

The Influence of Self-Directed Learning and Learning Commitment on Learning Persistence Intention in Online Learning: Mediating Effect of Learning Motivation

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Abstract

This is a descriptive investigative study which attempts to confirm the mediating effect of learning motivation in the relationship between self-directed learning, learning commitment, and learning persistence intention of university students in an online learning environment. The questionnaires were randomly distributed online and the agreed questionnaires were retrieved, with a total of 338 copies used for analysis. The following is the summary of the findings. First, there were significant differences in learning persistence intention according to general characteristics depending on age, major, part-time job, and academic level. Second, the results showed a positive correlation between self-directed learning, learning commitment, learning motivation, and learning persistence intentions of the subjects were statistically significant. Third, after checking the mediating effect of learning motivation in relation to self-directed learning, learning commitment and learning motivation, the learning motivation has a partial mediating effect on learning and 23% explanatory power, and the learning commitment was found to have a complete mediating effect on the impact of learning motivation on learning intentions with 21% explanatory power. Based on these results, it is necessary to provide a more diverse educational environment, such as operating a motivation semester program that can improve learning motivations along with learning commitment, and the use of a variety of contents that can focus the learner's interest or attention.

Keywords: Online Learning, Self-directed Learning, Learning commitment, Learning motivation, Learning persistence intention

1. INTRODUCTION

With the 2020 COVID-19 pandemic, all universities considered postponing the opening of classes at the request of the Ministry of Education to prevent the social spread of infectious diseases, and non-face-to-face classes using online lectures were held as the next best way to solve the delayed academic management.

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However, as the online classes conducted in Korea have a low progress rate of only 1% of the total, professors have experienced many difficulties in converting the existing face-to-face teaching method to online non face-to-face classes [1]. Of course, even before COVID-19, universities were encouraged to break away from traditional classes and utilize a variety of learner-centered classes [2], for the purpose of empowering college students, including Action Learning (AL), Problem-based Learning (PBL), Team-based Learning (TBL), and Flipped Learning.

Active participation and self-directed learning are essential in non-face-to-face online learning compared to face-to-face lectures in classrooms [3, 4]. This is also because online learning is a form of class that deviates from the perspective of professors instead of being free from time and space constraints, making it difficult for professors to intervene or control participation in classes. Therefore, in online learning, the ability of learners to participate and manage classes themselves is important. In addition, since non-face-to-face online learning can cause problems such as quantitative decline in communication between professors and learners [5], and poor quality of classes, therefore it is necessary to identify learner factors that have a positive impact on online classes. Self-directed learning refers to the attitude, ability, and personal characteristics in which learners take the initiative in the learning process of planning and evaluating learning, that can be seen as a learning process in which learners have primary responsibility [6]. Self-directed learning is the willingness to control the learning environment on one's own in online learning, which lacks professor control, a very important factor in non-face-to-face online classes. Furthermore, Guglielmino indicated that a directly developed self-directed learning measurement tool can be utilized as an in-depth research tool for self-directed learning [7] and various studies support this argument [4, 8, 9].

Learning commitment refers to a state of self-delight by actively participating in the current learning experience with an optimal state of mindful engagement in learning and complete absorption of knowledge in the learning process [10,11]. Learning Commitment represents an active and focused participation in learning activities, which has a positive impact on academic performance [12,13]. Learning commitment in a learning environment where professor control is not achieved, such as online learning, learning performance or learning satisfaction are affected, and consequently affects learning intentions. Learning persistence intention in online learning is an important defining factor to gauge the performance of learning, and is the behavioral immersion encountered in the course of performing a given task [14]. Furthermore, in online learning situations, learning persistence intention is described by learners as voluntary learning and continuous participation in the learning process [15] and is considered one of the variables to explain learning performance [16]. It is also a meaningful indicator for online learning because it is closely related to the dropout rate of college students [17] and can directly affect the maintenance of enrollment rates, which are used as indicators of university evaluations.

Learning motivation refers to the driving force behind the students' learning behavior, maintaining that behavior, and allowing learning to continue [17], and it has shown to have a positive impact on academic adaptation and academic performance [17, 18, 19]. Therefore, learning motivation can be an important factor in maintaining learning continuously in online learning. Furthermore, the motivation for learning influenced learning commitment [10] and it was highly correlated with self-directed learning [20].

