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Original Article

A Causal Relationships Model of Future Orientation on Self-Regulated Learning: The Mediating Role of Academic Self-Efficacy and Task Value Among Master's Degree Students Attending Electronics Courses at Payame Noor University of Tehran

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ABSTRACT

Background: In recent decades self-regulated learning has been regarded as an effective factor in successful academic performance, This study aimed at presenting a causal relationship model of Self-regulated learning and future orientation based on the mediating role of academic Self-Efficacy and Task Value through path analysis.

Methods: In this descriptive-correlational study, the data were collected through a combined questionnaire which was completed by 320Of Paramedical Students (178 woman& 142 Man). The samples were selected from among - people (statistical population) through a multi-stage sampling method (cluster, stratified and random) in 2018-19 academic year at Payame Noor University of Tehran, and they completed a questionnaire consisting of 4 standard sub-questionnaires. The data were analyzed by Path analysis using Amos 24, Lisrel 8.8 and Spss 22.

Results: The results showed that the effect of three endogenous factors)academic Self-Efficacy, task value equal, future orientation) on the academic self-regulation in the students was significant. The values obtained from the comparative fit index, goodness of fit index, adjusted goodness of fit index, and root mean squared error of approximation were 0.98, 0.97, 0.96, and 0.052, respectively.

Conclusion: Among the endogenous variables in students the maximum total effect on academic self-regulation is related to the academic self-efficacy and equal 0.22. The fit indices of the model showed that the proposed model in the study has a relatively good fit with the data gathered from virtual students.

Keywords: Task value, Future orientation, Academic self-efficacy, Self-regulated learning

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Introduction

Educational systems were the first systems to undergo widespread changes with the entering to the age of communications. They gradually and continually provided these new changes in the educational environment for learning. In such age, an independent learner with motivation is required to work with new methods of education, including electronic education, with a particular goal orientation towards mastering content and homework with self-regulated strategies (1).

On the other hand, in order to serve the educational justice, universities and institutes of higher education have set up electronic education courses. Following the rise of electronic education, scholars and researchers are growing more concerned about the quality of academic achievements of learners in these courses It is becoming ever more important to conduct research on managing education and improving the academic performance of learners in electronic education courses.

Nowadays, motivational variables are among the most influential variables in learning, academic success and achievement of electronic and non-electronic students. Therefore, this issue has been taken into consideration by many of the experts in the field of education. Self-regulated learning is the ability to change its responses based on rules, goals, ideals, norms, programs, and other standards in the human adaptive approach that exit in variety of activities to control them (2). One of the effective motivational variables in self-regulated learning is self-efficacy. Self-efficacy in, learning, is a set of skills and competencies necessary to achieve a particular task that affects both the processes of thinking and emotion in the motivation of an individual (3). Effect of academic self-efficacy on self-regulation has been investigated in different ways. These investigations are about the use of self-regulated strategies and their usefulness (4, 5), and results in efficient, useful and absorbent interpretations in performing tasks (6). The other variable that influences self-regulated learning is task value, which is a strong factor that stimulate an individual to improve his performance (7). Self-regulated learners select goals for a specific task and use appropriate strategies to achieve these goals and actively control the important aspects of cognition, behavior, and environment for achieving their own learning goals (5, 8), which results in a high quality performance of the individual (5). Other new variables in educational management is future orientation. Future orientation refers to the perceptions people have about their future (9). It can make future planning easier and create the ground for individual progress (10-15). It is an essential prerequisite for achieving individual goals based on the learners perception of success, search for future choices, the exchange of information and the systematic planning for the future (11). And it includes the task value for achieving its) future orientation(future goals and program and the amount of internal value (11).

According to Linenbrink and Pekrun, systematic and theoretical research is needed in order to obtain a comprehensive knowledge of the dimensions of electronic learning (12). Therefore, In view of the theoretical framework and the research background, this study conducts path analysis to explain the self-regulated learning of the master's students in electronic courses at Payame Noor University of Tehran.

