



The Pattern of Structural Relationships between Perceptions of Constructivist Learning Environment, Academic Self-efficacy, Intrinsic Motivation and Academic Performance

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ABSTRACT: The objective of this study is to investigate the pattern of structural relationships between perceptions of constructivist learning environment, academic self-efficacy, intrinsic motivation and academic performance of students in Islamic Azad University of Minab. In this descriptive-correlational study, the population is all students in Islamic Azad University of Minab and using multi-stage random sampling, 400 students in various disciplines are selected as samples. Tools used in this study include Constructivist Learning Environment Survey (CLES) and Motivational Strategies for Learning Questionnaire (MSLQ). The proposed model is evaluated using structural equation modeling. To test indirect relationships, Bootstrap test is conducted in Hayes and Preacher macros. According to the results obtained in this study, the proposed model for structural equations of causal relationships between variables indicates an acceptable fitting. Based on the results obtained for assumptions one to five, we can conclude that the indirect relationships proposed in assumptions sixth and seventh are also explainable. In other words, the perception of a constructivist learning environment can affect academic performance through increasing the academic self-efficacy and intrinsic motivation, and promote it.

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INTRODUCTION

Teaching and learning process in a continuous and stable process and is based on two types of factors: internal and external. In the context of learning and teaching process, psychologists advocate two perspectives, namely internal and external factors. The first group advocates the communication theory in learning process. The second group of psychologists, who are active in the field of learning and education, considers learning as an effect of the perceptions of a Wight and believes that teaching and learning must be evaluated and interpreted in the context of conceptions and reasoning of a Wight.

The focus of researches conducted on classroom learning environments have generally been on the psychosocial aspects of these environments-aspects focused on the origin or the result of human behavior [1]. A review of researches on classroom learning environments by Novak [2] has identified at least 10 research fields in this area which has been the most vigorous research field and has linked classroom learning environments and cognitive and emotional outcomes of learners. The results of studies conducted in this area have provided compelling evidence implying that classroom learning environments are significant determinants for students learning [2].

People's learning is influenced by a complex ecosystem. The ecosystem has various components. An element of the ecosystem is the learning environment and situation which plays an important role in learning. On the other hand, in addition to the learning environment and situation, the different and potential abilities of the people in the mentioned ecosystem has a special role [3].

In the mid-1980s, a new attitude, called constructivism was introduced; a novel and innovative altitude which was the result of profound changes and ideas in the structure of the educational system in the world [4].

Self-efficacy beliefs are the basis of functionality [5]. Cognitive-social theory suggests that insisting on an adaptive behavior is related to self-efficacy beliefs and outcome expectations. In other words, a person's behavior is due to his belief in his ability to experience a positive outcome. Positive outcomes include physical and social behaviors. According to Bandura, expectations may affect people in two areas: (a) the amount of effort for that work, and (b) the type of activities chosen for that work [5].

In a study, Loyens et al. examined the relations between motivational, cognitional, social and behavioral variables. They concluded that self-efficacy has a direct effect on mastery, performance-oriented and performance-rejected goals and deep cognitive involvement, while task value just predicts the mastery goal. Based on the existing theory and previous research results, the overall objective of the present study is to test the fitness of the proposed

conceptual model for causal relationships between perceptions of constructivist learning environment, self-efficacy, intrinsic motivation and academic performance.

MATERIALS AND METHODS

This study a descriptive and correlational study which uses structural equation modeling to test the assumed relationships between latent and measured variables in the proposed model. In the study, two questionnaires were used to collect data. The first one, 9 items of which was used to evaluate the self-efficacy and 31 items for intrinsic motivation, is Motivational Strategies for Learning Questionnaire (MSLQ). In the first study, the reliability coefficient was 0.90 and in the second study, it was 0.81. According to Rafieian, the validity factor of this study was 0.64. In this study, confirmatory factor analysis was conducted to investigate the factor structure of Motivational Strategies for Learning Questionnaire (MSLQ), and Cronbach's alpha was used to evaluate the reliability. Accordingly, the validity of this scale was estimated in an appropriate level. The reliability of the scale was also calculated equal to 0.87 using Cronbach's alpha.

To assess the perceptions of constructivist learning environment, the scale of Constructivist Learning Environment Survey (CLES) was used. The scores of individuals on this scale estimate their perceptions of five basic aspects of constructivist classes including personal relevance (articles one to six), the uncertainty of science (articles seven to twelve), critical voice (articles thirteen to eighteen), shared control (articles nineteen to twenty-four), and student negotiations (articles twenty-five to thirty). Authors have declared that the scale has a satisfactory factor structure; the subscales reliability has been reported between 0.54 to 70.

