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Effects of Nursing Education using a TBL on Self efficacy and Self Identity among Nursing students

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Abstract

This study investigated the effects of TBL nursing education (for the care of congestive heart failure patients) on self identity and self efficacy among nursing students. A one-group, pre-post design was utilized with 28 nursing students as the participants. The scenario of TBL nursing education was created based on PBL, and consisted of four states (1) Present a problem, (2) Problem Follow-Up Steps, (3) Present the results including presentation, and (4) Problem Conclusion and after resolution. And then In-depth interviews were conducted with volunteers on program experiences. The data were analyzed using descriptive statistics, Pearson's correlation coefficients and paired t-tests and Giorgi phenomenology analysis method was performed. The TBL program was effective in self - efficacy and self - identity ($p < 0.01$) increased significantly after the education intervention and The meaning of the TBL experience is four (meaning that the learners embarrassed TBL, aggressive learning attitude change, effective collaboration for problem solving in a free learning environment, university classes imagined in high school), and 67 sub-components appeared as an element. The TBL program is an effective teaching method for nursing education and it can be used as basic data for the development of nursing education based on this research.

Keywords: Nursing students, TBL, phenomenology

1. Introduction

Recent economic and social developments are increasing people's interest in the quality of life. Considering the quality of life, modern people are particularly interested in living long and healthy and Modern people are already familiar with medical knowledge by listening to and experiencing their knowledge of health through various media such as media and information magazines [1]. Therefore, nursing in the modern medical market should maintain a high quality level according to the individual's unique circumstances in order to meet not only medical knowledge but also their nursing needs. Therefore, education at the nursing college that nurtures future nurses is very important. In other words, the current medical environment is that the nursing college wants to discharge nurses who can provide appropriate nursing according to the situation of the client [2] Nursing colleges must respond to the demands of nurses who have practical skills to solve problems in the medical field. Most of the nursing caregivers have a single problem, which is rare and involves multiple situations and problems, so a team approach is needed to solve these problems [3-4]. There

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have been many discussions about effective teaching methods in order to find a way to cope with these medical conditions [5-6]. To do this, various universities offer special lectures on various teaching methods to encourage the development of effective teaching methods. Successful instruction can be said to be a lesson that instructors take with learners. In other words, the effectiveness of the lesson can be maximized when the teacher 's teaching and the learner' s learning activities interact harmoniously. In particular, nursing is a practical study, and theory and practice are closely related. In other words, it is necessary to immediately recognize the situation and problems of the nursing environment, and to analyze and solve unique situations simultaneously, therefore Problem - based learning is more important than nursing education.

Problem-based learning (PBL) deals with problems that people actually experience in real life [7]. In addition, the process of solving these peer problems is to lead the learners to learn the necessary knowledge themselves [8]. In other words, problem-based learning (PBL) is a process of solving real problems, The learner leads the learning from the subjective standpoint, It is an approach to achieve an autonomous and collaborative learning process in order to revise and complement ideas for problem solving. The TBL strategy of problem-based learning evolves so that team members are actually helpful. The structure of problem-based learning is divided into small group learning and self-directed learning (SDL) [9].. The development process of problem-based learning is as follows. First, the task that is divided into small groups determines the goals that they will learn. This leads to practice of the first step in learner-centered initiative learning in constructivism. The next step is to find a 'solution' from the given task (the problem) and then to 'further facts' and 'facts to know more'. The 'solution' is mainly composed of small groups. 'Facts already known' are written based on what we have heard. 'What we need to know more' includes the things that learners ultimately need to learn. Then, the professor prepares and selects the necessary materials to solve the task for each team by referring to the high learning materials. Once the team has decided on a number of things, each individual learns about his or her own tasks through SDL activities, It is shared with the team members and reconstructed as a collaborative work. Any time a revision of the initial "assumption and solution" as a result of such individual, team learning is inevitable, it will be corrected at any time. Because knowledge formation is a repetition of continuous reconstruction through new experiences and reflection. Eventually, this repetition process leads to the solution of the problem, Through this process, both knowledge formation and knowledge sharing can be experienced. Ultimately, 'problem' in problem-based learning is to connect education and reality by making the actual environment and educational environment close to each other. Barrows and Mayers [10] summarized the problem-based learning process in four ways, (1) presenting problems, (2) following the problem, (3) presenting and presenting the results, and (4) resolving problems after the conclusion and solution. 1) In the problem presentation process, it presents the problem, introduces the homework to be submitted at the end, and shares the role of each person in the group. At this point, we expand and concentrate our thoughts, We synthesize facts, re-synthesize, identify and justify learning tasks, formulate action plans, and think deeply about the solution of given team problems. In other words, we think about possible solutions, and identify and share learning tasks. It also selects and selects learning materials and decides the time for discussion. (2) In the following stage of the problem, we synthesize the used learning materials and exchange opinions about them. Revise thoughts and assumptions, and reassemble using new knowledge. At this time, we will identify and share new tasks as needed, redesign existing practices, and approach new issues. (3) After presenting and presenting the results (4) Problem Conclusion and Resolution In the later stage, the members learn the opinions of the members through the process of abstracting or generalizing the learned knowledge and conduct self-evaluation. This course is to acquire the knowledge and information necessary for problem solving by selecting the logical thinking about the problem solving process and the appropriate learning materials, and also to know whether the tasks that

