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The relationship between self-directed learning and the parameters affecting adult education

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Abstract

The main purpose of this study is to investigate the relationship between "self-directed learning" and "the parameters affecting adult education". The parameters studied in this paper include performance, assessment, motivation, anxiety, and academic engagement. The research has been conducted on employees of Insurance Company who attend specialized courses. The research population consists of 550 employees who work in Insurance Company and attend specialized training. The statistical sample consists of 214 people who have been selected from the population. Data have been collected through questionnaires which are related to the variables. In addition to descriptive statistics, inferential statistics have been also used to analyze data. The results of this study show that there is a positive and significant relationship between self-directed learning and academic parameters in adults including performance, assessment, motivation, anxiety, and academic engagement. Considering the results of this study, it seems that teachers and education professionals, due to being aware of self-directed learning functions and academic parameters of adults, can use their experiences in this regard to enhance learning outcomes.

Keywords: self-directed learning, assessment, motivation, anxiety, academic engagement

Introduction

Learning is the main issue of all kinds of education. This means that education is meaningful when it is along with the learning of learners. We live in an era in which we have to deal with massive amounts of educational materials and issues. Daily progress of technology adds to the amount of these materials. This means that each person should learn more not to remain behind others. In this era, human innovates and creates new knowledge based on the knowledge of previous generations. Whatever the process moves forward, it becomes faster. Pace with the developments, each person must make greater efforts for his education. In this process, traditional systems of education cannot be held accountable. So people need to push their education to a direction where there is less need for instructors. Era of information technology and its achievements has provided a proper ground to convert the teacher-centered learning to self-directed one. Virtual environments created by the Internet and Intranet motivate individuals' self-directed learning. SDL (self-directed learning) makes people to follow and learn what they need to learn. In recent decades, creating and fostering self-directed skills has become one of the goals of adults' education, so that the number of research and studies on SDL has increased worldwide. Self-directed learning is aimed at providing training for everyone in any situation where they are.

Self-directed learning is of utmost importance for learners' education. Knowles has enumerated some reasons for the necessity of self-directed learning and emphasizing it (quoted by Smith, 1996); the reasons are as follows: the first reason is that people who take the initiative of their learning (active learners) learn more things and achieve better results in comparison to those who attend the classroom passively for receiving training (passive learners). They step into the

realm of learning with a higher purpose and motivation and benefit from their learning better and more than passive learners. The second reason is that self-directed learning is consistent with the natural processes of psychological growth; in fact, one of the fundamental aspects of maturity is the formation of ability and increasingly undertaking responsibilities; namely, increasingly to become self-directed. The third reason is that many of new developments shaped in education has made learners to a large extent take the initiative of learning; hence, the learners without search and self-directing skills will often suffer from anxiety, frustration, and failure. The fourth reason is that due to the rapid changes in knowledge perception, it is not realistic anymore that transfer of knowledge to be considered as the main goal of learning. Actually, the main objective of current education and learning is to create and shape the research and investigative skills (Smith, 1996).

Self-directed learning is a process in which employees based on their own initiative are involved in learning, identifying the needs, developing and formulating learning objectives, identifying resources for learning, selecting and implementing learning strategies, and assessing the results of learning. The role of instructor, as a wise person is to guide learners to move towards self-directed learning (Fisher et al., 2001). Readiness for self-directed learning is defined as the degree of readiness in which employees have acquired attitudes, abilities, and personality traits needed for self-directed learning; accordingly, the assumptions of this definition are as follows: firstly, learners should be guided inherently and show a willingness to it. Secondly, the person must own the necessary competence to develop self-determination and choose the best way of learning. Thirdly, the person must possess the ability to learn independently and be able to extend this ability to his other skills. In this definition, three main variables have been considered for learning. These variables have been used to measure the employees' readiness for self-directed learning in Islamic Azad University, Science and Research branch (as a case study). The variables are self-management, self-control, and willingness to learning (Fisher and King, 2010).

