

# The Effects of Flipped Learning on the Self-Directed Learning Ability and Class Participation of the Nursing Students

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## Abstract

This study was to compare and investigate the change in self-directed learning ability and class participation between before and after flipped learning in 69 nursing students taking a course in mental health nursing at D University. The SPSS 18.0 program was used to conduct descriptive statistics, Cronbach'  $\alpha$  and Paired t-test. The flipped learning is a teaching and learning method where an on-line video is provided to students for their pre-learning in pre-class stage and in-depth learning is performed through discussion with peer learners and aid from teacher in in-class stage. The flipped learning was applied in this study for three weeks from 15 week class. In the pre-class stage, the video lectures about these contents were created based on PARTNER model using doczoom program. In the in-class stage, the interests in the learning contents were induced by presenting study question in earlier time and the sufficient time for discussion was allowed. The comprehension level of students was checked through feedback. In the last stage, post-class, the reflection diary was used to summarize learning contents and check class participation. The results showed higher scores of self-directed learning ability and class participation after flipped learning than those before it, suggesting that the flipped learning had positive effect on self-directed learning ability and class participation. For development of more efficient and active nursing class, further studies are needed to develop contents for pre-learning that are helpful to utilize the characteristics of flipped learning class, to improve the classroom environment for efficient implementation of flipped learning, and to diversify the models for teaching and learning of flipped learning.

**Keywords:** Nursing Students, Flipped Learning, Self-Directed Learning Ability, Class Participation, Psychiatric Nursing Education

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## 1. Introduction

### 1.1. Background

The development of information and communication technology, wild adoption of web-based communication, and philosophy for sharing, in combination with the government's education policy to effectively respond to these events, is changing the educational environment is changing, requiring a shift in the teaching and learning paradigm.

In the future information-oriented society, the acquisition and internalization of information in this rapidly changing modern society require active self-directed learning rather than just passive acceptance of knowledge. It means that learners are required to create an innovative idea using their prior knowledge. The education in the future, therefore, should focus on self-directed learning ability and improvement of insight. The self-directed learning, in particular, was found to have both long-and short-term effect, where, in the short term, it is advantageous for learners to achieve learning goal and, in the long-term, it helps to skill development and achieve educational goal [1]. In addition, the sub-factors of capacities required for 21st century college students include self-directed learning and self-directedness as well as creativity, innovation, critical thinking, and problem-solving ability [2]. The achievement of goals through self-directed

abilities, therefore, needs the maximization of learning effect above all, which requires individualized learning adjusted to each student.

The successful learning requires, among others, maximization of learning effectiveness, for which it is necessary to develop an individualized teaching method tailored to the students. Most of the nursing education, however, has relied on cramming education through lecture-based classes to deliver as much knowledge as possible within a certain amount of time. Nursing students are forced to be passive in most classes because they require a large amount of learning to acquire professional knowledge, making the individualized teaching to be infeasible. These teaching methods are not effective in improving the ability to access and utilize much knowledge and information abundantly produced in modern society, problem solving and coping in clinical situations after graduation [3]. As an effort to solve these problems, various teaching methods such as problem-based learning (PBL), simulation education, action learning, and flipped learning have been tried [4]. In the blended learning, basically a lecture is performed by teacher and the on-line learning environment is built to provide the interaction between teacher and student and the in-depth and supplementary learning [5].

Meanwhile, with the recent appearance of educational websites such as Khan Academy and TED that offer for free the education- or lecture-related videos by subjects, a new type of blended learning has emerged, which is called as flipped learning. The flipped learning is a teaching method where students learn the related contents in advance before class and, in the class, the level of pre-learning is identified interaction and discussion between students and teachers or among students and in-depth or supplementary learning are performed, unlike conventional classes consisted of just lecture [6]. It refers to flipped teaching with opposite temporal direction compared to traditional one [9].

