

The Effect of College Students' Learning Immersion and self-Direction on Non-Face-to-Face Learning Performance and Class Satisfaction [^]

Eun Joo Kim

Eulji University, Geonggido, South Korea

Abstract

This study aims to analyze the status of distance learning in higher education and explore the effects of learning engagement and self-directed learning readiness among variables related to learners on academic performance and course satisfaction in distance learning. It seeks to provide a baseline for other studies to develop strategies for quality online courses in preparation for a prolonged COVID-19 pandemic. An online survey was conducted on 708 students from a four-year University E located in Seongnam, Gyeonggi-do. Each student completed a self-administered questionnaire on a web page, which was created for the survey. The survey used a multiple regression analysis, with the independent variables being student engagement and self-directed learning readiness. With the aim of explaining academic performance and satisfaction for distance learning, the study also adopted a stepwise selection method to select the independent variables. It was found that learner engagement has a greater influence on academic performance than self-directed learning readiness among the independent variables. Additionally, it was found that learners' self-directed readiness did not impact course satisfaction; only learner engagement influenced student satisfaction for online courses. In conclusion, the survey showed that learner engagement and self-directed learning readiness are significant predictor variables of academic performance in online courses. It also found that learner engagement is a significant predictor variable of student satisfaction with online courses. In other words, teaching strategies are important for the promotion of student engagement to improve academic performance and student satisfaction in distance learning.

Keywords— New Normal, Distance learning, Learner engagement, Self-directed learning readiness, Academic performance, Student satisfaction

1. Introduction

COVID-19 has acted as a catalyst for change in our society, and especially in the field of education where distance learning has been brought to the center of attention. For students, the switch to online courses from the more familiar in-person ones changed their lifestyle and brought about some confusion. Online education is no longer an option but a necessity. Due to the severe outbreak of the global COVID-19 pandemic, major regions of the world have been quarantined, which has also caused educational cessation. However, many countries have introduced distance learning entirely or promoted education in parallel with school attendance. In this COVID-19 crisis situation, rather than focusing on providing quality education through distance learning to students, we have no choice but to focus on ensuring that many students can participate in distance learning without any setbacks [1].

Even if we get out of the COVID-19 crisis due to these changes, it is impossible for our society to return to the way it was before. The same goes for education. Due to the nature of schools living in groups, if an infectious disease such as COVID19 occurs again, school attendance will be suspended and the class will be switched to remote classes, or mixed classes will be promoted. Therefore, distance learning should not only aim to provide quality education in the COVID-19 crisis, but also consider the quality of education in a non-face-to-face classroom environment.

Alongside, the switch to distance learning has caused instructors to experience many difficulties in guaranteeing the quality of learning in the early stages of the transition. From the universities' point of view, the most urgent task was to secure the quality of learning and reinforce their existing infrastructure for online classes, apart from the task to boost student satisfaction with online courses and their academic performance. Universities that spent the first semester of 2020 unprepared are trying to come up with measures to improve learners' academic performance and satisfaction by analyzing the status of teaching and learning for online courses.

Watkins, Leigh and Triner (2004) reported that cognitive strategies and motivations suitable for the new learning environment (compared to those in face-to-face settings) are needed to enhance online courses' educational effectiveness in higher education [2]. In non-face-to-face classes, learning takes place through a virtual space rather than face-to-face, so the learner's dependence on motivation is higher than that of traditional classroom classes. In other words, it presupposes the active reaction of the learners, and the instructor's control over the learner is insufficient because the learner and the instructor are not face-to-face. This means that the degree of participation of the learner, that is, the difference in the quality of learning according to the learning motivation can become severe. Due to these shortcomings, most learners complain of difficulties in continuous learning, and the effectiveness of non-face-to-face classes is not fully demonstrated.