The population consisted of all first-year students in Azad University of Minab in 2011-2012 school year. The study sample was selected using multi-stage stratified sampling. The process of sampling was as follows: at first, the 5 disciplines were randomly selected among available disciplines in the university, and then totaled 400 students studying at selected disciplines were randomly selected.

For studied variables, statistical indicators including mean, standard deviation and other required descriptive parameters were calculated. To test the relationships assumed in the proposed conceptual model, structural equation modeling was used. Therefore, the fit indices of the model such as the chi-square, the comparative fit index (CFI), goodness of fit index (GFI), adjusted goodness of fit index (AGFI) and root mean square error of approximation (RMSEA) were calculated.

RESULTS

In this section, the descriptive statistics of the variables are investigated. Table 1 shows mean, standard deviation, minimum and maximum scores for the variables in the perception of constructivist learning environment, academic self-efficacy, intrinsic motivation and academic performance. Table 2. presents the correlation matrix for the variables.

Table 1. Descriptive functions of the variables

| Scales | Mean | SD | Min. | Max. |
|---|-------|-------|------|--------------|
| perception of constructivist learning environment | 46.95 | 7.89 | 23 | 64 |
| personal relevance | 11.79 | 2.13 | 6 | 16 |
| uncertainty of the Science | 12.02 | 2.15 | 6 | 16 |
| critical voice | 12.45 | 2.16 | 6 | 16 |
| shared control | 11.51 | 2.35 | 6 | 16 |
| student negotiating | 12.04 | 2.78 | 6 | 16 |
| academic self-efficacy beliefs | 18.16 | 3.19 | 7 | 25 |
| intrinsic motivation | 42.21 | 10.04 | 15 | 64 |
| academic performance | 13.89 | 2.86 | 8.09 | 17.62 |

Findings related to the test of the proposed model: First, the underlying model assumptions and fitness parameters are provided. The general assumption: the proposed conceptual model for the causal relationships between perceptions of constructivist learning environment, self-efficacy, intrinsic motivation and academic performance among students of Islamic Azad University Minab fit with research data.

The path coefficients for the direct relationships of the proposed model: The structural model of the study is composed of four variables including perceptions of constructivist learning environment, academic self-efficacy, intrinsic motivation and academic performance. In this model, the perception of a constructivist learning environment is considered as an exogenous variable, intrinsic motivation, and academic self-efficacy as a mediator variables and academic performance as endogenous variables. The results of the analysis of the proposed model are shown in Figure 1.

Results obtained from direct relations of variables in the model show that all path coefficients between variables are statistically significant. Table 3 shows the parameters used to measure the direct relations of variables for all samples. As obvious from Table 3, the standardized path coefficients are positive and significant for constructivist learning environment and academic performance ($\beta=0.46$, $p \leq 0.001$), constructivist learning environments and self-efficacy beliefs ($\beta=0.51$, $p \leq 0.001$), constructivist learning environments and intrinsic motivation ($\beta = 0.54$, $p \leq 0.001$), self-efficacy and academic performance ($\beta = 0.56$, $p \leq 0.001$), and intrinsic

motivation and academic performance ($\beta = 0.49, p \leq 0.001$). Therefore, based on the standardized coefficients and the critical values presented in the table, the significance of all direct paths is $p \leq 0.001$. The fit indices of the proposed models is discussed and evaluated at the following.

Evaluation of the proposed model: To evaluate the proposed model, the fit indices are examined. The analysis results show that the root mean square error of approximation (RMSEA) is 0.06, the comparative fitness index (CFI) is 0.98, the goodness of fit index (GFI) is 0.95, the adjusted goodness of fit index (AGFI) is 0.92, the normalized fitness index (NFI) is 0.98, the increasing fitness index (IFI) is 0.98, and Tucker - Lewis index (TLI) is equal to 0.98 which imply the proper fit of the model. Overall, about 89% of the variance in academic performance was predicted by the model variables. The fit indices of the model for all samples are presented in Table 4.