Most of current nursing students are millennium generations [7], and they have the characteristic of being skillful in manipulating digital device, being practical, and preferring experiential knowledge. For them, pre-learning through the media in free time is likely to stimulate interest in the class and provide motivation for learning. In addition, practical experience in face-to-face classes is a suitable educational method for them because it is effective and efficient for internalizing theoretical knowledge. The flipped learning is gaining attention in nursing education in that it allows for nursing students to advanced learning for improvement of integrated thinking by finding instructional materials and conducting prior learning and enhancing problem-solving skills based on the content [8]. Flipped learning is a method of flipping the traditional teaching method [9], where, after the learner pre-learns using the video lectures or learning materials provided by the instructor, interaction and communication between the instructor and the learner, or learners are made in various ways such as questions, discussions, role playing, and projects in the face-to-face class. In flipped learning, team learning activities for problem solving are actually performed, and in this process, the ability to apply knowledge learned, through feedback from instructors, in theory to reality is improved. Many authors in the fields of medicine, nursing, and pharmacy reported that the learning using flipped method was more effective in improving self-directed learning than learning using traditional teaching methods [7]. In other words, the combination of pre-learning through materials such as lecture videos outside classroom and in-depth and active approach through cooperative learning in class is an effective learning strategy that increases students' participation in the learning and improves the learning process and the outcomes [10].

In the course of flipped learning, learners are encouraged to take a proactive role to deepen their understanding of the content and improve self-directed learning ability [11-12]. Self-directed learning poses the responsibility of learner to learner and induces the learners to act in purpose-oriented [13]. Students'

ability to set goals, plan and follow them, and to evaluate one's own learning performance, task activity, and time management allow them to learn and utilize more and improve academic achievement. In addition, since most of pre-learning is an online video, students watch it at any time according to one's own level and schedule, and since the class activities are customized, self-efficacy is improved thus increase the class participation.

Class participation is a comprehensive learner's behavior that appears in the process of learning the knowledge that was not available to him/her before class [14], referring active and voluntary participation of learners in behavioral, emotional and cognitive way in class-related activities. To ensure the active participation of learners in class, active interaction with instructors, active prior learning, and deep learning that can utilize the learned content are very important [15]. Self-directed learning ability and class participation are, therefore, important in measuring the learning effect of flipped learning and it is necessary to test the effectiveness of these variables in flipped learning. The flipped learning has been applied to courses in nursing such as basic nursing, basic nursing practice, pharmacology, adult nursing, health assessment, quality improvement and patient safety, health promotion, and human and health [16] which are addressing physical problem and has been rarely applied to courses in mental health nursing, requiring communication and interaction. Mental health nursing is a course that, based on their understanding of human beings, enables the application of various psychological techniques to the client using the techniques of therapeutic relationship and

communication [17]. It is necessary, therefore, to learn interactive methods through self-directed team learning and to actively participate in learning.

## 1.2. Purpose of the Research

The purpose of this study was to investigate the effect of flipped learning on self-directed learning ability and class participation in nursing students. The specific research questions are as follows:

- 1) What is the effect of flipped learning on self-directed learning ability in nursing students?
- 2) What is the effect of flipped learning on class participation in nursing students?

## 1.3 Hypothesis

For the purpose, this study developed following hypotheses:

- Hypothesis 1. The score of self-directed learning ability will increase after applying flipped-learning in mental health nursing class.
- Hypothesis 2. The score of class participation will increase after applying flipped-learning in mental health nursing class.

## 2. Method

### 2.1. Research Design

This study applied one-group pretest-posttest, a method for the cases where there is only experimental without random allocation because of difficulties in manipulation, therefore, the scores before and after treatments were compared and analyzed (Table. 1).

Table 1 Research Design

Group	Pre-test	Treatment	Post-test
One group	O1	X	O2

O1 = Ability to self-directed learning ability, Class participation  
X = Class of flipped learning  
O2 = Ability to self-directed learning ability, Class participation

**2.2. Subjects and Data Collection**

The subject of this study was 69 nursing students taking a course in mental health nursing at D University. The needed number of subjects was calculated as 64, using G POWER 3.1 PROGRAM with .05 of significance level for t-test, .3 of effect size, and .80 of statistical power. To guarantee the right to study of the nursing students who took the psychiatric nursing course, the flipped learning was explained and a total of 69 fourth grade students who understand the purpose of this study agreed to participate voluntarily. One week before the first flipped learning and immediately after the third flipped learning, an online survey was conducted, and 68 of the 69 respondents (98.6%) except one unfaithful respondent were used for the analysis.