need to be solved were carried out cooperatively with the members, And it is confirmed that it has been deepened and finished.

Team-based learning (TBL) is a model in which team members collaborate and learn, It is a learning method that combines small group formation and independent learning outside the classroom for group discussion. What distinguishes it from other group learning is that in the team-based learning, reading tasks are given in the preparation process, students are learning in advance, and the grades are group performance and peer evaluation. Unlike PBL, TBL is an effective learning strategy for team learning without requiring many classrooms and a large number of tutors [11-12]. There are four core principles of team-based learning. (1) The group should be formed appropriately. When forming a group, the members who inhibit the cohesiveness of the group should be excluded, In order to carry out group-specific tasks, the group should have some similar members. (2) The learner must be responsible for his learning. In order to establish a sense of responsibility, we must carefully monitor the individual and group performance of group members and ensure that the results are important. (3) Promoting group development and learning through group learning tasks. The important thing is to develop and provide appropriate group-specific learning tasks. The task should be complex enough to ensure proper communication between group members. (4) Give students immediate feedback. Immediate feedback can stimulate students' diverse thinking and positively affect group development.

Based on the above findings, this study developed and applied a problem solving program for improving problem solving by linking problem - based learning (PBL) model with TBL, As a result, this TBL program promotes self-efficacy by analyzing problems, sharing roles, exchanging opinions among team members, exchanging opinions outside the team, preparing presentations, presenting, evaluating, The purpose of this study was to analyze the influence factors of self – identity. The specific objectives are as follows.

First, develop a TBL program.

Second, we analyze the effect of TBL - based education method on the self - efficacy of nursing students.

Third, the factors affecting TBL on self-identity and self-efficacy are analyzed.

2. Method

2-1. Research tools

2-1-1. Self-efficacy

Self-efficacy can be defined as a belief in one's ability to organize and carry out the necessary course of action to achieve the goal. In order to measure students' self-efficacy, we used the general self-efficacy measuring tool developed by Kim, Ae [13]. The self-identity questionnaire consists of 24 items and is a self-reported 7-point Likert scale (1 point = not at all, 2 points = not, 3 points = slightly dissatisfied, 4 points =5 points = slightly, 6 points = Yes, 7 points = very much). The reliability of this study was cronbach aplha = .777.

2-1-2. Self-identity

The self identity used in this study was the 'Korean ego identity test' developed by Park [14]. This test consists of subjectivity, self - acceptance, future conviction, goal orientation, initiative, and intimacy. Each sub-domain is a 5-point scale consisting of a total of 60 items, with 10 items (1 point = not at all, 2 points = roughly not, 3 points = moderate, 4 points = almost yes, 5 points = very). The reliability of this study was cronbach aplha = .984.

