

Effects of Applying Reflective Journal on Metacognition, Academic Self-efficacy and Self-directed Learning Ability in Undergraduate Nursing Students

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Abstract

The purpose of this study was to develop the reflective journal teaching method and to identify its effects in undergraduate nursing students. A nonequivalent control group with pre-posttest was designed. The experimental group consisted of 64 juniors and the control group 65 juniors in 2017. Collected data were analyzed using chi-square and independent t-test. There were significant increases in self-directed learning in the treatment group who participated in the applying reflective journal teaching method compared to the control group who did not ($t=2.69$, $p=.008$). Reflective journal teaching method is an effective teaching and learning method to enhance the self-directed learning of nursing students. Further exploration is needed to develop and utilize applying reflective journal for diverse courses.

Keywords: *Nursing student, Metacognition, Self-efficacy, Self-directed*

1. Introduction

Reflective journal is defined as a method to describe a change of thinking and mentality in the process of understanding a task by writing down the learner's activities and conversation, behavior and belief [1]. While practicing the method, the students can recognize objectively and check their learning process and outcome themselves. Thus it is widely accepted that the method is helpful for developing the learner's active and positive attitude to learning [2]. Thinking and activities based on introspection makes shape active and creative mindset, induces practical attitude to solve a problem [3], connects the already-acquired knowledge with a new knowledge and enables to think in abstract ways [4], accordingly enables a student to learn in the active and self-directed way. ¹

Metacognition is an ability to control and handle the learner's intellectual activities after the learner grasping his/her cognitive knowledge level in a learning process [5] and can lead to the dynamic and creative learning outcome by developing self-control ability and a process of thinking [6]. It is pointed out that an efficient clinical inference in the practical affairs of nursing varies depending on the nurse's level of metacognition [7]. Academic self-efficacy becomes a driving force to encourage the nurse to study a new expertise and skills in a new situation [8]. As the nurses should acquire steadily new knowledge and additional expertise in order to

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develop their capability constantly in a clinic [9], academic self-efficacy is regarded as an important concept in the nursing education.

Accordingly, the purpose of the study is to examine the effect of the reflective journal teaching method on metacognition, academic self-efficacy and self-directed learning ability of the students majoring in nursing.

1.1 Study hypothesis

Hypothesis 1. The metacognition score of the experimental group participating in the experiment to conduct the reflective journal teaching method is higher than that of the control group not participating in.

Hypothesis 2. The academic self-efficacy score of the experimental group participating in the experiment to conduct the reflective journal teaching method is higher than that of the control group not participating in.

Hypothesis 3. The self-directed learning ability score of the experimental group participating in the experiment to conduct the reflective journal teaching method is higher than that of the control group not participating in.

2. Study method

2.1. Study design

A nonequivalent control group with pre-posttest was designed.

2.2. Study participant and data collection

The study is carried out after the researcher getting the approval from the institutional review boards (No. 1040173-201708-HR-020-02). The study selects two Nursing Colleges located in S city having the similar curriculum in order to secure the homogeneity of the subjects and assigns, at discretion, the role of the experimental group to the students at one college and the role of the control group to the students at the other college in order to prevent them from sharing the experiment contents. The study uses G*power 3.1.3, the program to calculate the number of samples based on the sampling formula of Cohen. As a result of calculating the minimum number of the samples under the condition of the significance level of the two-tail test .05, effect size .50, power .80 for the independent t-test, the number of samples required for each group is calculated to be 64 persons. However considering drop-out rate of 10 %, 70 persons for each group are chosen as the subjects.

Those who write down the reflective journal once a week for 8 weeks and sincerely fill out the pre- and post-questionnaires were selected as the final subjects for the study. The 6 subjects among the experimental group were eliminated because 5 students did not meet the requirement of writing down the reflective journal total 8 times and 1 student answered insincerely the post questionnaire. The 5 subjects among the control group were eliminated because they all answered insincerely the post questionnaire. Accordingly only the data collected from the 64 students among the experimental group and the 65 students among the control group were analyzed for the study.

2.3. Study process

In the study, the pretest, the application of the reflective journal teaching the pretest, the application of the reflective journal teaching method for 8 weeks and the posttest are conducted in sequence Figure 1.

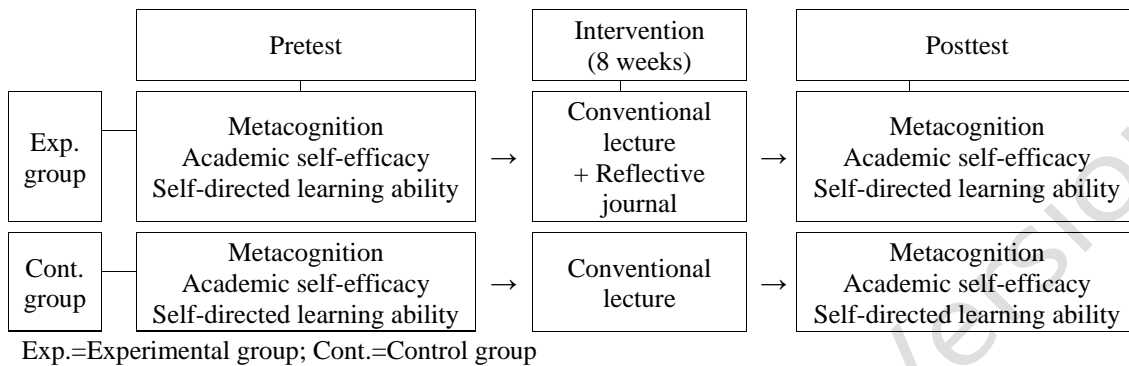


Figure 1. Research Design

2.4. Reflective journal teaching method

The subjects fill out once a week the specific reflective journal form to describe their learning activities and post the form on an online bulletin board. The reflective journal form contains the 7 questions made by referring to previous studies ; ‘what did you study?’, ‘how many hours did you study?’, ‘how did you study?’, ‘what is the most important thing you learn through your study?’, ‘which part could you not understand in studying?’, ‘which do you think is the most important question among the questions you saw while studying?’, ‘what did you realize through your study?’