Learning management in virtual learning by the learner is important. On the other hand, research with this arrangement has not been done in the past. The model presented in this research is extracted from the theoretical background and previous research that has been selected as the conceptual model (Figure 1). In this model, we evaluate the relationships among variables, estimate the coefficients, and finally fit the model.

The conceptual model of research is presented in Figure 1.

Methods

This research is descriptive-correlational type, based on the nature of the research and the method of studying variables.

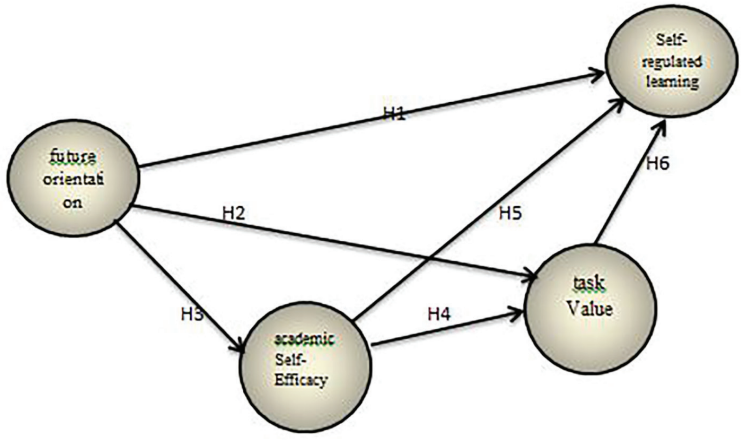

Figure 1: The conceptual model and hypotheses of research

The statistical population of this research consisted of all master's students attending electronic education courses at Payame Noor University of Tehran during the academic year of 2018-2019 (1870 people). The study sample included 250 people (117 men (46.8) and 133 women (53.2)), who were selected by multi-stage sampling method based on Morgan's table (At first, two faculties were selected from among the electronic faculties of Payam Noor University of Tehran and then some classes were selected from a list of classes in a particular semester. Then some students in each class filled the questionnaires). A total of 235 questionnaires were completed, of which 15 were eliminated due to lack of complete response or multiple responses to one question. To evaluate the variables, participants responded a questionnaire consisting of four sub-questionnaires. This questionnaire consisted of six items. The studied fields include task value, self-regulation, self-efficacy, and future (career) orientation.

The questionnaire scale in Likert's five-point scale (1-5 points) was the scoring method. The reliability of this questionnaire was confirmed by confirmatory factor analysis method (GFI=0.99, AGFI=0.94 and RMSEA=0.05) and showed that the correlation coefficient between the questions was appropriate and its validity was confirmed by professors and experts in this field. The minimum score of this questionnaire is 59 and its maximum is 295. These questionnaires are:

1. Bouffard's Self-Regulation Questionnaire: It contains 14 items designed by Bouffard et al (14). All questions are in a 5-point range using the Likert's scoring scale. The overall reliability coefficient of the questionnaire based on Cronbach's alpha was obtained as 71%. The reliability of the cognitive strategies and metacognitive subscales were 70% and 68%, respectively. The minimum score for this questionnaire was 14 and its maximum was 70.

2. Pintrich's Task Value Questionnaire: This scale has 6 items that are set in a Likert's five-point scale. The reliability coefficient for this scale in Pintrich et al (15) was 0.90. The minimum score for this questionnaire was 6 and its maximum was 30.

3. Midgley et al.'s Standard Academic Self-Efficacy Questionnaire: This scale has five items with a Likert's five-point scale. Cronbach's alpha for the data before and after the experiment was 0.91 and 0.90, respectively (16). The obtained reliability for academic self-efficacy was 0.86 using Cronbach's alpha. To evaluate the validity of this tool, content and face validity were evaluated by specialists and experts. The minimum score for this questionnaire was 5 and its maximum was 25.