**2.3 Measures**

**2.3.1 Self-Directed Learning Ability**

The self-directed learning ability was measured by using Self-Directed Learning Ability Instrument developed by Lee, Chang, Lee & Park [18] for university students and adults. Three sub-scales of learning plan, learning practice, and learning evaluation were measured using 45 items. Each item was answered on likert five point scale from 1 (strong agreement) to 5 (strong disagreement) and No. 3, 4, 20, 27, 29, 30, 32, and 35 were reversely coded. The higher score represents more excellent ability of self-directed learning. The reliability measured using Cronbach's  $\alpha$  were .94 for original paper and .87 and .88 for pre- and post-test of this study.

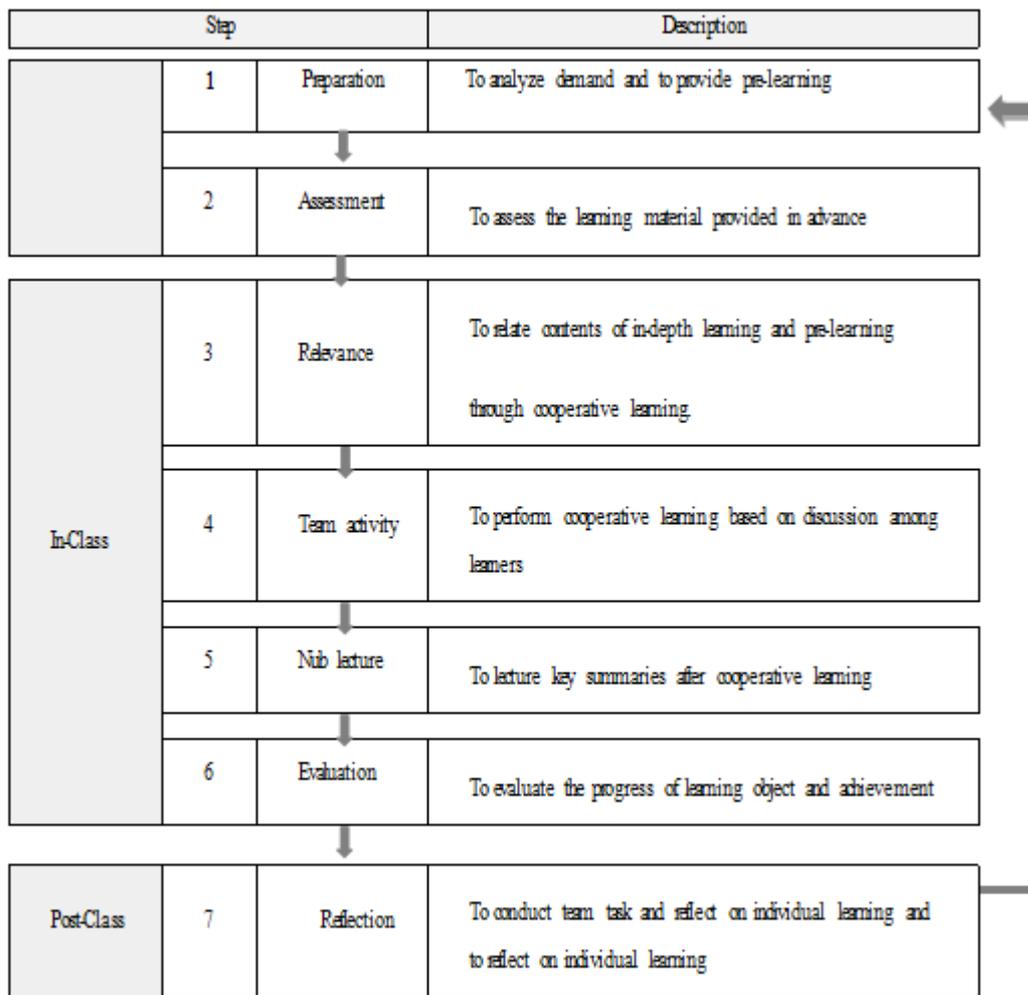
**2.3.2. Class Participation**

The class participation was measured by using Class Participation of Learners Instrument developed by Cha et al. [14] for learners. Five sub-scales of class preparation, class activity, expressing opinion, expanding class, class enthusiasm were measured using 16 items. Each item was answered on likert five point scale from 1 (strong agreement) to 5 (strong disagreement) and higher score represents more active class participation. The reliability measured using Cronbach's  $\alpha$  were .90 for original paper and .93 and .91 for pre- and post-test of this study.