Self-directed learning factors are defined as any cases affecting employees' readiness for self-directed learning. These factors include three main variables. The first variable is the achievable goals of employees. Here, achievable goals refer to employees' sense of accomplishment and satisfaction with reading and studying. The second variable is approaches to learning. The purpose of this case is employees' attitude towards the usual method of studying and learning. Finally, the third variable is learning environment; the purpose of this case is to investigate the major issues in the learning environment of employees and their experiences of the self-directed learning activities. The variable of "approaches to learning" is an intermediate between the two other variables. Safavi et al. (2010) in a study as "self-directed learning readiness and learning styles of nursing employees in Isfahan University of Medical Sciences" concluded that in the majority of studied units, self-directed learning readiness is at a high level and accommodating style has been the dominant learning style. Due to the high level of readiness for SDL in a significant number of employees and the dominance of one style among most of them, teaching methods consistent with this learning characteristic of employees were proposed. Merriam (2001) in a study as "andragogy and self-directed learning as pillars of adult learning theories" concluded that self-directed learning is one of the foundations of adult training.

Zsiga and Webster (2007) in a study as "why high school instructors are interested in self-directed learning?" concluded that instructors should make employees ready to take advantage of learning opportunities provided for them and improve their skills to be successful in their educational communications. Song and Hill (2007) in their study as "a conceptual model for understanding self-directed learning in online environments" concluded that self-directed learning is an important aspect of adult education and can be considered as both the purpose of adult education and the process leading them towards a successful learning. Long (2007) in a study as "skills for

self-directed learning" concluded that self-directed learning is an ongoing process that everyone needs during the life time; and since each individual becomes mature through facing with challenges in the environment, everyone needs education and for this purpose, it is needed to gain the required skills. Self-directed learning is a process in which learners are responsible for planning, implementing and assessing their learning and they are expected to work and do activities independently of the others in order to achieve predetermined objectives of learning (Hiemstra, 1996). The key qualifications and competence for self-directed learning is to understand the differences between teacher-centered and self-directed learning. If self-directed learning is viewed from a philosophical perspective, the philosophy or purpose of each individual would be personal independence, self-management of learning, satisfaction, and educational leadership capacity. Also, from a process perspective, learners are allowed to pursue learning, on their own, control objectives, and clarify and assess instructional strategies, content and procedures. Considering the characteristics such as self-management and self-monitoring (the processes by which learners regulate, assess, and revise their cognitive strategies), this learning approach is an appropriate method to cope with complexity and rapid changes in today's fast world (Garrison, 1997); because on the one hand, this process enhances the quality of learning and leads to achieving better results in learning; and on the other hand, motivation to learn and efforts to promote it is expanded. Self-directing is considered as a personality trait whose outcome is the self-directed process; this means that generally we are somewhat self-directed; namely, self-directing is not something that is newly discovered, but it has existed since the beginning of human creation and human beings have been inherently created to be self-directed. Also, people's familiarity with this feature and their ability to use it for advancing their goals can affect their lives. Hence, to apply self-directed methods in learning, it is needed to measure learners' readiness for self-directing in learning. The readiness means to possess the attitudes, abilities, and personality traits needed for self-directed learning (Wiley, 1983). Individuals with higher self-directing readiness have higher initiative in learning and learn better; hence, people with lower self-directing readiness should try to strengthen it. Since the amount of learners' self-directed learning determines at what level of training they are and what methods should be used for them, it is of utmost importance to identify the factors affecting the readiness for self-directed learning. In an educational environment, if those involved in education (including management of the educational unit, teachers, and learners) know to what extent the learners are self-directed and what factors can affect learners' readiness for self-directed learning, they can design a better plan for their education; also, through identification of these factors, they can modify the current training methods in the educational unit.

Methodology

This study is a descriptive-correlational research whose population consists of 550 people. The sampling method was determined to be the proportional stratified method by gender. Here, due to unavailability of the population variance, researchers distributed a preliminary questionnaire among insurance company employees randomly selected; and accordingly, the sample variance was calculated. Then, using the Cochran's formula and at the confidence level of 95%, the sample size of undergraduate employees was determined as 214 people of which 156 females (73%) and 58 males (27%) were randomly selected through access to the target population and according to the proportional stratified sampling (by gender). After removing flawed questionnaires as well as the questionnaires that were unanswered, 195 questionnaires completed by 145 females and 50 males were analyzed; hence, in this study, the rate of return is equal to 91%. Considering the sample size proportion and the type of research as well as the time and costs spent on running the questionnaire, the number of samples is appropriate.

