A study on learning immersion, online class satisfaction, and perceived academic achievement of flip-learning online classes

Soonyoung Yun*[1], Shinhong Min[2]

[1]Baekseok University, Nursing department, **76, Munam-ro,** ASI|KR|KS002|CHEONAN, **Korea**

[2]Baekseok University, Nursing department, **76, Munam-ro,** ASI|KR|KS002|CHEONAN, **Korea**

syb3000@bu.ac.kr[1], shmin@bu.ac.kr[2],shmin@bu.ac.kr

Abstract

Background/Objectives: This study is an exploratory research study to investigate the effectiveness of nursing students' flip-learning video classes on their impact on learning immersion, class satisfaction, and academic achievement.

Methods/Statistical analysis: Students who understood and agreed to the purpose of this study were targeted at all grades of Nursing Department enrolled in City C. Descriptive statistics, t-test, t-test and ANOVA tests, and correlation analysis were performed using SPSS 21.0.

Findings: As a result of this study, the flip-learning video teaching method showed higher learning immersion, class satisfaction, and academic achievement than face-to-face lectures or real-time lectures.

Improvements/Applications: It is necessary to further develop the flip learning video teaching method, which is an effective teaching method, and use it as an efficient and practical teaching and learning method.

Keywords: class satisfaction, flip-learning, learning immersion, online class, perceived academic achievement

1. Introduction

Data mining helps to extract the original and the valuable data from the large amount of dataset. Data mining can As the recent educational paradigm changes to learner-centered education, interest in flip learning among various teaching methods has also been amplified in university education, and the development of learning resources based on various media has had a great impact on the spread of flip learning [1]. The purpose of flipped learning is to increase the learning effect by increasing knowledge transfer by enabling higher-order thinking activities, and to compensate for the shortcomings of existing knowledge-oriented education [2]. The flip-learning teaching-learning model is not a typical knowledge transfer based on a lecture-style direct teaching method, but a learning method that mainly focuses on constructivism-based learner-centered activities in the classroom after pre-online learning [3]. Unlike the simple combination of online and offline like blended learning, flip learning is structured so that it can be applied and deep learning after performing conceptual learning through self-learning [4]. Therefore, in order to support successful learning in the flipped learning environment consisting of pre-online learning and classroom classes, it is important to find out how much learners are immersed in the lectures, are satisfied with the classes, and have successfully achieved the goals of their studies.

Flip learning is a form of changing from teacher-led lecture classes to student-led activity classes, where the teacher plays an auxiliary role to help learning, and the student actively learns to enable in-depth knowledge [5]. Students listen to teacher-created lectures before class, and at school, they can discuss with their peers or perform assignments to enable more in-depth learning [6]. This flip-learning classroom class transforms boring and unresponsive students into active participation, providing an opportunity for students with good prior learning to teach their peers, and as an opportunity to check each other's knowledge, metacognition also rises. [7,8]

Learning immersion is a psychological state in which learners lose themselves by concentrating their energy solely on learning. Deeper learning immersion increases academic achievement and college life adaptation [10]. This suggests that learning immersion is an important prerequisite for predicting academic achievement, satisfactory college life, and career adjustment based on voluntary learning motivation [11]

Class satisfaction is used to understand the effectiveness of education and refers to the level of awareness of the class. In addition, class satisfaction is an important criterion for learners to achieve their goals, is related to academic achievement, and is a factor that confirms motivation and continuous participation in learning [12]. Class satisfaction satisfies the learner's expectations above a predetermined level, and evaluating satisfaction after educational experience by comparing it with previous expectations acts as an important variable for examining the effectiveness of flip learning [13] . In order to increase the satisfaction of the flip-learning class, it is necessary to provide an appropriate online class learning method in advance to enable effective immersion, and to design a teaching/learning method that can satisfy learner factors and surrounding conditions [14].

Academic achievement is an objective indicator of how successfully one has achieved the learning process, and is used as an important criterion for employment, limiting the scope of career choices or affecting the entry into the major career itself ([15]. Academic achievement is the As a product of sincerity and effort, it is proportional to the amount of individual interest and investment to some extent and can be an important factor linked to credits [16]

Therefore, this study was attempted to investigate the degree of learning immersion, online class satisfaction, and perceived academic achievement through a study on the utility of flip learning online classes.