A study conducted by Minjung Chae (2016) found that the level of student engagement in online classes plays a vital role in improving academic performance and satisfaction with online courses [3]. According to Csikszentmihalyi (1990) and Lee Eun-kyung (2018), student engagement encourages students' interest in learning and affects the students' quality of life through experiences such as the pleasure of learning, creativity, and self-esteem [4-5]. In another study, Sone Ji-yeon (2017) found that student satisfaction and positive emotions are important factors when studying students' academic performance and satisfaction with courses [6]. In short, learner engagement can be a predictor variable that affects achievement outcomes and course satisfaction in online distance learning.

In addition, a study by Forgerson (2005) revealed that self-directed learner readiness has a positive impact on academic performance and course satisfaction [7]. According to Guglielmino (1977) and Oddi (1986), self-directed learner readiness is defined as a learner's inner personality characteristic (such as attitudes, values, and learners' abilities) to actively engage in learning [8-9]. Remote learning gives teachers a limited amount of control compared to face-to-face learning and lets students manage their learning progress by themselves. Thus, students who are not self-directed and do not adequately manage their time by investing in their learning could negatively impact their academic performance and overall course satisfaction. A study by Joo Young-Joo, Ha Young-Ja, Kim Eun-Kyung, and Yu Ji-Won

(2010) reported that students could end up with lower academic performance if they do not develop motivation, engagement, and self-directed learning readiness [10].

As such, learners' learning performance and class satisfaction in a non-face-to-face class environment are major indicators measured in online education, meaning the psychological state a learner has when they have achieved their learning goals or met their own expectations [11]. Class satisfaction is a factor that plays an important role in acquiring knowledge because it allows the learner to directly check the learner's response to the class, and if the learner is satisfied with the content, the learner can understand the content and learn effectively [12]. Therefore, it is necessary for the improvement and development of effective teaching and learning and other non-face-to-face education to understand class satisfaction in a non-face-to-face class environment.

Thus, the purpose of this study is to examine the status of online courses at the university level as well as analyze the effects of student engagement and self-directed learning readiness among learner-related variables on academic performance and course satisfaction. This study seeks to provide a baseline for other studies in order to develop strategies for quality online courses in preparation for a prolonged pandemic.

The research questions to achieve these research objectives are as follows.

First, what is the current status of non-face-to-face classes in the first semester of 2020?

Second, what are the effects of learning immersion and self-direction following non-face-to-face class participation on learning outcomes?

Third, what is the effect of learning immersion and self-direction according to non-face-to-face class participation on non-face-to-face class satisfaction?

2. Research Methods and Data Collection Procedures

This study is to investigate the structure of non-face-to-face class status and learning outcomes and non-face-to-face class satisfaction perceived by university students who took non-face-to-face class lectures in response to COVID-19 in the first semester of 2020. An online survey was conducted for all E University students.

The data collection method was a self-filling survey, and an online survey was conducted for each individual after opening a web page. An online survey was conducted through Google questionnaire for two weeks from October 13, 2020, targeting university students, and responses were received from a total of 720 people. Excluding 12 missing values, 708 patients were collected.

2.1. Research Subjects

Table 1 shows baseline characteristics of the study subjects who participated in the survey.

Table 1. Baseline Characteristics (N=708)

Variables	Categories	Frequency (n)	Percentage (%)
Gender	Male	241	34.0
	Female	467	66.0
Year	First-year	319	45.1
	Second-year	146	20.6
	Third-year	143	20.2
	Fourth-year	100	14.1
Major	Nursing (Seong-nam campus)	7	1.0
	Clinical pathology (Seong-nam campus)	47	6.6
	Optometry	18	2.5
	Biomedical engineering	25	3.5
	Paramedic science	42	5.9
	Radiology	41	5.8
	Dental hygiene	27	3.8
	Physical therapy	40	5.6
	Cosmetic science	19	2.7
	Food & Nutrition	29	4.1
	Food science and industry	14	2.0
	Environmental health and safety	21	3.0
	Healthcare management	34	4.8