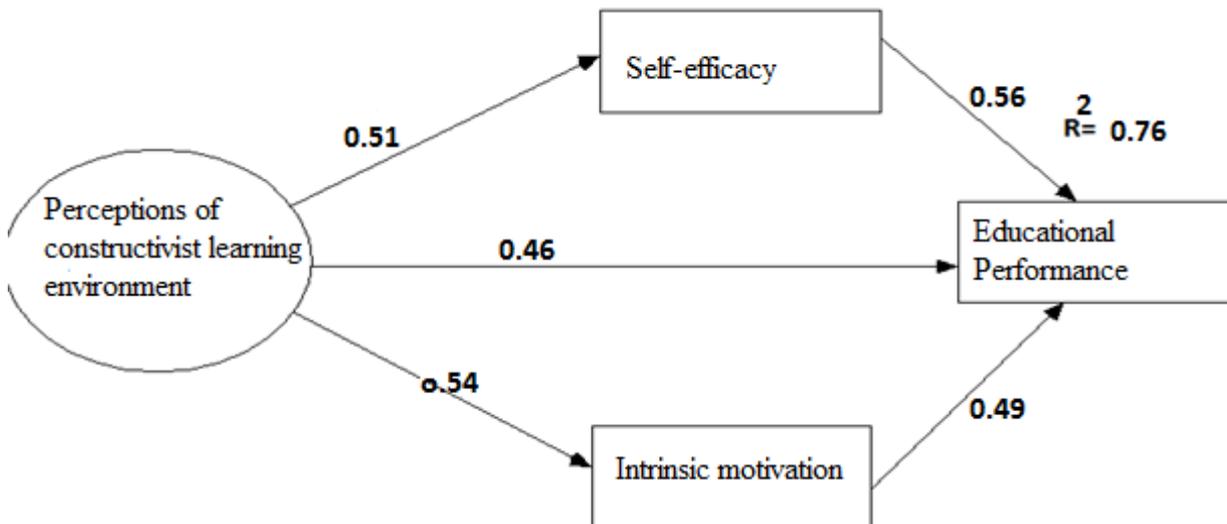


Figure 1. The results of the model analysis

Table 3. Parameters for measuring direct relations between the variables

| Path | Beta | B | SE | CR | Sig. |
|--|------|------|------|------|-------|
| Constructivist learning environment with academic performance | 0.46 | 0.39 | 0.07 | 4.10 | 0.001 |
| Constructivist learning environment with self-efficacy beliefs | 0.51 | 0.76 | 0.09 | 8.42 | 0.001 |
| Constructivist learning environment with intrinsic motivation | 0.54 | 0.64 | 0.14 | 4.56 | 0.001 |
| Self-efficacy beliefs with academic performance | 0.56 | 0.07 | 0.01 | 7.54 | 0.001 |
| Intrinsic motivation with academic performance | 0.49 | 0.08 | 0.02 | 3.85 | 0.001 |

Table 4. The fit indices for the proposed model in the entire sample

| Fit indices | Value |
|--|--------|
| Chi-square test (χ^2) | 148.09 |
| Significant level | 0.001 |
| Degrees of freedom (df) | 54 |
| Chi-square to degrees of freedom ratio (χ^2/df) | 2.74 |
| Goodness of fit index (GFI) | 0.95 |
| Adjusted goodness of fit index (AGFI) | 0.92 |
| Normalized fit index (NFI) | 0.98 |
| Comparative fitness index (CFI) | 0.98 |
| Increasing fit index (IFI) | 0.98 |
| Tucker - Lewis Index (TLI) | 0.98 |
| The root mean square error of approximation (RMSEA) | 0.06 |

DISCUSSION

The obtained results showed that there is a significant positive relationship between the perception of a constructivist learning environment and the academic performance. The results are consistent with Anyanwu [7] and Hodges [8]. In all these studies, a significant positive relationship between perceptions of constructivist learning environment and academic performance has been reported.

The results also show that there is a significant positive relationship between the perception of a constructivist learning environment and self-efficacy beliefs. The results are consistent with the results obtained by Gijbels et al. [9] and Samavi et al. [10].

Based on the results, there is a significant positive relationship between the perceptions of constructivist learning environments and intrinsic motivation. The result is consistent with Young [11].

Also, there is a significant positive relationship between intrinsic motivation and academic performance. The result is consistent with Zimmerman [12]. The results show that there is a significant positive relationship between academic self-efficacy beliefs and academic performance. The findings of the study are consistent with Bandura [5]. The best explanation for the relation between academic self-efficacy and academic performance is provided by Bandura. Bandura [5] believes that four information sources must be considered to judge the self-efficacy including actual performance, alternative experiences, verbal persuasion, and physiological feedback (emotional arousal). The first and the most important source of information for self-efficacy is the actual performance. Positive negative experiences can affect a person's ability to perform a specific task. If a person has worked well in the past in a specific task, he would probably feel competency and work well in the same task. Obviously, learners with successful academic performance have a higher-level academic self-efficacy because of possessing one of the major information sources, i.e. the real experiences.

Based on the results obtained on the assumptions one to five, it can be concluded that the indirect relationships discussed in sixth and seventh assumptions can also be explained. In other words, the perception of a constructivist learning environment can affect and increase the academic performance through increasing the academic self-efficacy and intrinsic motivation.

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