Individual attitudes: a paper-pencil test developed by Sternberg and Wagner. In this questionnaire, the answer of each item is specified based on a 7-degree scale and scored using the Likert method (ranging from 1 to 7). Sternberg et al. conducted detailed studies to evaluate the reliability of thinking styles questionnaire. Using the Cronbach's alpha, the reliability coefficient of subtests was found to be from 56% (for the executive style) to 88% (for the global style) with a mean value of 78%.

Perceived assessment: data were collected using the two questionnaires of perceived classroom assessment and SDL scale. The perceived classroom assessment questionnaire has been developed by Alkharusi [Alkharusi H 2009] and includes 18 items of which 9 items measure the perception of mastery (learning-centered) assessment and the other 9 items measure the perception of functional assessment. To obtain the initial reliability, the questionnaires were distributed among 30 members of the final population. Using the Cronbach's alpha, the questionnaire reliability was calculated equal to 0.72; and for the subscales of perceived mastery-based assessment and performance-based perception, it was obtained equal to 0.62 and 0.73, respectively.

Motivated Strategies: this questionnaire has been used to investigate the motivation and learning and cognitive strategies of employees. Various items of this questionnaire have been adapted and developed by Eccles, Harter, Weinstein, Schulte, and Palmer (Harter, 1981; Eccles, 1983). Eccles and Schunk have reported the reliability of self-efficacy subscale equal to 0.89 using the Cronbach's alpha.

Engagement: this questionnaire consisting of two subcomponents including "effort" and "cognitive engagement" is used to measure academic engagement. In this regard, the questionnaire developed by Dupeyrat and Marian (2005) has been used to measure the subcomponent of "effort". Accordingly, the Cronbach's alpha reported by Dupeyrat and Marian (2005) is equal to 0.77.

Anxiety: the anxiety test scale developed by Sarason (1975) has been used to collect data on this variable. Troyn (1980) has reported the scale reliability coefficient equal to 0.80 through test-retest and equal to 0.91 using the split- half method.

Results

The figure 1 shows the simple correlation coefficients between general subscales and the academic performance of all subjects.

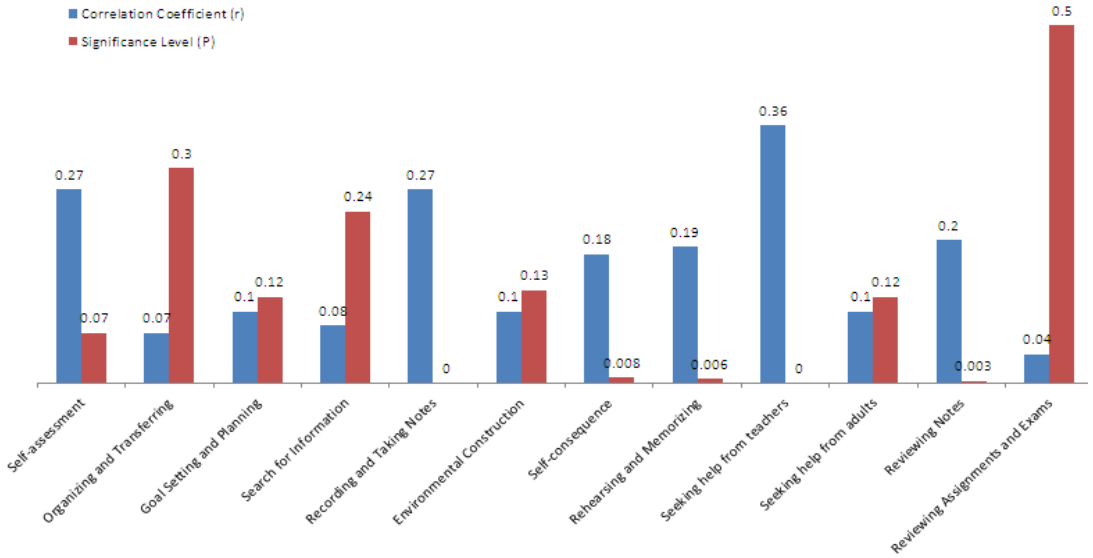

Figure 1: General subscales and the academic performance of all subjects

According to figure 1, the correlation coefficient between academic performance and the subscales of "recording and taking notes", "self-consequence", "rehearsing and memorizing", "seeking help from teachers", "reviewing notes", and "reviewing contents of books" is significant; however, the correlation coefficient between academic performance and the remaining subscales is insignificant.