	Medical IT	53	7.5
	Healthcare & PR	21	3.0
	Sports & outdoor	23	3.2
	Mortuary science	61	8.6
	Nursery education	5	0.7
	Addiction studies	29	4.1
	Child development	4	0.5
	Nursing (Daejeon campus)	49	6.9
	Clinical pathology (Daejeon campus)	99	14.0

The response rate was low (15.2%), however, a probability sampling method (simple random sampling) was used to achieve representativeness of the population. The sampling error was at a confidence level of 95% and was confirmed to be normally distributed. Simple non-positional sampling is the most basic sampling method among probability sampling methods, and it is a method of randomly sampling so that the probability of being selected as a sample among the members of the entire population is the same. The procedure of random sampling is to assign a number to each person or group in a sampling frame, and the investigator simply selects randomly without a certain type. The numbers of male and female respondents were 241 (34.0%) and 467 (66.0%), respectively. The gender ratio of respondents in University E was 3 (men) to 7 (women); thus, deeming the gender ratio to be reasonable.

The first-year students (319 students, 45.1%) had the highest participation rate, with the final year students (100 students, 14.1%) holding the lowest participation rate. Looking at the respondents by major, a total of 22 majors participated, with Clinical pathology (14.0%) at Daejeon Campus participating the most, followed by Mortuary science (8.6%) and Medical IT (7.5%).

2.2. Research Instrument

The questionnaire for the status of online distance learning and its effect on academic outcomes and student satisfaction was created for students. Table 2 shows the composition and a set of questions. The study adopted and revised a research tool developed by Chan & Repman (1990) to measure student engagement in web-based distance learning which was later translated and expanded by Kim Mi-kyung (2012) [13-14]. It is composed of a five-point Likert scale with '1' being 'strongly disagree' and '5' being 'strongly agree'. The higher points indicate a higher level of student engagement. The confidence level

(Cronbach's alpha) of student engagement was 0.93.

A survey developed by Kim Mi-ryang & Kim Jin-suk (2007) used studies by Garrison (1997) and Oddi (1986) and was revised and expanded to assess self-directed learning readiness [15-16], [9]. It is composed of a five-point Likert scale with '1' being 'strongly disagree' and '5' 'strongly agree'. The higher points indicate a higher level of self-directed learning readiness, with the confidence level (Cronbach's alpha) of self-directed learning readiness at 0.89.

Wang (2003)'s research on the assessment of learner satisfaction with e-learning was revised and expanded to measure online-learning satisfaction via the five-point Likert scale with '1' being 'strongly disagree' and '5', 'strongly agree' [17]. The higher points indicate a higher level of student satisfaction with distance learning with the confidence level at 0.90.

Surveys developed by Jinho Lim (2006), and Sun, Tsai, Finger, Chen, and Yeh (2008) were revised and expanded to assess academic outcomes [18-19]. The scale starts with '1' being 'strongly disagree' and '5' 'strongly agree'. The higher points indicate a higher level of academic performance with Cronbach's alpha at 0.88.

Table 2. Composition of the Questionnaire

Category	Question content	Number of questions	Cronbach' α
General	gender, year, major	3	-
Participation status of distance learning	experience of distance learning, device, participating location, smart device usage, class methods of major-related courses, methods of elective courses, types of assignment, platform used, a platform that students want to use	9	-
Self-directed learning readiness	continuous motivation, solution finding, participation in learning	4	.89
Student engagement	concentration, proactiveness, engagement, loyalty	7	.93
Satisfaction with online lectures	satisfaction, retaking of classes, loyalty	6	.90

Academic performance	learning ability improvement, acquiring knowledge	5	.88
Total		34	

2.3. Data Analysis

The following four methods were used for data analysis. First, a frequency analysis was conducted with a focus on general characteristics and questions related to the status of distance learning. Second, a descriptive statistical analysis was conducted to study the effectiveness of distance learning. Third, a multiple regression analysis was conducted to examine student engagement and self-directed learning readiness as independent variables to evaluate academic performance and student satisfaction with the online courses and finally, a stepwise method was implemented to select independent variables.