2. Materials and Methods
2.1. *Research design*
This study is an exploratory research study to investigate the effectiveness of nursing students' flip-learning video classes on their impact on learning immersion, class satisfaction, and academic achievement.
2.2. *Research subject*
This study was conducted with 213 students who understood and agreed to the purpose of this study for all grades of Japanese nursing students enrolled in City C.
2.3. *Research tool*
2.3.1. *Learning immersion*
Learning immersion is a measure of learners' immersion while learning, and it consists of a total of 29 items across 9 sub-factors [17]. It consists of a Likert 5-point scale, and Cronbach's α value showed a reliability of 0.979.

2.3.2. Online class Satisfaction

Satisfaction with online class is the degree of perception that learners are actually satisfied with the online class in the online class situation. The questionnaire consisted of a total of 11 items on a Likert 5-point scale, and Cronbach's α value showed a reliability of 0.968.

2.3.3. Perceived academic achievement

Perceived academic achievement is the degree of achievement and change that the learner recognizes and perceives by himself/herself how much new knowledge and content the learner has acquired through the teaching and learning process of online learning. It consists of a point scale [19]. It consists of a total of 4 items on a 5-point Likert scale, and the Cronbach's α value in this study showed a reliability of 0.953.

2.4. Data-analysis

For the data collected for the purpose of this study, the following analysis method was used using the SPSS21.0 statistical program.

First, the average and percentage were calculated for the demographic and sociological characteristics of the subjects.

Second, the average and standard deviation were calculated to analyze the subject's degree of learning immersion, class satisfaction, and academic achievement for the flip-learning video class.

Third, t-test and ANOVA tests were performed to compare the degree of learning immersion, class satisfaction, and academic achievement for the flip learning video class according to the demographic and sociological characteristics of the subjects.

Fourth, correlation analysis was performed to find out the relationship between the subject's learning immersion, class satisfaction, and academic achievement for the flip learning video class.

3. Results and Discussion
3.1. General characteristics

Table 1 shows the general characteristics of the 213 subjects. Of the subjects, 78.4% were female and 21.6% were male, with 1st grade 25.4%, 2nd grade 29.6%, 3rd grade 23.9%, and 4th grade 21.1%. Among the selected teaching methods, 41.8% of students who chose face-to-face classes and 58.2% of students who chose non-face-to-face classes were the criteria for good instruction, and 42.7% of students chose leading learning. For effective teaching methods, 56.8% of students chose non-face-to-face video recording lectures, and 35.7% of students chose face-to-face lectures. As for satisfaction with the flip-learning method, 63.8% of students chose "Generally agree" and 22.1% of students chose "Normal". Regarding the difficulty of remote lectures, 42.7% of students chose technical problems, and 31.9% of students chose a doctor. Restriction of communication has been selected. Regarding whether to watch flip-learning videos before the real-time class, 58.7% of students chose mostly yes, and 22.5% of students chose average. When asked whether they had taken the flip learning video more than twice, 55.9% of the students answered mostly yes, and 31.0% chose average. When asked if they would choose the same class method in the next semester, 78.4% of the students answered yes, and about the test method, 59.6% chose the face-to-face test as fair.

Table 1: Variable ratio according to general characteristics (N=213)

		N	%
gender	Woman	167	78.4
	man	46	21.6
grade	1st	54	25.4
	2nd	63	29.6
	3rd	51	23.9
	4th	45	21.1
selected class method	face-to-face	89	41.8
	non-face-to-face	124	58.2
good class judgment standard	Initiative Learning	91	42.7
	fair evaluation	15	7.0
	Communication between professors and students	46	21.6
	rich knowledge transfer	46	21.6
	various curriculum activities	4	1.9
	Etc	11	5.2
effective teaching method	Real-time video lecture	16	7.5
	Non-face-to-face video recording lectures	121	56.8
	face-to-face lecture	76	35.7
Flip Learning satisfaction	generally yes	136	63.8
	usually	47	22.1
	mostly not	30	14.1
Disadvantages of distance lectures	Technical problems	91	42.7
	communication limitations	68	31.9
	Difficulty in understanding class content	24	11.3
	Lack of teacher feedback and class activities	30	14.1
Take video lessons before class	generally yes	125	58.7
	usually	48	22.5
	mostly not	40	18.8
Take video classes at least 2 times	generally yes	119	55.9
	usually	66	31.0
	mostly not	28	13.1
Whether to choose the same class method for the next semester	Yes	167	78.4
	No	46	21.6
Test evaluation method	Face-to-face evaluation is fair	127	59.6
	Non-face-to-face evaluation is fair	14	6.6
	no difference	72	33.8