4. Future Life Path Questionnaire: This questionnaire was prepared with 20 items based on a Likert's five-point scale. The questionnaire is used to measure three

components of future orientation, including motivational, cognitive, and behavioral components, and evaluates the two fields of "work and job" and "marriage and family". In the present study, the evaluation of work and job has been investigated. The obtained validity coefficient for the behavioral, motivational and cognitive components using Cronbach's alpha was 0.72, 0.91 and 0.85, respectively. Factor analysis from Oblimin rotation method was performed to investigate the validity, and the three measured components together explained the variance of about 38% (10). The minimum score for this questionnaire was 20 and its maximum was 100.

For analyzing the data, descriptive statistics (mean, standard deviation, skewness and kurtosis), and inferential statistics (path analysis and Pearson correlation coefficient) were used, and for analyzing the relationships between research variables and testing hypotheses in the form of a causal-comparative model based on theoretical and empirical background, Amos24, and SPSS21 (IBM,Armonk, NY, USA) software were used.

It should be noted that for doing research, the ethics code (IR.PNU.REC.1397.049) was obtained from the ethics committee in biomedical research and all ethical principles have been observed in all cases, including informed consent of the volunteers and the rights of the authors, designing the study, and so on.

Results

The sample of this study consisted of 250 master's degree students attending electronic education course at Payame Noor University of Tehran. The results are listed in Tables 1-4.

Given that research questions have investigated the causal relationships of future orientation on self-regulated learning with the mediating role of self-efficacy and task value among M.Sc. students of electronic courses of Payam Noor University of Tehran, descriptive statistics of research variables including mean, standard deviation, skewness, Kurtosis are shown in Table 1.

Table 2 presents the correlation coefficients of the four research variables. Table 3 shows the estimation of the direct and indirect effects coefficients of the research variables on the self-regulated learning variables. Finally, Table 4 was considered to provide model fit characteristics.

Given the descriptive statistics indices of the research variables in Table 1, we observed that students who studied in combined courses of Payame Noor University were individuals with higher mean variables in the future orientation variables, academic self-efficacy and academic self-regulation.

It is observed that the highest correlation

Table 1: Mean and standard deviations of variables

Variable	Average	The standard deviation	Skewness	Kurtosis
Future orientation	170.50	9.12	-1.71	1.32
Academic Self-Efficacy	13.55	2.48	-0.36	0.27
Task Value	10.38	1.77	-0.06	0.28
Self-regulated learning	47.16	2.49	0.10	0.21

Table 2: the correlation matrix between research variables (Combined course of Payame Noor University of Tehran)

Variables	1	2	3	4
1. Future orientation	1			
2. Academic Self-Efficacy	0.22*	1		
3. Task Value	0.29*	0.29*	1	
4. Self-regulated learning	0.28*	0.25*	0.41*	1

*P<0.01

Table 3: Estimates of direct and indirect effect coefficients (Combined course at Payame Noor University of Tehran)

Standardized parameters	Estimates of direct effect coefficients		Estimates of indirect effect coefficients	
	Standardized parameters	t	Standardized parameters	t
Direct effect of future orientation on:				
Academic Self-Efficacy:	0.17*	2.04	0.14**	3.40
Task Value	0.25**	3.31		
Self-regulated learning	0.23**	2.97		
Direct effect of academic Self-Efficacy on:				
Task Value	0.20**	2.62	0.38**	12.74
Self-regulated learning	0.24**	3.22		
Direct effect of task Value on:				
Self-regulated learning	0.25**	3.36		

*P<0.05, **P<0.01

Table 4: Characteristics of goodness of fit index in academic self-regulation prediction model of the students

Characteristic	Estimates
Chi-square ratio to degree of freedom(x^2/df)	2.06
Comparative fit index(CFI)	0.98
Goodness of fit index(GFI)	0.97
Adjusted goodness of fit index(AGFI)	0.96
Root Mean Square Error of Approximation (RMSEA)	0.052

coefficient among the variables of this research was related to the relationship between task value and academic self-regulation (0.41) and the lowest correlation coefficient was related to the relationship between future orientation and academic self-efficacy (0.22). Among the research variables, the value task variables (0.41), future orientation (0.28), and academic self-efficacy (0.25) have highest to lowest correlation coefficient with academic self-regulation, respectively.