In a study that identifies the effect of self-regulated learning ability on learning persistence intention and the mediating effect of learning motivation, it is confirmed that self-directed learning ability increases learning persistence intention and learning motivation can have a positive effect on learning persistence intention [21]. Learning persistence intentions enable prediction of dropout rates among college students in online learning. However, it was difficult to find a literature that comprehensively analyzed the mediating effects of learning motivation with learning performance for learners who have experienced online learning. So it is an arduous process to understand the relationship between these variables in depth. Therefore, it is necessary to select self-

directed learning and learning commitment as motivators and comprehensively identify the effects of correlation and learning motivation among these variables.

Therefore, this study attempts to present strategies to enhance learning intent by identifying the mediating effects of learning motivation in self-directed learning, learning commitment, and learning persistence intention, which are learner factors in online learning, and provide basic data for improving the quality of online learning.

2. MATERIALS AND METHODS

2.1 Research Design

This study is a descriptive survey to confirm the mediating effects of learning motivation in the relationship between self-directed learning, learning commitment, and learning persistence intention in online learning conducted due to COVID-19 in 2020 through structured questionnaires.

2.2 Data Collection

The subjects of this study are undergraduates from Daejeon-based, four-year universities who experienced online classes in 2020. Data were collected randomly through online questionnaires, and surveys of 359 people who agreed to participate in the study, and a total of 338 data were used for analysis, with the exemption of 21 duplicate and insincere responses.

2.3 Measurements

1) Self-directed Learning

Self-directed learning measurements were modified and supplemented by a self-directed learning measurement tool developed by Guglielmino[7], and was also modified and used by Lee [22]. It consists of 39 questions in total, and in this study the reliability coefficient Cronbach's α value was .91.

2) Learning Commitment

The learning commitment measurement used in Agarwal & Karahanna's study [23] used tools to modify [24], refine, and supplement [25] the tool used for the purpose of the study. The tool consists of a total of 20 questions on the Likert 5-point scale. In this study, the reliability coefficient Cronbach's α value was .92.

3) Learning Motivation

To measure learning motivation, a self-determination learning motivation scale [11] of which validates Self – Regulation Questionnaire- Academic(SRQ-A) to suit college students, developed by Ryan and Connell [26] was used. The measure consisted of a total of 12 questions. In this study, the reliability coefficient Cronbach's α value of .92.

4) Learning Persistence Intention

The measurement of learning persistence intention was made using a measurement tool [27] that asks the importance of completing learning, and willingness to enroll in online education later. The survey consists of a total of six questions. In this study, the reliability coefficient Cronbach's α .77.

3. STATISTICAL ANALYSIS

The collected data were analyzed using the IBM SPSS WIN 24.0 program. The difference between persistence intention according to the general characteristics of the subjects were analyzed using t-test, ANOVA, and for the post-test, Scheffé test was done. The correlation between self-directed learning, learning commitment, learning motivation, and learning persistence intentions of the subjects was analyzed as Pearson's correlation coefficient. The mediated effects of learning motivation in the relationship between self-directed learning, learning commitment, and learning persistence intentions of the subjects were analyzed using hierarchical regression, and Sobel test was conducted to verify the effectiveness of the mediated effects. The statistical significance level was set at $\alpha = .05$.

4. RESULTS

1. Differences in learning persistence intention according to the general characteristics of the subjects

In learning persistence intention, age ($F=4.60, p=.011$), major ($t=5.45, p<.001$), part-time availability ($t=-2.24, p=.025$), academic level ($F=4.72, p=.003$), showed statistically significant differences. Those under the age of 20 were more willing to continue their studies than those between the age of 21-22 and those in the health sector were more willing to continue their studies than those in the non-health sector. College students who did not work part-time were significantly more willing to continue their studies than college students who worked part-time<Table 1>.

Table 1. Learning persistence intention according to the general characteristics of the subjects

Classification		Learning Persistence Intention		
		M \pm SD	t/F(p)	Scheffé
Gender	Male	4.03 \pm .66	-.13(.890)	
	Female	4.04 \pm .69		
Age	≥ 20 a	4.21 \pm .68	4.60(.011)	a>b
	21-22b	3.93 \pm .66		
	$23 \leq c$	4.08 \pm .70		
Year Level	1 st Year	4.18 \pm .68	2.35(.072)	
	2 nd Year	3.96 \pm .64		
	3 rd Year	3.93 \pm .70		
	4 th Year	4.08 \pm .69		
Major	Health	4.18 \pm .61	5.45(.000)	
	Non-health	3.74 \pm .73		
Tuition Support	Parental	4.00 \pm .68	-2.02(.044)	
	No- Parental	4.17 \pm .67		
Online Class Experience	Yes	3.98 \pm .70	-1.92(.055)	
	No	4.13 \pm .64		
Part-Time Availability	Yes	3.90 \pm .70	-2.24(.025)	
	No	4.10 \pm .67		
Academic Level	>3.0 ^a	3.90 \pm .63	4.72(.003)	b<c, d
	3.0-3.49 ^b	3.85 \pm .72		
	3.5-3.99 ^c	4.13 \pm .66		
	$4.0 \leq$ ^d	4.17 \pm .65		