2.5. Study instruments

To measure metacognition in the study, the Metacognitive Inventory for Nursing Students (MINS) tool invented by Hsu [10] was used. To measure academic self-efficacy in the study, the academic self-efficacy tool invented and validated by Kim and Park [11] is used. And, to measure self-directed learning ability in the study, self-directed learning ability tool invented by Lee, Chang, Lee and Park [12] is used.

2.6. Data analysis

The collected data are analyzed by means of SPSS WIN 23.0. Descriptive statistics is utilized in order to analyze the general characteristics of the experimental group and the control group, metacognition, academic self-efficacy and self-directed learning ability. χ^2 and independent t-test and independent t-test are used to analyze homogeneity between the experimental group and the control group and the hypotheses.

3. Study Results

3.1. Securing homogeneity between the experimental group and the control group

The researcher checked the general characteristics of the subjects such as gender, age, satisfaction in major, earned grades in the previous semester, etc. and found there was no significant difference between the experimental group and the control group. Thus, it means that homogeneity is secured.

3.2. Verifying the hypotheses

Metacognition score of the experimental group joining in the reflective journal teaching method indicates 3.54 ± 0.47 , metacognition score of the control group stands at 3.52 ± 0.41 . Statistically significant difference is not found, thus hypothesis 1 is not supported ($t=0.34$, $p=.811$). Academic self-efficacy score of the experiment group joining in the reflective journal teaching method is at 3.70 ± 0.34 , academic self-efficacy score of the control group is at 3.56 ± 0.65 . Statistically significant difference is not found, therefore hypothesis 2 is not supported ($t=1.54$, $p=.125$). Self-directed learning ability score of the experiment group joining in the reflective journal teaching method indicates 3.49 ± 0.41 , self-directed learning ability score of the control group is at 3.32 ± 0.30 . Statistically significant difference is found, therefore hypothesis 3 is supported ($t=2.69$, $p=.008$).

Table 1. Comparison of Dependent Variables between Experimental and Control Groups after Intervention (N=129)

Variable	Exp. (n=64)	Cont. (n=65)	t	p
	M±SD	M±SD		
Metacognition	3.54 ± 0.47	3.52 ± 0.41	0.24	.811
Academic self-efficacy	3.70 ± 0.34	3.56 ± 0.65	1.54	.125
Self-directed learning ability	3.49 ± 0.41	3.32 ± 0.30	2.69	.008

Exp.=Experimental group; Cont.=Control group; SD=Standard deviation

4. Discussion and Conclusion

First, metacognition score of the experimental group conducting the reflective journal teaching method and that of the control group not conducting it were measured at 3.54 points, 3.52 points respectively. The findings show that there is not statistically significant difference. It is in contrast with the findings [4] that after applying blended learning in the basic nursing training education to learners, the learners' metacognition are improved. The difference between both findings is caused by the limitation described below. The experiment instructor should offer sufficiently feedback related with the reflective journal to the subjects joining in the reflective journal method, make the subjects believe that their opinions are respected and make them continuously interactive and communicate with the instructor. In this study, the researcher offered the feedback related with the reflective journal to the individual subject or all the subjects and made an effort to shape sufficiently interaction between the instructor and the subjects and make the subjects strengthen the reflective thinking in the feedback process. However, I think that there is a limitation that one instructor is not able to sufficiently interact with many subjects.

Second, academic self-efficacy score of the experimental group conducting the reflective journal teaching method and that of the control group not conducting it were calculated at 3.70 points, 3.56 points respectively. The findings show that there is not statistically significant difference. It is in contrast with the findings [13] that after learners conducting simulation education, the learners' self-efficacy are increased. It is hard for self-efficacy to be built up for a short time. Self-efficacy of a learner has a tendency to increase through various experience.

Thus, it is necessary to examine the change of their academic self-efficacy with applying the reflective journal teaching method to students for a long time.

Third, self-directed learning ability score of the experimental group conducting the reflective journal teaching method and that of the control group not conducting it were calculated at 3.49 points, 3.32 points respectively. The findings show that the score of the experimental group is significantly improved. It is the same with the several findings [14, 15] that after learners conducting problem-based learning, the learners' self-directed learning ability are improved. In other words, it is confirmed that applying the reflective journal method is effective for improving the self-directed learning ability of the students majoring in nursing.

It is revealed in the study that applying the reflective journal method is effective for improving the self-directed learning ability of the students majoring in nursing and does not have a significant effect on improvement of metacognition and academic self-efficacy. The researcher suggests based on the findings in the study as follows. First, it is necessary for an instructor to apply the revised reflective journal method in class that an instructor is able to sufficiently interact with students and strengthen their reflective thinking by offering feedback to an individual student. Second, a new lecture method to integrate the reflective journal method and other teaching & learning method should be designed in order to improve both metacognition and academic self-efficacy and I hope that a study is conducted for the purpose of finding out the effectiveness of the new lecture method.

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