The objective of this study was to examine the mediating and predicting role of variables and also to determine the direct and indirect effects of these variables on each other through path analysis, so the direct effects of research variables on each other are presented in Table 2.

As shown in the table, the task value variable has the highest correlation with the self-regulated learning variable.

Regarding the direct effect coefficients in Table 3, a number of important results were obtained according to the conceptual model for master's students of Payame Noor University ; the most important findings showed that the direct effect of future orientation on academic self-efficacy, the direct effect of future orientation on task value, the direct effect academic self-efficacy on academic self-regulation, the direct effect of academic self-efficacy on task value and the direct effect of task value on academic self-regulation were significant.

All paths between the variables in the model are specified in the table. The obtained t values at the 0.05 and 0.01 level were confirmed for all variables.

Indirect effects of variables on each other were investigated. The indirect effect of future orientation on academic self-regulation is equal to 0.14, which according to (t=3.40) was significant at the level of 0.01 and confirmed. The indirect effect of academic self-efficacy on academic self-regulation is equal to 0.38, which according to the (t=12.74)

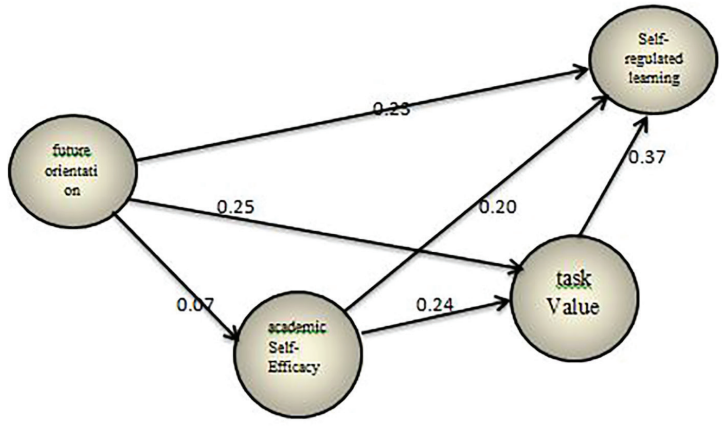

Figure 2: Output model for Master's students of electronic course in Payame Noor University

was significant at 0.01 level and confirmed.

As can be seen, future orientation with regard to self-efficacy and task value as mediators was able to change the self-regulated learning in M.Sc. students attending electronic courses at Payame Noor University of Tehran.

Regarding the characteristics of goodness of fit index as reported in Table 4, the fit of the self-regulation prediction model is relatively good, and the conceptual model presented in terms of the fit indices of the model, provides a suitable framework for self-regulation (Figure 2).

Discussion

The objective of this study is to provide a causal relationships model of future orientation and self-regulated learning based on the mediating role of academic self-efficacy and task value among master's students in electronic courses held at Payame Noor University of Tehran. In the investigation of the conceptual model of research and according to the goodness of fit indices and the generality model review in the studied group, the model has suitable fit in terms of indices and can be used in decision making and policy making and is consistent with theoretical and empirical foundations.

The results showed that the direct effect of academic self-efficacy on self-regulation (α=0.24 , t=3.22) in the students is confirmed, which is consistent with Cho et al. (4) and Kuo et al. (5). Accordingly, it can be explained that self-regulated learning strategies depend on the motivational variable of self-efficacy. Self-efficacy beliefs are individuals' judgments about their abilities in organizing and doing their tasks, and if a person feels high self-efficacy in one task, his/her self-regulation function improves in a variety of ways.

According to the results, the direct effect of academic self-efficacy on task value(α=0.20 , t=2.62) is significant and consistent with the results obtained by Charlton (17) and JuJoo et al. (6), It explains that the task value significantly stimulates individuals to perform their tasks. If students believe that what they learn is useful and important, and they accept their own self-efficacy, they are more motivated and persistent in learning.

The results of this study showed that the direct effect of the task value on self-regulation (α=0.25, t=3.36) of the students is confirmed, which is consistent with Charlton's (17) research. Based on its confirmation, it can be explained that self-regulated skills are related to task value activities, and affected by it. The students have been shown academic task value as one of the strongest endogenous components for profound effect on self-regulation and as a means of engaging in academic activities.