2. Correlation between self-directed learning, learning commitment, learning motivation, and learning persistence intention of the subjects

The correlation between self-directed learning, learning commitment, learning motivation, and learning intent, which are the key variables used in this work, shows a moderate positive correlation with self-directed learning ($r = .319, p < .001$). Learning motivation showed moderate correlation with self-directed learning ($r = .630, p < .001$) and low positive correlation with learning commitment ($r = .231, p < .001$). Learning persistence intention showed low positive correlation with self-directed learning ($r = .195, p < .001$) and learning commitment ($r = .169, p < .001$) on the other hand, it showed moderate positive correlation with learning motivation ($r = .467, p < .001$) showed statistically significant differences <Table 2>

Table 2. Correlation of self-directed learning, learning commitment, learning motivation, and learning persistence intention

Classification	Self-directed learning	Learning Commitment	Learning Motivation	Learning persistence intention
	$r(\rho)$			
Self-directed learning	1			
Learning Commitment	.319 ($<.001$)	1		
Learning Motivation	.630 ($<.001$)	.231 ($<.001$)	1	
Learning persistence intention	.195 ($<.001$)	.169 ($<.001$)	.467 ($<.001$)	1

3. Mediated effects of learning motivation in the relationship between self-directed learning, learning commitment, and learning persistence intention of the subjects

To verify the mediated effectiveness of learning motivation in the relationship between self-directed learning, learning commitment, and learning persistence intention, a three-step test was conducted according to Baron and Kenny’s mediated effect methodology and is confirmed using the Sobel Test. Prior to regression, the residual diagram was examined for equal variance and found that the correlation coefficients were .16-.63 independent, and that the Durbin-Watson index was near 2, confirming the independence of the error term, variance Inflation Factors (VIF) were between 1.00 and 1.65, and there was no problem of multicollinearity between independent variables, so the assumption of the regression equation was satisfied.

A. Mediated effects of learning motivation in self-directed learning and learning persistence intention

Verification of the effect of independent variables on parameters in stage 1 of the mediated effect methodology shows that self-directed learning has a significant effect on learning motivation ($\beta = .63, p < .001$). Verifying the effect of the independent variable on the dependent variable in stage 2, it indicates that self-directed learning has a significant effect on learning persistence intention ($\beta = .19, p < .001$). Tests on the effect of independent variables and parameters on dependent variables in the last stage 3 show that self-directed learning has a significant negative influence on learning intent ($\beta = -.16, p = .008$), the effect of the independent variable on the dependent variable was found to be less than the regression coefficient of stage 2 ($B = -.04$) indicating that the learning motivation had a partial mediating effect on the learning persistence motivation and the explanatory power was 23%. To identify the indirect effect and significance through the parameter learning motivation, Sobel test results in statistically significant z value of 7.79 ($p < .001$), verifying the partial mediating effect.

B. Mediating effects of learning motivation in learning commitment and learning persistence intention

Verifying the effect of independent variables on parameters in stage 1 verification shows that learning commitment has a significant effect on learning motivation ($\beta = .23$, $p < .001$). Verifying the effect of the independent variable on the dependent variable in stage 2, it conveys that learning commitment has a significant effect on the learning persistence intention ($\beta = .16$, $p = .002$). Tests on the effect of independent variables and parameters on dependent variables in the last stage 3 illustrates that learning commitment has no significant effect on the learning persistence intention ($\beta = .06$, $p = .191$). Learning motivation has been shown to have a significant effect on learning intent ($\beta = .45$, $p < .001$). The effect of the independent variable on the dependent variable in stage 3 ($B = 01$) was found to be less than the regression coefficient of stage 2 ($B = 05$) indicating that learning motivation had a complete mediating effect in the effect of learning commitment on learning persistence intention with an explanatory power of 21%. The Sobel test results in a statistically significant z value of 3.91 ($p < .001$), validating the complete mediating effect.