3. Research Results

3.1. The Operational Status of Distance Learning

The results showed that most students did not have previous experience with online courses, as 95.2% (n=674) of students answered 'none.' It was reported that 72.5% (n=513) of students use 'a laptop' for distance learning, and 87.6% (n=620) take online courses 'from home,' indicating that a large number of respondents attend online courses on their laptops at home.

In regard to the students' ability to use smart devices for distance learning, 42.7% (n=302) of students chose 'high'. Further, 55.8% (n=395) of major-related courses are taught 'online,' while 90.1% (n=638) of elective courses are taught 'online'. These results indicate that most courses are taught through distance learning currently.

The number of responses for the question concerning the most common type of assignments was 1,588 total responses (multiple response option). The option that the most students chose for this question was 'reports' at 39.9% (n=622). The number of responses for the question about the most commonly used platform for remote learning was 1,477 total responses (multiple response option). The option that most students chose was 'Google Classroom' at 47.2% (n=697). The platform that students would like to use the most for online learning is 'Google Classroom' with a response rate of 77.1% (n=546).

Table 3. Analysis of the Operational Status of Online Courses for the First Semester of 2020 (N=708)

Variables	Categories	Frequency	Percentage (%)
Experience in distance learning	Yes	34	4.8
	No	674	95.2
Devices	Laptop	513	72.5
	Desktop PC	108	15.3
	Tablet	48	6.8
	Smartphone	39	5.5
Location	Home	620	87.6
	Places other than home and library	77	10.9
	Library	8	1.1
	Public transportation	1	0.1
	Others	2	0.3
Smart device usage ability	High	160	22.6
	High medium	302	42.7
	Medium	212	29.9
	Low medium	25	3.5
	Low	9	1.3
Class methods of major-related courses	Distance	395	55.8
	Distance + Face-to-face	308	43.5
	Face-to-face	5	0.7
Class methods of	Distance	638	90.1

elective courses	Distance + Face-to-face	65	9.2
	Face-to-face	5	0.7
Type of assignment (multiple response)	Quiz	530	34.0
	Writing comments	315	20.2
	Report	622	39.9
	Presentation	68	4.4
	Others	23	1.5
Platform (multiple response)	Google Classroom	697	47.2
	Naver Band	82	5.6
	ZOOM	350	23.7
	CANVAS	16	1.1
	Webex	26	1.8
	Moodle	77	5.2
	Naver/Daum Cafe	113	7.7
	School LMS	27	1.8
	KakaoTalk	72	4.9
	Others	17	1.2
Platform that students want to use	Google Classroom	546	77.1
	Naver Band	7	1.0
	ZOOM	75	10.6
	CANVAS	2	0.3
	Webex	3	0.4

	Moodle	6	0.8
	Naver/Daum Cafe	5	0.7
	School LMS	40	5.6
	KakaoTalk	14	2.0
	Others	7	1.0
	No response	3	0.4

3.2. Effects of Student Engagement and Self-Directed Learning Readiness on Academic Outcomes in Distance Learning

The results below are the results of analyzing the effects of learning immersion and self-direction following non-face-to-face class participation on learning outcomes. In particular, the results of multiple regression analysis on the descriptive statistics of learning outcomes, learning immersion, and self-direction and the learning outcomes of college students are presented.

Table 4. Descriptive Statistics of Academic Outcomes, Student Engagement, and Self-Directed Learning Readiness (N=708)

	Mean	Std. Deviation
academic outcomes	3.3102	.85547
student engagement	3.0841	.77541
self-directed learning readiness	3.4280	.68457

The table of analysis of the variance of the medium and multiple regression of the learning outcomes of university students is shown in Table 5.

