expect students to progress and strive for excellence in various aspects, including cognitive dimensions and skill acquiring as well as emotional and personal dimensions⁹.

Undoubtedly, in today's developed world one of the signs of a person's success is his/her academic achievement, without which the development and progress of any country would not be possible. Development of any country is directly related to the progress of science and knowledge and technology of that country. Scientific progress cannot be achieved unless people have been trained to be creative. While academic achievement is effective in the development of the country, at higher levels, it leads to finding appropriate jobs and opportunities and, therefore, having sufficient revenue.

As mentioned before, academic achievement and self-efficacy are specifically affected by cognitive, emotional and behavioral engagement. For a closer look at the impact of factors involved in the present study, we decided to investigate the effect of academic engagement components on the academic achievement of high school students in Bandar Abbas to be aware of the impacts of variables.

METHODOLOGY

In this study, due to the nature of the research subject, objectives and assumptions, descriptive (non-experimental) method was applied and the research design was correlational one. The study population included all high school boy students in the District 1 of Bandar Abbas city from 2014 to 2015. To determine the sample size, according to the Morgan formula, 200 subjects were selected by random sampling method.

Given the nature of the present study, data collection carried out by two methods of library and field study and according to the needs at each stage of the research, one or both of these two methods were used. To obtain theoretical foundation in the field of research and understanding theories, models and approaches, and to collect the required information, library resources, Internet

Relationship of Cognitive, Emotional and Behavioral Engagements with Students' ...

sites, Persian references, authentic Latin papers and theses, documents and available data in the Statistic Center were studied and analyzed and descriptive and analytical information has been collected.

Data collection regard to the population of the study carried out through field study using the tools of questionnaires and interview.

In this study, following questionnaires used to assess the participants:

In the present study, McIlroy and Bunting Questionnaire used in order to measure academic self-efficacy beliefs.

Fredericks et al. prepared a questionnaire with 19 questions whose answers were the range of Likert five-item, from strongly disagree to strongly agree and it measures three types of engagements, including behavioral engagement, motivational engagement and cognitive engagement.

RESULTS

Table 1. Mean and standard deviation of research variables in the sample

Variable	Mean	Standard Deviation
Cognitive Engagement	17.525	3.68746
Behavioral Engagement	20.55	3.91845
Emotional Engagement	8.445	2.07327
Academic Achievement	64.415	11.1385

Descriptive findings according to Table 1 about research variables showed that the mean of cognitive engagement is equal to 17.525, the mean of behavioral engagement is equal to 20.55, the mean of emotional engagement is equal to 8.445 and the mean of academic achievement is equal to 64.415.

Table 2. Results of determination model of the role of cognitive, emotional and behavioral engagement in academic achievement prediction

Adjusted Determination Coefficient	Determination Coefficient	Correlation Coefficient
0.694	0.699	0.835

Results of regression test in predicting academic achievement through cognitive, emotional and behavioral engagements showed that the desired model has a coefficient of determination equal to 6.99. This suggests that cognitive, emotional and behavioral engagements determine 0.694 percent of the students' academic achievement.

Table 3. ANOVA of the role of cognitive, emotional and behavioral engagement in academic achievement prediction

Model	Coefficient of Squares	Freedom Degree	Mean of Squares	F	p
Regression	17245.782	3	5748.594	151.793	0.001
	7422.733	196			
Total	86642.555	199			

The results of ANOVA show that due to the value of $F= 151.793$ and $P= 0.001$ cognitive, behavioral and emotional engagements explain academic achievement significantly.

Table 4. Academic achievement prediction through cognitive, emotional and behavioral engagement

Variables	beta	T	p
Cognitive	0.587	0.138	0.001
Emotional	0.347	0.235	0.001
Behavioral	0.082	1.932	0.055

The results ultimately showed that cognitive engagement, given $\beta = 0.587$ and $P= 0.001$ and emotional engagement, given $\beta = 0.347$ and $P = 0.001$ and behavioral engagement, given $\beta = 0.082$ and $P = 0.055$ are significantly able to predict academic achievement.

CONCLUSION

The aim of this study was to investigate the relationship between cognitive, emotional, and behavioral engagements and academic achievement of students. Cognitive engagement is the engagement in which the students enjoy a subject, and it leads to motivation in the students. As demonstrated in other studies, the cognitive engagement makes learning processes to be occurred from simple to difficult. Research has shown that cognitive engagement plays a more important role in learning. In general, studies carried out by Amini² and Mohsenpour⁹ showed that cognitive engagement has a direct and positive effect on students' academic achievement. This finding is consistent with the findings of the present study.

Emotional engagement is subject to the issue of attention and value. If students show interest in the subject and consider it as a valuable content, the students' learning is better. As this study confirms, emotional engagement plays an important role in academic achievement.

Behavioral engagement is coordination and cooperation between nerves, the nervous system and muscles. As the results of this study show, the role of behavioral engagement is as important as the role of cognitive and emotional engagements.

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Relationship of Cognitive, Emotional and Behavioral Engagements with Students' ...

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