To investigate whether employees' preparation for self-directed learning can be predicted through functions of thinking styles, the multiple-regression coefficient was used. The results obtained from running the multiple regression showed that the functions of thinking styles can predict the preparation for self-directed learning ($F_{3,191} = 5.84$, P<0.01). Also, the results show that the squared multiple-correlation coefficient is reported equal to 0.07 ($R^2 = 0.07$). This indicates that the predictor variables can explain 7% of changes in the criterion variable of "preparation for self-directed learning". The standardized regression coefficients show that among the functions of thinking styles (legislative, executive and judicial functions), only the variable of judicial style can be a good predictor of preparation for self-directed learning ($t = 2.62$, P<0.05).

Table 1: **Individual attitudes**

Variables	**Regression Coefficients**	**Standard Error**	**Deviation of Standardized Regression Coefficients (β)**	**T**	**Significance**
Legislative	0.20	0.46	0.03	0.44	0.66
Executive	0.33	0.48	0.06	0.67	0.50
Judicial	1.13	0.38	0.24	2.98	0.003

Table 2: Perceived assessment

Variables	**Mean**	**Standard Deviation**	**Number**	**1**	**2**	**3**
The structure of perceived mastery-based classroom assessment	26.65	6.55	220	1		
The structure of perceived performance-based classroom assessment	24.66	4.96	220	0.19_*	1	
Self-direction in learning	156.88	14.96	220	0.21_*	0.09	1
*P-Value <0.01						

According to table 2, it is observed that there is a positive and significant relationship between the perceived mastery-based classroom assessment and perceived performance-based classroom assessment structures (P<0.01, r=0.19); also, there is a positive and significant relationship between the structure of perceived mastery-based classroom assessment and self-direction in learning (P<0.01, r=0.21), but there is no significant relationship between the structure of perceived performance-based classroom assessment and self-direction in learning.

Table 3: the standardized regression coefficients of the Perceived assessment

Variables	**Beta Coefficient**	**t**	**P-Value**
Perceived mastery-based classroom assessment	0.20	2.96	0.003
Perceived performance-based classroom assessment	0.05	0.83	0.40

The standardized regression coefficients showed that among the predictor variables, only the variable of perceived mastery-based classroom assessment can alone predict the self-direction in learning (P= 0.003, t=2.96), but the variable of perceived performance-based classroom assessment does not have a significant contribution to the prediction of self-direction in learning (P= 0.40, t=0.83).

Table 4: Motivated Strategies

Criterion Variable	Predictor Variable	Multivariate Correlation Coefficient MR	Coefficient of Determination R^2	F	Standardized Coefficients β	Non-standardized Coefficients		T	P
						β	Error		
academic performance	Seeking help from teachers	0.36	0.13	29.62	0.33	0.45	0.094	4.87	0.000
	Seeking help from adults	0.40	0.16	19.26	-0.22	-0.32	0.093	-3.45	0.001
	Recording and Taking Notes	0.45	0.20	16.95	0.22	0.17	0.055	3.23	0.001
	The Cognitive Strategy	0.42	0.18	44.15	0.44	0.05	0.007	6.97	0.000
	The Test Anxiety	0.45	0.21	26.11	-0.16	-0.03	0.013	-2.60	0.01

According to table 4, it is observed that the multivariate correlation coefficient for linear combination of variables “seeking help from teachers”, “seeking help from adults”, and “recording and taking notes” with academic performance in all subjects is reported equal to MR=0.45. The ratio of F is equal to 16.95, which is significant at the 0.001 level. In addition, the coefficient of determination (RS=0.20) indicates that 20% of the variance in academic performance can be explained by the predictor variables; namely, “seeking help from teachers”, “seeking help from adults”, and “recording and taking notes”. On the other hand, coefficients of determination show that “seeking help from teachers” alone predicts 0.13% of the variance in academic performance; and adding the variable “seeking help from adults” to the regression equation causes MR to increase from 36% to 40% and RS from 13% to 16%. Also, adding the variable “recording and taking notes” to the regression equation causes MR to increase from 40% to 45% and RS from 16% to 20%.