Table 5. The Variance Analysis of the Multiple Regression Model (N=708)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	298.782	2	149.391	481.741	.000
Residual	218.625	705	.310		
Total	517.407	707			

$$R^2(\text{adj. } R^2) = .577(.576)$$

Table 5 shows the variance analysis for the multiple regression analysis on student academic outcomes. The test results that assessed the effects of student engagement and self-directed learning readiness (the two independent variables) on academic performance in higher education revealed that the regression model is statistically significant at the significance level of .01. The F statistic value in the final model of which both student engagement and self-directed learning readiness were included was 481.741, with a significance probability of .000. According to the adjusted R-squared model, 57% of the total rate of change in academic outcomes can be explained by the independent variables included in the model.

The results of the multiple regression analysis of academic outcomes are shown in Table 6.

Table 6. Multiple Regression Analysis of Academic Outcomes (N=708)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.466	.110		4.250	.000
student engagement	.743	.034	.673	21.655	.000
self-directed learning readiness	.161	.039	.129	4.152	.000

Table 6 shows the results of the multiple regression analysis on academic outcomes. The independent variables that significantly affect academic outcomes at the significance level of .05 are student engagement ($t=21.655$, $p=.000$) and self-directed learning readiness ($t=4.152$, $p=.000$) according to the test results (taking into account the contribution and statistical significance of each independent variable in relation to the dependent variable). The standardized coefficients representing the relative contribution of the independent variables show that academic performance is impacted more by student engagement and self-directed learning readiness, respectively.

3.3. Effects of Student Engagement and Self-Directed Learning Readiness on Student Satisfaction with Online Courses

The results below are the results of analyzing the effects of learning immersion and self-direction following non-face-to-face class participation on class satisfaction. In particular, it presents the results of multiple regression analysis on the descriptive statistics of non-face-to-face class satisfaction, learning immersion, and self-direction, and the non-face-to-face class satisfaction of college students.

Table 7. Descriptive Statistics of Satisfaction with Online Courses, Student Engagement, and Self-Directed Learning Readiness (N=708)

	Mean	Std. Deviation
student satisfaction	3.2196	1.12920
student engagement	3.0841	.77541
self-directed learning readiness	3.4280	.68457

Table 8 shows the variance analysis of the multiple regression analysis on student satisfaction with online courses.

Table 8. Variance Analysis of the Multiple Regression Model (N=708)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	258.868	1	258.868	284.400	.000
Residual	642.618	706	.910		
Total	901.486	1. 707	2.	3.	
R2(adj. R2) = .287(.286)					

The test measuring the effects of student engagement and self-directed learning readiness (the two independent variables) on academic performance in higher education indicated that the multiple regression model is statistically significant at the significance level of .01. The F statistic value of the final model of which student engagement was included (self-directed learning readiness was excluded due to its insignificance) was 284.400, with a significance probability of .000. According to the adjusted R-squared model, 28% of the total rate of change in student satisfaction with online courses can be explained by the independent variables.

Table 9. Multiple Regression Analysis of Student Satisfaction with Online Courses (N=708)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.813	.147		5.524	.000
student engagement	.780	.046	.536	16.864	.000

Table 9 shows the results of the multiple regression analysis on student satisfaction with online courses. Student engagement appears to significantly affect satisfaction with online courses at a significance level of .05 ($t=16.864$, $p=.000$). Self-directed learning readiness was excluded according to the test results of the contribution and the statistical significance of each independent variable to the dependent variable. The standardized coefficients that represent the relative contribution of each independent variable shows that student engagement has an impact on satisfaction with online courses.

4. Conclusion

In distance learning, more emphasis is required on learning rather than on education and on learners rather than on teachers as learners perceive online courses as learning experiences instead of educational situations. Managing the quality of distance learning is no longer an option, but a necessity. The Ministry of Education is developing various measures to assure the quality of remote education. It has made it a mandate for each university to establish and operate an organization in charge of developing quality content for distance learning and to enhance the distance teaching capabilities of faculty members. Additionally, universities are encouraged to build a system to achieve quality education in distance learning.