Also, the results showed that direct effect of future orientation on academic self-efficacy (α=0.17, t=2.04) is significant and consistent with Azizli et al. (12). The future orientation of professional programs, student attitudes and self-efficacy beliefs affect

academic subjects students (18), because self-efficacy beliefs do not occur accidentally, and successes reinforce these beliefs.

The results, confirm the direct effect of future orientation among students on task value (α=0.25, t=3.31), which is consistent with JuJoo et al. (6). Future orientation means stretching people to engage in thinking about the future, which are interpretations of the usefulness, attractiveness, and usefulness of the task.

The findings of the research showed that future orientation has an indirect effect on academic self-regulation (α=0.14, t=3.40). In other words, the future orientation has a positive and significant effect on academic self-regulation by mediating academic self-efficacy and the task value. These students have progressive behaviors, such as choice and continuity. They do highly value their academic tasks because of their innate motivations such as the need for progress or fear of failure in the form of the value of success. Therefore, students will feel self-efficacy in the event of a sense of success, and will use strategies to avoid feeling unsuccessful and pessimistic in order to support self-worth and continuity. They will have a better perspective of the areas that are relevant to their academic future, and expect successful outcomes from these areas through proper academic tasks. Another important result of this study has shown that the academic self-efficacy has indirect effect on academic self-regulation by mediating task value (α=0.38, t=12.74). If students are more willing to fulfill their academic tasks, they are more committed to education and have greater willingness to spend time and effort on their tasks and studies. Due to more tendency and motivation, these students have a greater capacity and ability to perform cognitive operation in one task, and they are not reluctant to end academic issues with regard to ready structures and will be able to look critically in their efforts to complete their academic tasks. Based on the confirmation of this hypothesis, it can be concluded that perceived constructive learning environments are directly and indirectly related to the attitude towards educational subject with learner self-efficacy through future orientation and task value (17). Realizing a brighter future for learners requires that, psychologists, counselors and teachers pay more attention to the role of future orientation in the professional growth of student self-efficacy (6), and the future orientation of professional programs, student attitudes and self-efficacy beliefs affect academic subjects students (18).

Conclusion

Master's students in the electronic courses of Payame Noor University uses academic self-efficacy and their personal abilities to achieve satisfactory results and solve problems related to various academic fields. Given the fact that, the individuals are more willing to perform their academic tasks, they are more likely to be committed to studying and have greater willingness to spend time and effort on their tasks and studies. As a result, they appear more capable and persistent in dealing with educational issues and problems. This group of students are compelled to work hard by using different learning strategies due to the lack of guidance and focus on their efforts. They are required to think deeply about the learning contents, use different learning strategies that enhance their understanding of contents and think critically and creatively about learning contents. These students are trying to process learning contents at higher levels of cognitive field, such as analysis, combination and evaluation, to reach high levels of self-regulation. Therefore, the intervention and help to improve the performance of student's self-regulated learning in each educational system is one of the most important responsibilities of higher education system so that students can achieve better results.

In general, the students in this study had high commitment, effort, motivation, and perseverance, with an intrinsic interest, supervision, control, continuous effort, and mastery of their short-term, medium-term,

and long-term goals. They also had the ability to regulate their emotions, control and guide them through the process of education, and make them compatible and consistent with their academic activities to achieve their goals. When performing homework, they have stability along with satisfaction. Despite the lack of teachers and instructors, they rely on their efforts and self-efficacy to study the content with all their abilities to gain an understanding of it.

Suggestions

Managing personal and virtual learning is very crucial in education. An individual's future perspective plays an important role in the achievement of objectives, academic self-efficacy, and ultimately self-regulated learning strategies. Therefore, it is recommended to pay special attention to the effect of future orientation on self-regulated learning strategies and academic performance, and to provide the necessary training to enhance them.

This research is extracted from a PhD thesis. Hopefully, the results will be used in training.