**2.4. Design of Flipped Learning**

The lecture was designed based on the 'PARTNER' model [19] develop by Choi & Kim (2015), a model applicable both in theory and practice, to help change and growth of learners by denying the vertical relationship between teacher and students (Fig. 1).

Figure 1 Flipped Learning ‘PARTNER’ Model Step



Flipped learning was explained in detail to the students in advance, and team organization and activities were announced for face-to-face classes. The flipped learning was applied for three weeks from 15-week class and three contents for about 20 minutes were provided as a pre-learning material. In the Pre-Class, the first week addressed substance-related disorders, the second week body-related and dissociation disorders, and the third week the act on mental health welfare. The video lectures were created about these contents using doczoom program and were provided to students in advance so that they study them and the subjects of discussion were presented to identify the level of students' understanding. In the In-Class, the pre-learning problems were provided to students before team activity during the face-to-face class to induce their interests in the class and allowed sufficient time for discussion in team activities. After the team presentation, the feedback was used to check whether the students fully understood the contents of team activities. In the Post-Class, the students were asked to reflect on the learning contents and their attitude of participating class, using the reflection diary.

**2.5. Data Analysis**

Data were analyzed using SPSS 18.0 program.

- 1) The general characteristics of subjects were presented as frequency and percentage.
- 2) The internal consistency for the survey of pre-test of self-directed learning ability and class participation were analyzed using Cronbach's  $\alpha$ .

3) The differences in self-directed learning ability and class participation between before and after treatment were analyzed using paired t-test.

**2.6. Limitation**

- 1) This study was on only one subject, psychiatric nursing class, making the generalization of the results to general nursing curriculums to be difficult.
- 2) The analysis of the results should be cautioned because there is a limitation in all factors of internal and external validities due to the design of one-group pretest-posttest design.

**3. Results**

**3.1. General Characteristics of Subjects**

Table 2 shows general characteristics of subjects. Female accounted for 85.3% (n=58) and those who experienced the flipped learning for the first time accounted 95.6% (n=65).

Table 2. General Characteristics of Subjects

(N=68)			
Variable	Item	Frequency	Percentage (%)
Sex	Female	58	85.3
	Male	10	14.7
Experience of Flipped Learning	Yes	3	4.4
	No	65	95.6

**3.2. Comparison of Pre-and Post-Test for Self-Directed Learning Ability**

The change in self-directed learning ability was analyzed to investigate whether the flipped learning has positive effect on this ability of subjects (Table 3). The difference in subjects' self-directed learning ability between pre- and post-test was 14.44±26.02 점 (t=-4.509, p<.001) for total score and the difference in three sub-scales were statistically significant (learning plan: t=-3.278, p<.001; learning practice; t=-6.495, p<.001; learning evaluation: t=-3.345, p=.001), supporting the hypothesis 1.

Table 3. Comparison of Self-Directed Learning Ability

(N=68)					
Variable	Paired Difference			t	Significance (two-tail)
	Pre-test	Post-test	Difference		
	mean±S.D.	mean±S.D.	mean±S.D.		
Self-Directed Learning Ability					
Total	158.53±16.06	172.690±2.134	14.44±26.02	-4.509	.000
Learning Plan	72.79±9.33	78.53±9.22	5.74±14.43	-3.278	.002
Learning Practice	50.81±3.83	55.47±4.08	4.66±5.92	-6.495	.000
Learning Evaluation	34.93±5.74	38.62±6.84	3.74±9.09	-3.345	.001

### 3.3. Comparison of Pre and Post-Test for Class Participation

The change in class participation was analyzed to investigate whether the flipped learning has positive effect on class participation of subjects (Table 4).

The difference in subjects' self-directed learning ability between pre- and post-test was  $9.21 \pm 13.08$  ( $t = -5.806$ ,  $p < .001$ ) for total score and the difference in five sub-scales were statistically significant (class preparation:  $t = -5.398$ ,  $p = .005$ ; class activity:  $t = -2.917$ ,  $p < .001$ ; expressing opinion:  $t = -5.848$ ,  $p < .001$ ; expanding class:  $t = -4.358$ ,  $p < .001$ ; class enthusiasm:  $t = -3.657$ ,  $p = .001$ ), supporting the hypothesis 2.