2-1-3. Deep depth interview

This study used Giorgi's phenomenological analysis method, which focuses on explaining the meaning of TBL teaching experience through interviews of the participants[15]. Giorgi 's research methodology consists of 'whole recognition ', 'division of meaning units', 'transformation of semantic units into academic terms', and 'integration into structure '. Therefore, this study was analyzed according to the context as follows.

- ① In order to get a feeling from the data, it is repeated as it is,
- ② The ambiguous part of the technical inquiry asked the participant again to confirm the exact meaning
- ③ Participant's natural meaning unit is expressed literally by expressing the unit of the skill that expresses the experience of the participant.
- ④ Identify the themes that can represent the participants' vivid experiences in each unit.
- ⑤ In order to specify the subject, the focus meaning that the subject 's experience means is identified in the language of the researcher.
- ⑥ The meaning of experience in the viewpoint of the participants by integrating the central meaning.
- ⑦ Situated structure description The experience structure in the viewpoint of the whole participant was integrated into the general structure.

As mentioned above, the data gathering and analyzing process were concurrently underlined in the part where the meaning of the experience of the research participant is well revealed, and the place where the description of the different technique among the meaning of the experience was questioned again. This process was repeated to derive meaning units. As a result, 98 semantic units were derived from 28 research participants. In addition to the overlapping and out-of-structure units of the derived semantic units, they are used in the analysis, and the components are derived based on the semantic unit, and the correlation between the various components is analyzed and integrated into the structure of the experience. As a result, students' TBL experience was integrated into a structure consisting of four components and 67 sub-components. In this data analysis process, the researcher went back to the raw data every time he analyzed the phenomenological reduction attitude and the process of verifying and complementing the qualitative research were asked to reanalyze and the valid derivation of semantic units was repeated. For this study, the researcher participated in the qualitative research workshop and continuously prepared the foundation as a phenomenological researcher. In addition, when it is necessary to increase the validity of the content during the data analysis process, the participants were asked again whether the interpretation was correct, and the relationship between the components was confirmed and shared. In addition, two nursing professors who were experts was secured.

2-2. TBL development course

2-2-1. Based on TBL

The TBL program for this study was based on the PBL of the instructional model procedure of problem-based learning (PBL) of Barrows and Mayers (Figure 1), In order to solve the hypothetical problem situation suggested by the researcher, it was aimed to distribute the learning materials and to experience the high level problem solving ability that pursues the mutual and common purpose while carrying out the activities by the team through the learning materials.

Table 1. Present a problem

1. Problem setting			
2. Internalization of the problem			
3. An introduction to the final submission			
4. Share their roles within the group			
Thoughts (assumptions)	Actually	Learning task	Action plan
Record of thoughts on a given problem	Comprehensive knowledge and information that can be supported by the individual or team through the home	Record what you need to know or understand to solve your assignment	Specific action plan to solve the problem
5. Think more deeply about solving a given problem			
Thoughts (assumptions)	Actually	Learning task	Action plan
Expansion and concentration	Comprehensive and re-synthesis	Identification and Justification	Formulate a plan
Follow-Up Steps			
1. Synthesis of learning materials and exchange of learning materials			
2. Re-approaching the problem			
Thoughts (assumptions)	Actually	Learning task	Action plan
Edit	Reassemble using your new knowledge	Identify and share new challenges when needed	Redesigning the practice
Present and present the results			
Problem Conclusion and Resolution			
1. Generalize and organize learned knowledge			
2. Self Evaluation			
- Did you think logically about the problem-solving process?			
- Have you picked the right knowledge and information by selecting the appropriate study material?			
- Was the team performing well and cooperating with all team members?			
- Has the problem solved new knowledge acquired or intensified?			

[Instructional modeling procedures for problem-based learning (PBL)
(Barrows and Mayers, 1993)]

2-2-2. PBL-based TBL program development procedure

In order to develop a team-based learning program based on problem-based learning, the researcher took two teaching methods related to team-based learning in advance, the TBL literature was reviewed to make problem-solving items of nursing, The three professors of nursing professions collected difficulties during class, what should be supported for successful teaching, and TBL class experience, In collaboration with two nursing faculty professors, we constructed a TBL program based on PBL, The instrument to measure the effectiveness of the completed program was revised and supplemented with expert opinions(Figure 2). The completed TBL program was conducted for 28 volunteers among C students of C university nursing students.