According to table 4, it is observed that the multivariate correlation coefficient for linear combination of variables “the cognitive strategy” and “the test anxiety” with academic performance in all subjects is reported equal to MR=0.45. The ratio of F is equal to 26.11, which is significant at the P<0.01 level. In addition, the coefficient of determination (RS=0.21) indicates that 21% of the variance in academic performance can be explained by the predictor variables; namely, “the cognitive strategy” and “the test anxiety”. On the other hand, coefficients of determination show that

"the cognitive strategy" alone predicts 0.18% of the variance in academic performance; and adding the variable "the test anxiety" to the regression equation causes MR to increase from 42% to 45% and RS from 18% to 21%.

Table 5: Engagement and anxiety

Scales	Stage	Test		Control	
		Mean	Standard Deviation	Mean	Standard Deviation
Academic Engagement	Pre-test	102.76	15.93	98.2	16.40
	Post-test	104.3	15.26	97.93	15.06
Test Anxiety	Pre-test	57.53	7.13	58.03	7.08
	Post-test	55.96	49.6	58.50	7.30

Table 5 shows the results obtained from analysis of covariance and its assumptions based on the scores of scales "academic engagement" and "test anxiety". As observed, the first hypothesis of the research (stating that training self-regulatory strategies increases employees' self-regulatory skills) is confirmed.

Table 6: The significance test for differences between the mean scores of subjects in the control and test groups regarding the scales of academic engagement and anxiety

variables	Source of Changes	Sum of Squares	Degrees of Freedom	Mean Squares	F	Significance Level	Power
Engagement	Pretest	13192.97	1	13192.97	4908.96	0.0001	1
	Group	57.063	1	57.06	21.23	0.0001	0.995
	Error	153.18	57	2.68			
Anxiety	Pretest	2599.65	1	2599.65	867.48	0.0001	1
	Group	63.73	1	63.73	21.26	0.0001	0.995
	Error	170.81	57	2.99			

According to table 6 and the results obtained from performing analysis of variance for scores of "test anxiety", it is concluded that the null hypothesis (stating that the changes in posttest results in comparison to pretest ones are random and not as a result of training self-regulatory learning strategies to the test group) is rejected; in other words, at the level of ($P<0.05$), training self-regulatory learning strategies to the test group to reduce their test anxiety causes the test group to show significant differences in comparison to the control group.

Discussion and conclusions

In this regard, the results obtained from the Pearson's correlation coefficient showed that there is a positive and significant relationship between executive and judicial thinking styles and the total scale of preparation for self-directed learning and its subcomponents. In addition, results of the multiple-regression test showed that self-directed learning can be predicted based on the functions of thinking styles; however, considering the beta weights, only the judicial thinking style can predict the preparation for self-directed learning. The findings of this study are consistent with the results obtained from the studies conducted by Sternberg and Grigorenko (Sternberg, Grigorenko, 1997)

and Zhang and Sternberg (Zhang, Sternberg, 1998) who concluded that there is a positive and significant relationship between legislative, judicial, democratic, hierarchical, and external thinking styles and the deep learning approach as well as between executive, judicial, conservative, and oligarchy thinking styles and the superficial approach (Shokri, Kadivar, Farzad & Daneshpoor, 2006).

The positive and significant relationship between the judicial thinking style and preparation for self-directed learning can be explained based on the characteristics of persons with judicial thinking style. Such people are interested in commenting on various affairs and evaluating different issues and judging others (Khoeini, 2005); also, they are the ones with productive creativity and deal with processing complex information (Zhang, & Postiglione, 2001). These features are consistent with the characteristics of self-directed learners who are active, spontaneous, accountable, and self-discipline people and more importantly, have the ability to assess their knowledge and others' (Gordanshekan,Yarmohammadian, Ajami, 2010).