Table 4. Comparison of Class Participation

(N=68)

Variable	Paired Difference		Difference mean±S.D.	t	Significance (two-tail)
	Pre-test	Post-test			
	mean±S.D.	mean±S.D.			
Class Participation					
Total	57.50±1.19	66.71±8.41	9.21±13.08	-5.806	.000
Class Preparation	6.65±1.90	8.38±1.51	1.74±2.65	-5.396	.005
Class Activity	16.99±2.05	18.10±1.85	1.12±3.16	-2.917	.000
Expressing Opinion	12.96±3.50	16.03±2.83	3.07±4.33	-5.848	.000
Class Expansion	12.49±3.87	15.10±3.50	2.62±4.95	-4.358	.000
Class Enthusiasm	8.43±1.18	9.09±0.96	0.66±1.49	-3.657	.001

### 4. Discussion

This study investigated the effect of flipped learning by administrating pre- and post-questionnaire on the self-directed learning ability and class participation in 68 nursing students taking psychiatric nursing course.

For the subjects; self-directed learning ability, the difference in this ability before and after flipped learning was  $14.44 \pm 26.02$  ( $t = -4.509$ ,  $p < .001$ ), consistent with the results of [12] and [20]. This means that the flipped learning require students to perform pre-learning by looking for material by themselves and, based on them, to present their opinion voluntarily and actively in team activities. This indicated a strong association between self-directed learning ability and flipped learning with the former being a positive factor for the latter.

A formation of teams composed of students with similar level, based on the level of pre-learning measured by simple test, allows us to perform learning by level, though which, it is possible to overcome the boredom and lagging due to level difference among students found in traditional class. In this method, supplementary learning when one's own learning is insufficient compared to other students, and in-depth learning when there is a desire for more detail contents are feasible. The role of teachers, through this process, changes from a one-sided knowledge provider to an assistant who supports students' learning and provides practical assistance. Considering this point of view, it is important for future teachers to provide a sense of psychological stability b forming an emotional rapport with students and to provide customized learning that each student needs. The important responsibility of teachers include also, raising the overall

academic level of students by providing, based on the confirmed pre-learning level of students, challenging tasks to excellent student or materials for supplementary learning to poor students. In the future class environment, even though the role of students increases and the that of teachers decreases in the class room, the role of teachers is still important and, therefore, needs to be designed more elaborately and thoroughly.

For the class participation of subjects, the difference between pre- and post-test was significant ( $9.21 \pm 13.08$ ;  $t = -5.806$ ,  $p < .001$ ), being consistent with Lee & Han [3] and Kim [21]. All the five sub-scales of class preparation ( $t = -5.398$ ,  $p = .005$ ), class activity ( $t = -2.917$ ,  $p < .001$ ), expressing opinion ( $t = -5.848$ ,  $p < .001$ ), class expansion ( $t = -4.358$ ,  $p < .001$ ), and class enthusiasm ( $t = -3.657$ ,  $p = .001$ ) showed statistically significant difference, suggesting that the flipped learning requires pre-learning, active interaction between learner and instructor or among learners, induce interests in self-directed learning, leading to higher class participation. The participation into class of learners by themselves is one of the most remarkable characteristics of flipped learning. Individualized pre-learning is effective in increasing learner participation. The class participation is likely to increase the class participation by decreasing their burden for learning when pre-learning materials, rather than covering entire contents of the class, provides a learning guide or supplementary material to access main contents. The differentiation between pre-class and in-class further improves class participation by providing the opportunities to apply the contents of pre-learning activities and connect them with practical knowledge in in-class. In flipped learning, teachers consider how to contribute to individualized learning in pre-learning design. Since pre-learning is in the form of online class it can be considered, based only on the characteristics of the media used, that there are characteristics of individualized classes. However, online class itself is not individualized learning, making teachers not to determine the direction easily. The teachers, therefore, should carefully explore whether the meaning of individualized learning is that the students themselves adjust the progress or level of learning according to their capacities abilities and circumstances or educational content is absorbed by the students, or there is another meaning.

Online class in flipped learning is necessary to satisfy the minimum requirements that allow mastery of factual information or basic content in offline class. It is not easy for teachers to decide which part of their class to be assigned to online class. The content of online classes must be essential for active activities in offline classes, and basic information learned through short online classes must be helpful for intensive activities in offline classes. In flipped learning, the teacher decides on the content of online and offline lessons, providing an opportunity to reflect on and reorganize the content. However, significant expertise is required to classify class contents into online and offline ones, based on the relevance of teaching intentions and contents. Educational materials used for online lectures are directly produced by the teacher, which is an additional advantage in connection with offline classes and in interaction with students. The teachers, therefore, should develop and research online class contents that induce students to participate in offline class with challenging attitude.