3.2. *Learning immersion, Online Class Satisfaction, and Perceived Academic Achievement*

The subject's flipped learning method class learning immersion was 3.29±0.93, class satisfaction was 3.75±0.96, and perceived academic achievement was 3.76±1.01(Table 2).

Table 2: Learning immersion, online class satisfaction, perceived academic achievement of Flip learning method

	M	SD
Learning immersion	3.29	0.93
Class satisfaction	3.75	0.96
Academic achievement	3.76	1.01

3.3. *Comparison of Learning immersion, Online Class Satisfaction, and Perceived Academic Achievement According to General Characteristics*
3.3.1. *Comparison of learning immersion according to general characteristics*

As a result of comparing the learning immersion according to general characteristics, it was found that there was a difference according to the selected class method, good class judgment criteria, effective class method, satisfaction with the flip learning class, and the selection of difficulties in distance lectures(Table 3).

Table 3: Comparison of Learning Engagement Scale, Online Class Satisfaction, and Perceived Academic Achievement According to General Characteristics

Learning immersion		M	SD	t/F	p
gender	Woman	3.35	0.89	1.771	.078
	man	3.07	1.03		
grade	1st	3.29	0.86	1.805	.147
	2nd	3.40	0.76		
	3rd	3.04	1.12		
	4th	3.42	0.96		
selected class method	face-to-face	3.01	0.94	-3.825	.000
	non-face-to-face	3.49	0.87		
good class judgment standard	Initiative Learning	3.47	0.93	3.272	.007 (a>f)
	fair evaluation	3.39	1.22		
	Communication between professors and students	3.15	0.89		
	rich knowledge transfer	3.22	0.68		
	various curriculum activities	3.65	0.71		
	Etc	2.39	1.15		
effective teaching method	Real-time video lecture	3.27	0.76	27.660	.000 (b>c)
	Non-face-to-face video recording lectures	3.64	0.75		

	face-to-face lecture	2.74	0.95		
Flip Learning satisfaction	generally yes	3.66	0.72	69.122	.000 (a>b, a>c b>c)
	usually	3.06	0.58		
	mostly not	1.97	0.92		
Disadvantages of distance lectures	Technical problems	3.64	0.83	13.925	.000 (a>c, a>d b>c, a>d)
	communication limitations	3.27	0.79		
	Difficulty in understanding class content	2.52	0.71		
	Lack of teacher feedback and class activities	2.87	1.13		

3.3.2. Comparison of online class satisfaction according to general characteristics

As a result of the comparison of online class satisfaction according to general characteristics, it was found that there were differences according to the selected class method, good class judgment criteria, effective class method, satisfaction with the flip learning class, and the selection of difficulties in distance lectures(Table 4).

Table 4: Comparison of online class satisfaction according to general characteristics

class satisfaction		M	SD	t/F	p
gender	Woman	3.79	0.91	1.076	.283
	man	3.61	1.12		
grade	1st	3.76	0.93	2.638	.051
	2nd	3.96	0.73		
	3rd	3.46	1.20		
	4th	3.76	0.93		
selected class method	face-to-face	3.47	1.07	-3.573	.000
	non-face-to-face	3.95	0.82		
good class judgment standard	Initiative Learning	3.96	0.88	3.105	.010
	fair evaluation	3.69	1.30		
	Communication between professors and students	3.51	0.96		
	rich knowledge transfer	3.80	0.77		
	various curriculum activities	3.57	1.36		
	Etc	2.98	1.26		
effective teaching method	Real-time video lecture	3.91	0.56	24.021	.000 (b>c, a>c)
	Non-face-to-face video recording lectures	4.08	0.70		
	face-to-face lecture	3.20	1.13		
Flip Learning satisfaction	generally yes	4.19	0.59	93.733	.000 (a>b, a>c
	usually	3.37	0.76		

	mostly not	2.35	1.01		b>c)
Disadvantages of distance lectures	Technical problems	4.05	0.79	14.847	.000 (a>c, a>d b>c, b>d a>d)
	communication limitations	3.89	0.80		
	Difficulty in understanding class content	2.97	0.79		
	Lack of teacher feedback and class activities	3.16	1.29		