The second aim of study is aimed at investigating the role of perceived classroom assessment structure. Considering the purpose of the research, correlation coefficients and multiple-regression were simultaneously used to analyze the data. The results obtained from the Pearson's correlation coefficient indicate that there is a positive and significant relationship between the structure of perceived mastery-based classroom assessment and self-direction, but there is no significant relationship between the structure of perceived performance-based classroom assessment and self-direction. The findings mean that the more emphasized the teacher's process of assessment on the learning, the higher the employees' motivation for learning will be; as a result, the employees' ability to lead and plan for learning will increase. The findings are consistent with the studies conducted by Alkharusi (Alkharusi, 2007) and Macmillan and Vercammen who concluded that there is a relationship between the perceived classroom assessment and motivation; on the other hand, since conducting a formative assessment is mostly mastery-based, the findings of this study are consistent with other studies (Brown, Hirschfeld, 2008) too. The results obtained from the regression variance analysis showed that the type of perceived classroom assessment can predict the self-direction in learning; and in the meantime, the perceived mastery-based classroom assessment could alone predict employees' self-direction in learning. This finding is consistent with the study conducted by Alkharusi (Alkharusi, 2007); and since conducting a formative assessment is mostly mastery-based, this finding is also consistent with other studies (Rohani, Maher, 2007). In explaining these findings, it can be said that according to what was found by Alkharusi, since in the mastery-based assessments, employees perceive the assessment tasks average in terms of being challenging, feedbacks from teachers' assessment are informative for them; in addition, they clearly perceive the standards and criteria of assessment. Such criteria would cause higher motivation and joy of learning.

The third aim of study is aimed at predicting academic performance (as a criterion variable) by the predictor variables of "self-regulated learning strategies" and "motivated strategies for learning" in employees. The results showed that academic performance is correlated with most subscales of "self-regulated learning strategies" and "motivated strategies for learning". However, the stepwise regression analysis showed that among the self-regulated learning strategies, three components including "seeking help from teachers", "seeking help from adults", and "recording and taking notes" as well as among motivated strategies for learning, two components including "the cognitive strategy" and "the test anxiety" are the best predictors of academic performance. These results are consistent with the results obtained from studies conducted by Charlotte et al., and Mohsenpoor et al., Kajbaf et al. (Dignath et al., 2008; Mohsenpoor et al., 2007; Kajbaf et al. 2003). In explanation of these results, it can be noted that employees who use more self-regulated strategies

try to challenge teachers and experts in the field of what is taught by teachers; also, they try to learn more materials and improve their academic performance through recording and taking notes and creating a logical relation with previous materials. Another important result of this study is that using cognitive strategies can be a good predictor of academic performance.

The test anxiety can negatively affect academic performance. According to these results and considering the role and importance of learning and motivational strategies in academic performance of employees, it is recommended employees to use self-regulated learning and cognitive strategies to deepen their learning and information. It is expected that education along with self-regulatory learning strategies improve employees' self-regulatory skills, increase their academic engagement, and reduce their test anxiety. The findings show that applying the independent variable "training self-regulatory learning strategies" can significantly and positively influence employees self-regulatory skills; hence, it can be concluded that employees' awareness of self-regulatory learning strategies and application of them is effective in their study and learning. The results of this study are consistent with many studies such as the ones conducted by Cleary and Zimmerman (2004), Dignath et al. (2008), and Lavasani et al. (2008). Performing the analysis of covariance for the component "academic engagement" showed that self-regulatory learning strategies can significantly increase employees' academic engagement. According to the studies conducted by Pintrich, self-regulated employees attribute their success to effort rather than luck or easy tasks. For them, failure is of a temporary problem and not an accusation against the ability. In addition, researchers such as Linnbrinc and Pintrich (2003) who have investigate the issue of learning and the application of self-regulatory strategies believe that the application of these strategies depends on factors such as self-efficacy, documentation effort, personal control in success and failure, the value of homework, employees' efforts, and classroom. Self-regulated employees are flexible in the use of cognitive strategies and always review their own performance while doing homework; and after doing their homework, they evaluate their performance based on the determined objectives and always strive to achieve them. The findings confirm the results previously obtained by Pintrich (2000), Azevedo (2009), and Lavasani et al. (2011).

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