This study contributed to the field by investigating the feasibility of effectiveness and application of the flipped learning in the field of nursing education and demonstrating that the flipped learning has beneficial effect on learning through positive effect on self-directed learning ability and class participation. The class on which flipped learning is applied improved communication and cooperation, thus helped satisfying the learning goal of mental health nursing courses. The flipped learning, however, has several weakness such as sense of burden by learners for pre-learning, sense of burden by instructor for developing pre-learning resource [11], [22], which may offset the positive effect of flipped learning. It is necessary, therefore, to

develop various methods to increase the teaching effect while reducing the burden on learners and professors.

As a way to supplement the weakness of flipped learning and to increase efficiency, it is recommended to use flip learning as the main teaching method to motivate learners for self-directed learning through online learning or to provide lecture-like knowledge that the learner is curious about while increasing the concentration of attention. In addition, it is expected that learners are able to develop time management and voluntary learning skills through flipped learning, which provides flexibility for learners' learning time and learning space.

Flipped pre-learning is conducted using online lectures or articles, news, or learning materials that address issues related to the topic. In the case of a class that prepares for the national exam for nurses, the amount of pre-learning can be increased accordingly, so a systematic study of pre-learning to increase the understanding of learning and induce interest even with compressed content seems to be needed. On the other hand, flipped learning has been reported to degrade self-directedness in learners with lack of understanding of the class by placing a burden on learning for students who are difficult to manage themselves [2]. Therefore, it is necessary to establish a variety of teaching strategies to induce learners to take part in the class with interest in learning by themselves, rather than simple pre-learning that provides video lectures. Furthermore, It is necessary to analyze students' various needs and achievements through qualitative research and in-depth interviews as well as student satisfaction surveys and reflection record data analysis, to develop and research the model and instructional strategy of flipped learning as well as detailed instructional design and application plans that meet the educational goals and program learning outcomes that can be achieved through the detailed analysis of experts on the theme in question, and to use the nursing model of flipped learning through the effect verification, which can have positive and practical effects from the learner's side.

## 5. Conclusion & Recommendation

This study was performed to check the changes in self-directed learning ability and class participation by applying the flipped learning for nursing college students taking mental health nursing courses, and to present basic data for future expansion of flipped learning in nursing education. It was found that flipped learning was effective because the students who participated in the flipped learning class showed statistically significant changes between pre- and post-test for self-directed learning ability and class participation.

In the flipped learning online content should be developed to increase understanding and induce interest in learning, requiring systematic research and application. In the flipped learning, even though the role of students increases and the that of teachers decreases in the class room, the role of teachers is still important and, therefore, needs to be designed more elaborately and thoroughly. It is necessary to develop various pedagogical strategies so that learners have interests in learning on their own and participate in class actively.

It is recommended, based on the results, as following:

First, it is recommended to employ control group design unlike this study that compare pre- and post-test for one group.

Second, for pre-learning, video lectures of about 60 minutes were divided into three parts, and the lecture contents were delivered through online-offline join classes. Given that too long videos can increase the

pressure on pre-learning, it is necessary to adjust the time or develop another kind of pre-learning. In addition, it is necessary to develop guidelines related to this, since the time allocation may vary depending on the amount of content, the amount of assignment, the difficulty, the number of questions, and the amount of discussion in the offline class.

Third, since the effect of flipped learning was demonstrated in the class of mental health nursing, it is necessary to develop measurement variables and class contents according to the characteristics of the subject through systematic analysis of each subject in the future.

Fourth, this study just compared the variables before and after flipped learning, however, a study comparing the effect of flipped learning with other general lecture classes is needed.