This study explored the effects of student engagement and self-directed learning readiness for online learning on academic outcomes and course satisfaction. In distance learning environments, it was found that student engagement had a greater influence than self-directed learning readiness on academic performance. The study also explored the effects of student engagement and self-directed learning readiness on student satisfaction with online lectures. It revealed that while student engagement influenced student satisfaction with online classes, self-directed learning readiness had no impact on student satisfaction. In conclusion, student engagement and self-directed learning readiness are significant predictors of students' academic performance in an online learning environment. Additionally, student engagement is a significant predictor of student satisfaction in online remote learning. Thus, teaching strategies to improve student engagement are necessary in order to increase the academic performance of students and their satisfaction with lectures in a distance learning environment.

Chan (1999) proposed instructional strategies for student engagement, emphasizing that the presentation of educational content can influence student engagement in classes [20]. He also demonstrated that student engagement could increase when lively educational content, materials, and proper teacher-student interactions (such as feedback) are provided. In another study, Paras and Bizzocchi (2005) stressed instructional strategies regarding learning conditions, methods, etc., for student engagement [21]. In particular, factors that appear to boost learner engagement in distance learning include the following: intense concentration; clearly determined goals as well as immediate and proper feedback; control given to students; appropriate tasks according to students' level of knowledge; enjoyable experience; and convenience and speed. These factors could bring about an engaging experience, thus online classes should be designed for students to experience a merger of action and awareness, concentration, sense of control, time distortion, and loss of self-consciousness [22].

Moreover, game-based learning could be a very effective method to stimulate engagement. Video games are a ubiquitous part of many children's lives and have been applied to distance learning for elementary students in the sense that games can induce curiosity and interest. For example, Cordova and Lepper (1996) developed a math game for elementary students to learn in specific situations through games, such as puzzles [23]. Tüzün et al. (2008) created a 3D game for geography classes and found that students who learned by playing the game showed higher levels of intrinsic motivation than students who learned in traditional classes [24]. A study by Kelly and Weibelzahl (2006) introduced EDUCE, an adaptive tutorial system, which presented eight types of characters according to thinking activities, problem situations, and learning levels [25]. This was applied based on Gardner's theory of multiple intelligences. EDUCE contributed to student learning not only by injecting concentration and fun as engagement factors into the process, but by providing accurate feedback to each learner. In another study, Jung Sang-mok and Song Ki-sang (2007) designed and implemented a dialogue-based feedback system to increase student engagement in distance learning [26-29].

Comprehensive design strategies for distance learning environments are necessary to increase student engagement. Numerous factors (such as virtual reality, games, feedback, etc.) must be considered in an integrated manner. In addition, the future society after COVID-19 will not become a hyper-connected society where people can interact and cooperate by connecting with each other anytime and anywhere at home, school, society, or work, rather than gathering and interacting together in a specific space. Therefore, non-face-to-face cooperative activities that relieve the sense of isolation by sharing and communicating learning experiences and learning activities should be activated so that students who will live in the future do not fall into a sense of isolation due to non-face-to-face classes.

5. Research Limitations and Suggestions

This study is meaningful in providing basic data for preparing quality control measures for non-face-to-face classes due to the prolonged COVID-19. However, in relation to the limitations of this study, I would like to make some suggestions for follow-up studies.

First, this study was conducted targeting university students from a single school, and the total number of participants was 708, so it was difficult to consider it a large-scale sample.

Second, since the online environment was perceived as the subjectivity of the learner rather than the objectively measured qualitative aspect, there could be some difference from the actual environment.

These limitations limit the generalizability of the results of this study. However, this study found that in order to improve learners' learning performance and non-face-to-face class satisfaction in a non-face-to-face class environment, a teaching strategy for learners' immersion in learning is needed. Therefore, based on the results of this study, the following suggestions were made.