3.3.3. Comparison of perceived academic achievement according to general characteristics

As a result of comparing perceived academic achievement according to general characteristics, it was found that there were differences according to the selected class method, good class judging criteria, effective class method, satisfaction with the flip learning class, and the difficulty of remote lecture selection(Table 5).

Table 5: Comparison of perceived academic achievement according to general characteristics

Academic achievement		M	SD	t/F	p
gender	Woman	3.81	0.98	1.267	.207
	man	3.60	1.11		
grade	1st	3.75	1.04	2.740	.044
	2nd	3.90	0.78		
	3rd	3.44	1.19		
	4th	3.95	0.96		
selected class method	face-to-face	3.47	1.12	-3.609	.000
	non-face-to-face	3.98	0.86		
good class judgment standard	Initiative Learning	4.00	0.93	3.135	.009
	fair evaluation	3.63	1.30		
	Communication between professors and students	3.59	1.00		
	rich knowledge transfer	3.72	0.81		
	various curriculum activities	3.81	1.40		
	Etc	2.89	1.36		
effective teaching method	Real-time video lecture	3.70	0.86	23.711	.000 (b>c)
	Non-face-to-face video recording lectures	4.12	0.71		
	face-to-face lecture	3.20	1.17		
Flip Learning Satisfaction	generally yes	4.20	0.67	81.280	.000 (a>b, a>c b>c)
	usually	3.43	0.73		
	mostly not	2.32	1.10		
Disadvantages of distance lectures	Technical problems	4.11	0.78	17.876	.000 (a>c, a>d
	communication limitations	3.89	0.86		

	Difficulty in understanding class content	2.81	0.83	b>c, b>d a>d)
	Lack of teacher feedback and class activities	3.18	1.31	

3.4. *Correlation between Learning immersion, Online Class Satisfaction, and Perceived Academic Achievement*

<Table 6> shows the correlation between the class learning immersion, class satisfaction, and perceived academic achievement of the subject's flip learning method. It was found that there was a significant correlation between the three variables.

Table 6: Correlation between the class learning immersion, class satisfaction, and perceived academic achievement

	Learning immersion	class satisfaction	Academic achievement
Learning immersion	1		
class satisfaction	.801**	1	
Academic achievement	.823**	.901**	1

4. Conclusion

As a result of this study, the flipped learning video class method showed higher learning commitment, class satisfaction, and academic achievement than face-to-face lectures or real-time lectures. Since it can be said to be such an effective teaching method, it can be said that the development of practical teaching and learning methods is continuously required by further developing flipped learning classes in the future.

5. Acknowledgment

6. References

1. Hamdan N, McKnight P, McKnight K, & Arfstrom KM. The flipped learning model: A white paper based on the literature review titled "A Review of Flipped Learning." Arlington, VA: Flipped Learning Network. 2013. https://flippedlearning.org/wp-content/uploads/2016/07/White Paper_Flipped earning.pdf

2. Kim MJ. The effects of the sectionalized cognitive level of online and offline learning on learners course interest and achievement in flipped learning. Journal of Learner-Centered Curriculum and Instruction. 2016 Dec;16(12):1279-1300. http://dx.doi.org/10.22251/jlcci.2016.16.12.1279

3. Bishop JL. & Verleger MA. The flipped classroom: A survey of the research. Proceedings of the 120th ASEE Annual Conference & Exposition, Atlanta, GA. 2013 Jun;23-26. file:///C:/Users/user/Downloads/6219.pdf

4. Baepler P, Walker JD & Driessen M. It's not about seat time: Blending, flipping, and efficiency in active learning classrooms. Computers & Education, 2014 Sep;78:227–236. https://doi.org/10.1016/j.compedu.2014.06.006