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## REFERENCES

- Lee Kyung Hwa, Park Hye Sung and Kim Soo Yeon. Development of the SDLA (Self-Directed Learning Ability) Test. *International Journal of Computer Science and Information Technology for Education* (2018) Vol. 3. No. 1. May. 2018. GVP Press. pp:13-18. <http://dx.doi.org/10.21742/IJCSITE.2018.3.1.03>
- Myungsook Lee, Aekyeong Yang. Factors influencing to 21st Century Skill of College Student. *Asia-Pacific Journal of Educational Management Research*. Vol. 4. No. 2. 2019. GVP Press. pp:7-14.
- Lee N.Y., Han J.Y., Nursing students' learning motivation, class participation, and class satisfaction on flipped class and teacher-centered class, *Journal of Learner-Centered Curriculum and Instruction*. (2017) Vol.17, No.8, pp.253-267.
- Park K. E., Lee S. G., Flipped Learning teaching model design and application for the University's "Linear Algebra", *Communications of Mathematical Education*. (2016) Vol.30, No.1, pp.1-22.
- Garrison, D., & Kanuka, H. Blended learning: Uncovering its transformative potential in higher education. *The Internet and Higher Education*. (2004) Vol.7, No.2, pp.95-105.
- Hamdan, N., McKnight, P., McKnight, K., & Arfstrom, K. M. A review of flipped learning. *Flipped Learning Network*. 2013.
- Lee M.K., Chang S.J., Effects of the Flipped Classroom Approach on the Psychiatric Nursing Practicum Course. *Journal of Korean Academic Psychiatric Mental Health Nursing* (2017), Vol.26, No.2, pp.196-203.
- Lee D.Y., Utilization of an educational information system for medical education. *Korean medical education review*. (2014) Vol.16, No.1, pp.1-6.
- EDUCAUSE. 7 things you should know about Flipped Classrooms. *EDUCAUSE Learning Initiative* February 2012. Retrieved December 6, 2013 from <http://net.educause.edu/ir/library/pdf/eli7081>
- Lae-Ok Jeong, Mun-Koo Kang, Yong-Myeong Kim. The direction of 'Flipped classroom' based on prospective study analysis. *Asia-Pacific Journal of Educational Management Research*. Vol. 1. No. 1. Dec. 2016. GVP Press. pp:63-70. <http://dx.doi.org/10.21742/AJEMR.2016.1.1.10>
- Lim M.R. A Study of University Students' Collocation Proficiency and Learners' Satisfaction by Flipped Learning. *The Journal of humanities and social sciences* 21
- Park H.K., Lee J.M. The Relationship among Self-Directed Learning Ability, Self-Efficacy for Group Work, Teachers' Autonomy Support, Learning Outcomes in Flipped Learning Environment. *The Journal of Educational Information and Media* (2018) Vol.24, No.1, pp.147-175.
- Knowles, M.S. *Self-directed learning: A guide for learners and teachers*. (1975). New York: Association Press

Cha. M. J., Kim C. M., Kwon. H. J., Cho. H. D., Lee J. Y., Jeong S. J., Pa<sup>2</sup>. E. A., Moon Y., Seo J. W., Jee J. M., Zhang W., Park M. S., Lee Y. D. N., Kim K. D., Lee R., Park H. S., Yu S. J., Kim J. J., Park I. W. A development of learner participation scale in instruction . The Korean Journal of Educational Methodology Studies, (2010) Vol.22, No.1, pp.195-219.

Kim J.R. The Structural Relationship Among Intrinsic Motivation, Learning Strategies, Academic Engagement, and Academic Achievement: Focusing on Gender Differences of High School Students. Asian Journal of Education. (2014) Vol.15, No.1, pp.93-113.

Bae S.H., Shin S.J. The Effect and Strategies of Flipped Learning in Nursing Education: A Systematic Review. Health & Nursing. (2018) Vol.30, No.2, pp.1-9.

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Lee S. J., Chang Y. K., Lee H. N., Park K. Y., A Study on the Development of Life-Skills: Communication, Problem Solving, and Self-Directed Learning. Journal of Educational Policy. 2013.

Statistical Analysis of Cause of Death by Age, Statistics Korea, 2016.

Kim B.Y., Development and application for Flipped-Learning Teaching-Learning Model for the self-directed learning of child care education students. Journal of Parent Education, (2018) Vol.10, No.2, pp.37-60.

Kim SK, The Effect of the Flipped Learning and PBL on Participation in Class, Problem Solving Ability and Personality for College Students. The Journal of the Korean Society for Fisheries and Marine Sciences Education. (2019) Vol.31, No.3, pp.703~716.

Lee J.Y., Kim Y. H., Kim Y. B., A Study on Application of Learner-Centered Flipped Learning Model. Journal of Educational Technology. (2014) Vol.30, No.2, pp.163~191

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