First, continuous follow-up research is required through systematic and comprehensive setting of variables that explain the improvement of learner's learning performance and non-face-to-face class satisfaction in a non-face-to-face class environment.

Second, follow-up research on e-learning design and teaching strategies for learners' immersion in learning is required to improve learners' learning performance and non-face-to-face class satisfaction in a non-face-to-face class environment.

It is unknown how long the current COVID-19 will last, and it may be pointless to predict what will happen after COVID-19. However, what is clear is that just like the COVID-19 epidemic after SAS and MERS, new infectious diseases may arise even after the epidemic ends, and non-face-to-face classes may be promoted again. Therefore, even from now on, concrete measures should be prepared so that non-face-to-face classes can be established as an everyday and essential education method, rather than a temporary method.

References

- Carey, K. (2020). Is everybody ready for the big migration to online college? Actually, no. The New York Times. <https://www.nytimes.com>
- Watkins, R., Leigh, D., & Triner, D. "Assessing readiness for e learning." *Performance Improvement Quarterly* 17.4(2004): 66-79.
- Chae Min-jung and Lee Jong-yeon. "Analysis of Structural Relationship among Instructional Quality, Academic Emotions, Perceived Achievement and Learning Satisfaction in Offline and Online University Lectures." *Journal of the Korean Association of information Education* 23.3(2017): 523-548.
- Czikszentmihalyi, M. *Flow : The psychology of optimal experience*, NY: Harper and Row, 1990.
- Lee Eun-kyung. *The Structural Relationship among Parental Attitudes, Liberal Classroom Climate, Bicultural Competence, Academic Resilience, and Learning Flow of Middle School Students from Multicultural Families in Rural Area*. Seoul National University doctoral thesis, 2018.
- Sone Jiyeon. *The Effect of Flipped Learning Activities on College Students' English Listening and Reading Comprehension and Their Affective Factors*. Kpmgju University doctoral thesis, 2017.
- Forgerson, D. L. *Readiness factors contributing to participant satisfaction in online higher education courses*. Unpublished doctoral dissertation, The University of Tennessee, 2005.
- Guglielmino, L. M. *Development of the self-directed learning readiness scale*. University of Georgia, doctoral dissertation, 1977.
- Oddi, L. F. "Development and validation of an instrument to identify self-directed continuing learners." *Adult Education Quarterly* 36.2(1986): 97-107.
- Joo Young-joo, Ha Young-ja, Kim Eun-kyung, Yoo Ji-won. "The Structural Relationship among Teaching Presence, Cognitive Presence, Social Presence, and Learning Outcome in Cyber University." *Journal of the Korean Association of information Education* 14.2(2010): 175-187.
- B. B. Wolman, *Dictionary of behavioral science*, Academic Press, 1989.
- S. B. Merriam, *The new update on adult learning theory*, San Francisco: Jossey-Bass, 2001
- Chan, T. S., & Repman, J. "Flow in Web based instructional activity: An exploratory research project." *International Journal of Educational Telecommunications* 5(1999): 225–237.
- Kim Migeong. *Effects of interactive design of learning, characteristics of learning tasks, web-based learning environment by mediating learners' characteristics on the flow in web-based instruction*. Seoul National University doctoral thesis, 2012.