Table 3. Mediated effects of learning motivation in the relationship between self-directed learning, learning commitment, and learning persistence intention

Stage	variable	B	SE	β	t	p	Adj. R ²	R ²	F	p
	Self-directed learning → Learning motivation	.31	.02	.63	14.88	<.001	.39	.39	221.51	<.001
2	Self-directed learning → learning persistence intention	.04	.01	.19	3.64	<.001	.03	.03	13.38	<.001
3	Self-directed learning → learning persistence intention	-.04	.01	-.16	-2.67	.008	.23	.23	51.22	<.001
	Learning motivation → learning persistence intention	.28	.03	.57	9.26	<.001				
$Z(p) = 7.79 (<.001)$										
1	Learning commitment → learning motivation	.13	.03	.23	4.35	<.001	.05	.05	18.93	<.001
2	Learning commitment → learning persistence intention	.05	.01	.16	3.14	.002	.02	.02	9.88	<.001
3	Learning commitment → learning persistence intention	.01	.01	.06	1.30	.191	.21	.22	47.74	<.001
	Learning motivation → learning persistence intention	.22	.02	.45	9.12	<.001				
$Z(p) = 3.91 (<.001)$										

5. DISCUSSION

This study aims to confirm the mediating effect of learning motivation in the relationship between self-directed learning, learning commitment, and learning persistence intention, which are the learner factors in online learning conducted due to global spread of COVID-19. The findings are as follows.

First, the learning persistence intention according to the general characteristics of learners differed

significantly depending on age, major, part-time job, and academic level. Low age, health sector students, university students without part-time jobs, and those who received high grades were willing to continue their studies. The difference according to age was different from the study [28] for nursing students, and the learning persistence intention according to gender was different from the study result [21], but the difference according to academic level was for cyber college students. It was similar to the results of the study [29]. It is thought to have shown different results because there may be differences in various variables that determine learning performance depending on learners' characteristics, such as gender, age, and academic level, and it is necessary to explore accordingly.

Second, the correlation between self-directed learning, learning motivation, and learning persistence intention of the subjects showed positive correlation with self-directed learning, and learning motivation showed a positive correlation between learning motivation and self-directed learning and learning persistence intention. Previous research study showed similar results [21,30,31]. Although these results are weak correlations due to the large number of study participants, it is thought that the results were significant, and it is necessary to confirm them through repeated studies that properly selected the number of study subjects. In online learning, it is necessary to design classes that can enhance learning motivation, learning factor that is significantly correlated with academic continuity, and to study factors that affect learning motivation.

Third, as a result of checking the mediating effect of learning motivation in the relationship between self-directed learning, learning commitment and learning persistence intention, there is a partial mediating effect of learning motivation on learning intention, and explanatory power was 23%, and learning motivation was found to have a complete mediating effect in the impact of learning commitment on learning persistence intention, with 21% explanatory power. This was partly similar to the findings [16,21]. Furthermore, the self-directed learning of the subjects has been shown to have a significant negative influence on their learning persistence intention, and has been found to have had both effects through parameters, learning motivation.

This study confirms that self-directed learning can have a positive impact on learning persistence intention only through learning motivation. Self-directed learners are expected to have high academic enthusiasm and academic standards, and online learning has not filled learners' academic enthusiasm or has negatively affected their motivation to continue learning. For example, it is believed that interaction with professors was not smooth, or that professors' roles or technical support to promote online learning may have been insufficient. These results were similar to those in previous studies [16,21].

Learning commitment does not directly affect learning persistence intention, but it can be said that learning motivation acts as a mediating factor. In other words, if learning commitment decreases, the learning motivation decreases and the learning persistence intention increases. As a result, efforts will be needed to improve learning motivation along with motivational semester program or to provide an educational environment to utilize various contents that can focus learners' interest or attention. Above all, it should be possible to induce learning motivation, and for this, it is considered important for professors to play a role in promoting online learning.

6. CONCLUSION

This study attempts to provide basic data to improve learning sustainability by identifying mediating effects of learning motivation in the relationship between self-directed learning, learning commitment, and learning persistence intention in online learning conducted due to the 2020 COVID-19. Studies have shown that learning motivation has a partial mediating effect on the effect of self-directed learning on learning persistence intention, and that learning motivation has a complete mediating effect on learning persistence intention. Therefore, in order to improve the students' willingness of online classes to continue learning, both professors' efforts to explore and seek ways to increase learning commitment and motivation, as well as learners, who are

the subjects of learning, will need to faithfully fulfill their roles.

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