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Ethical Considerations

The ethics code (IR.PNU.REC.1397.049) has been received from the ethics committee in biomedical research and all ethical principles have been observed in all cases, including informed consent of the volunteers and the rights of the authors, designing the study, and so on.

Conflict of Interest

None declared.

References

1 Chen KC, Jang SJ. Motivation in online learning: Testing a model of self-determination theory. Computers in Human Behavior. 2010 Jul 1;26(4):741-52

2 Baumeister R. Self-Regulation and Self-Control: Selected works of Roy F. Baumeister. Routledge; 2018 Jan 19.

3 Garvis S, Pendergast D, editors. Asia-Pacific perspectives on teacher self-efficacy. Springer; 2016 Jul 15.https://doi.org/10.1007/978-94-6300-521-0

4 Cho MH, Kim Y, Choi D. The effect of self-regulated learning on college students' perceptions of community of inquiry and affective outcomes in online learning. The Internet and Higher Education. 2017 Jul 1;34:10-7. https://doi.org/10.1016/j.iheduc.2017.04.001.

5 Kuo YC, Walker AE, Schroder KE, Belland BR. Interaction, Internet self-efficacy, and self-regulated learning as predictors of student satisfaction in online education courses. The internet and higher education. 2014 Jan 1;20:35-50. https://doi.org/10.1016/j.iheduc.2013.10.001.

6 Joo YJ, Lim KY, Kim J. Locus of control, self-efficacy, and task value as predictors of learning outcome in an online university context. Computers & Education. 2013 Mar 1;62:149-58. https://doi.org/10.1016/j.compedu.2012.10.027.

7 Durik AM, Lovejoy CM, Johnson SJ. A longitudinal study of achievement goals for college in general: Predicting cumulative GPA and diversity in course selection. Contemporary Educational Psychology. 2009 Apr 1;34(2):113-9.

8 Pintrich PR. Multiple goals, multiple pathways: The role of goal orientation in learning and achievement. Journal of educational psychology. 2000 Sep;92(3):544.

9 Nurmi JE, Poole ME, Seginer R. Tracks and transitions-a comparison of adolescent future-oriented goals, explorations, and commitments in Australia, Israel, and Finland. International Journal of Psychology. 1995 Jan 1;30(3):355-75.

10 Seginer R. Future orientation: Developmental and ecological

perspectives. Springer Science & Business Media; 2009 Apr 21. https://doi.org/10.1007/b106810

11 Walker TL, Tracey TJ. The role of future time perspective in career decision-making. Journal of Vocational Behavior. 2012 Oct 1;81(2):150-8. https://doi.org/10.1016/j.jvb.2012.06.002

12 Azizli N, Atkinson BE, Baughman HM, Giammarco EA. Relationships between general self-efficacy, planning for the future, and life satisfaction. Personality and Individual Differences. 2015 Aug 1;82:58-60.

13 Linnenbrink-Garcia L, Pekrun R. Students' emotions and academic engagement: Introduction to the special issue. Contemporary Educational Psychology. 2011 Jan 1;36(1):1-3.

14 Bouffard T, Boisvert J, Vezeau C, Larouche C. The impact of goal orientation on self-regulation and performance among college students. British journal of educational psychology. 1995 Sep;65(3):317-29.

15 Pintrich PR. A manual for the use of the Motivated Strategies for Learning Questionnaire (MSLQ).

16 Midgley C, Maehr ML, Hruda LZ, Anderman E, Anderman L, Freeman KE, Urdan T. Manual for the patterns of adaptive learning scales. Ann Arbor: University of Michigan. 2000.

17 Charlton CA. The Relationship Between Self-efficacy, Attribution and Task Value, and Performance in a Mandatory Military Self-paced Distance Learning Environment (Doctoral dissertation, University of West Florida).

18 Uitto A. Interest, Attitudes And Self-Efficacy Beliefs Explaining Upper-Secondary School Students'orientation Towards Biology-Related Careers. International Journal of Science and Mathematics Education. 2014 Dec 1;12(6):1425-44