- Kim Mi-Ryang, Kim in-Sook. "Analysis of Students' Attitude and Satisfaction Level toward Afterschool e-Home Study." The Korea Contents Society 7.10(2007): 44-58.
- Garrison, R. D. "Self-directed learning: Toward a comprehensive model." Adult Education Quarterly 48.1(1997): 18-33.
- Wang, Y. S. "Assessment of learner satisfaction with asynchronous electronic learning systems." Information & Management 41.1(2003): 75.
- Jinho Lim. A study on a structural equation model of the effects of e-learning perceived by elementary school students. Korea University doctoral thesis, 2006.
- Sun, P. C., Tsai, R. J., Finger, G., Chen, Y. Y., & Yeh, D. "What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction." Computers & Education 50.4(2008): 1183–1202.
- Chan, T. "Motivational flow in computer-based information access activity." Humanities & Social Sciences 59.7-A(1999): 2456.
- Paras, B., & Bizzocchi, J. Game, Motivation, and Effective Learning: An Integrated Model for Educational Game Design. Proceedings of the Digital Games Research Association 2005 Conference: Changing views-worlds in play, 2005.
- Massimini, F., & Carli, M., (1988), The systematic assessment of flow in daily in daily experience, In M. Csikszentmihalyi, & I. S. Csikszentmihalyi (Eds.), Optimal experience: psychological studies of flow in consciousness(266~287), Cmbridhe, UK, Cambridge University Press, 1988.
- Cordova, D., & Lepper, M. "Intrinsic motivation and the process of learning: beneficial effects of contextualizations, personalizations, and choice." Journal of Educational Psychology 88.4(1996): 715–730.
- Tüzün, H., Yılmaz-Sollu, M., Karakus, T., Inal, Y., & Kizilkaya, G. "The effects of computer games on primary school student's achievement and motivation in geography learning." Computers & Education 52.1(2008): 68–78.
- Kelly, D., & Weibelzahl, S. Raising confidence levels using motivational contingency design techniques. In Ikeda, M., Ashley, & K. D., Chan, T. W. (eds.), ITS 2006. LNCS, vol. 4053, pp. 535-544. Springer, Heidelberg, 2006.
- Jung Sang-Mok, Song Kisang. "Development of Dialogue-based Feedback System to Improve Flow Learning in e-Learning Environment." Journal of the Korean Society of Contents 7.2(2007): 150-160.
- Woo-Yeon Park, Sang-Jin Lee, Chulkyu Park, Sungha Jung, Ha-Kyun Kim, "The Effect of Service Quality of Internet Insurance on Intention to Purchase Online," International Journal of Smart Business and Technology 9.1(2021): 63-70.
- Sang-yun Jeong, Cheul Choi, "A Study on the Culture and Arts Activities of Migrant Women in the COVID-19 Era and Satisfaction of Non-face-to-face Media", Asia-pacific Journal of Convergent Research Interchange 7.3(2021): 111-121, <http://dx.doi.org/10.47116/apjcri.2021.03.10>
- Sunhee Bae, Youngju Jee, YoungSun Park, "A Study on Experience of Transition to Online Lecture due to COVID-19 in Nursing Students", Asia-pacific Journal of Convergent Research Interchange, FuCoS, ISSN : 2508-9080 (Print); 2671-5325 (Online) 6.12(2020): 11-24,
- Chan, Hoi Wing. "Participating in Extra-Curricular Activities and Fostering Greaterlearner Autonomy Among Highly Proficient Secondarystudents in Hong Kong." *International Journal of*

Educational Science and Research (IJESR) 8.2 (2018): 33-40.

Patra, Bairagi, and Ashok Kumar Mohanty. "Importance of English for Engineering Students: An Evaluation of the Prevalent Teaching-Learning System In The Indian Context." *International Journal of English and Literature (IJEL)*, ISSN (P) (2016): 2249-6912.

Varghese, Mary George, and S. H. E. F. A. L. I. Pandya. "A study on the effectiveness of brain-based-learning of students of secondary level on their academic achievement in biology, study habits and stress." *International Journal of Humanities* 5.2 (2016): 103-122.

Sabihaini, Sabihaini, and Sri Pamungkas. "Ongoing Efforts on Building an Adaptive Organizational Culture and Now-Future Leadership During the New Normal Era At Kppn Yogyakarta Through Work Motivation." *International Journal of Human Resources Management (IJHRM)* 10.2 (2021): 1-16.