5. Bergmann J & Sams A. Flip Your Classroom: Reach Every Student in Every

Class Every Day. Washington DC: International Society for Technology in Education. 2012.;120-190. https://www.scirp.org/(S(oyulxb452alnt1ae j1nfow45))/reference/ReferencesPapers.asp x?ReferenceID=1791200

6. Gopalan C & Klann MC. The effect of flipped teaching combined with modified team-based learning on student performance in physiology. Advances in physiology education. 2017 Jul; 41(3):363-367. https://doi.org/10.1152/advan.00179.2016

7. Choi MN. The effects of metacognition, the effect recognition and the satisfaction, and the video learning methods on continuous learning intention in university's the flipped learning, The Journal of Educational Information and Media. 2019;25(4):715-738. DOI:10.15833/KAFEIAM.25.4.715

8. Kim MJ. The Effect of Metacognition and Learning Flow on Problem-solving Abilities of Speech Therapy Department Students Learning with Flipped Learning, Journal of Speech-Language & Hearing Disorders. 2018 Oct;27(4):181-188.DOI:10.15724/jslhd.2018.27.4.181

9. Lee ST & Jang YJ. The Relationship Between Self-Discrepancy and Learning Flow: The Mediating Effects of Regulatory Focus, Journal of Learner-centered Curriculum and Instruction. 2021 Nov; 21(22): 513-529. http://www.riss.kr.libproxy.bu.ac.kr/link?i d=A107926748

10. Lee SJ. The Effect of Flow on Learning and Self-efficacy on College Adaptation and Academic Achievement in Undergraduate Students, The Korean Journal of Educational Psychology. 2011 Jun;25(2):235-253. UCI : G704-000199.2011.25.2.001

11. Choi MS, Jo HY. Structural Relationship Between Teacher's Autonomy Support and Self-Efficacy, Immersion and Learning Ability of College Student, Journal of Learner-Centered Curriculum and Instruction. 2021 Mar;21(6):295-305 https://doi.org/10.22251/jlcci.2021.21.6.2 95

12. Jonng YR. A Study of the Effect Factors` Influence on Course Satisfaction in Cyber University. Journal of Educational Technology. 2009 Mar;25(1):61-94. DOI : 10.17232/KSET.25.1.61

13. Song YS. A study of the effects of flipped-learning-based classes on pre-service early childhood teachers' learning immersion, self-directed learning, and class satisfaction. 2020 May;19(2):147-172. DOI : 10.30761/ecoece.2020.19.2.147

14. Lim JM, Kim SH, Beak MJ & Kim KH. The Effect of University Students' Learning flow, Self-Directed Learning, and Learning Outcomes on Uncontacted Online Class Satisfaction. Journal of Digital Convergence. 2021 Apr;19(4):393-401. DOI : 10.14400/JDC.2021.19.4.393

15. Pool LD & Sewell P. The key to employability: developing a practical model of graduate employability, Education & Training. 2007 Jun;49(4):277-289.

16. Song YJ & Cho GP. The Effects of University Students Major Satisfaction and Learning Flow on Their Career Decision-making Self-efficacy and Career Preparation Behavior, Journal of Learner-Centered Curriculum and Instruction. 2015 Apr;15(4):355-374. UCI : G704-001586.2015.15.4.010

17. Kim AY & Tack HY & Lee CH. The Development and Validation of a Learning Flow Scale for Adults, Korean Journal of

Educational Psychology. 2010 Mar;24(1):39-59. http://lps3.www.dbpia.co.kr.libproxy.bu.ac.kr/journal/articleDetail?nodeId=NODE06763786

18. Oh DY. Factors to Affect Real-Time Remote Class Satisfaction and Intention to Sustain Class of University Students, Global Creative Leader: Education & Learning. 2020 Sep;10(3):79-107. DOI : 10.34226/gcl.2020.10.3.79

19. Kim JH & Lee HW. The Effect of Teaching Presence and Student-Instructor Interaction on Perceived Academic Achievement in Flipped Classroom in Higher Education, Journal of Korean Association for Educational Information and Media. 2016 Dec;22(4):733-753. DOI : 10.15833/KAFEIAM.22.4.733