Table 2. PBL-based TBL program development procedure

Analysis	literature review Demand survey	Necessity of Research and TBL Literature Review Teacher interview Difficulty in class To be supported for successful teaching TBL class experience and content collection
Design	Program composition Expert consultation	Program: TBL program based on PBL Purpose: To improve problem solving ability and self-efficacy per team METHODS: TBL program application, self-efficacy scale Expert configuration review
Development	Expert consultation Final program	Expert consultation and final revision of program contents, methods and appropriateness of measurement tools after program type Completion of the final program
Implementation	Run the program	Target: C volunteer nursing students at C University 28 Conducted by program
Evaluation	Verification of effect	Quantitative Assessment: Self-Efficacy Scale Qualitative evaluation: Observation of instructor participation, collection of activity results, interview

2-2-3. TBL program structure

The TBL program was constructed according to the PBL-based procedure (Barrows and Mayers, 1993)(Figure 3). The TBL program consisted of a total of four, In the first session, the instructor presented the problem situation about the problem solving situation that was set up and presented the final task to

submit. The learner recognizes the problem presented by the teacher, Team members are able to synthesize knowledge and information, and they communicated how to obtain additional information for problem solving and set up a concrete problem-solving action plan. At the end of the first session, the first hypothesis was prepared and presented. Before starting the second session, Team members will search for relevant data as they have planned, participate in the second session with possible solutions, communicate their findings, exchange opinions, and choose a solution plan. At the end of the second session of the program, the second hypothesis was published, At this time, ppt or video presentation helped to clarify the activities of the team members. Team members compare the proposed second hypothesis with the first hypothesis and the second hypothesis prior to the third hypothesis program and revise their ideas and reintegrate using the newly acquired knowledge. When the 3rd session program started, each team expressed the selected problem solving action plan together and revised the result again. In the fourth session, each team had an evaluation time together with the time to publish the results. The evaluation rubric was prepared by collecting the opinions of two nursing professors and two clinical nurses(Figure 4).

Table 3. TBL program structure

Session		TBL deployment course		Activity	
1st	Problem recognition	Present problem situation		Expression in team member (Hypothesis)	
		Introduction of the final submission			
		role assign-ment	Problem situation recognition		
			Information synthesis		
			Synthesize more information need to know		
			Specific Action Plan for Problem Solving		
Production of the 1st hypothesis					
2nd	References searching	Thinking more about problem solving		Watching together (Hypothesis)	
		Maintaining a Possible Solution			
	Reflect the survey data	Identifying and Assigning Activities		Expression between team members (ppt / video)	
		Selection of activity data			
		Pursue problem solution			
		Activity data synthesis and opinion exchange			
Production of the 2nd hypothesis (Modification, addition, sharing)					
3rd	1,2 Hypothesis comparison	new Access	Revise thoughts		Expressing together (Modify the result)
	Redesign		New knowledge utilization, re-synthesis		
			Identifying new challenges, sharing		
			Redesigning practice plan		
4th	Result announce	Result presentation		Watching together	
	Reflection evaluation	Self evaluation and peer evaluation			

Table 4. TBL Performance evaluation contents and tools

TBL Team name :		
TBL Contents :		
Evaluation areas and elements		
Area	No	Evaluation factor
Contents analysis	1	Are the teams explaining the logic of the claim using the data they have investigated?
	2	Has each team provided specific evidence to support the claim?
	3	Does each team have a good understanding of the core and concepts of the topic and the level of the term?
	4	Can teams accept a common sense claim based on basic knowledge?
Persuasiveness Expression A basis	5	Has each team appropriately appealed to the other's feelings in some cases?
	6	Did each team answer questions that were creative and understandable about tongues and questions?
	7	Are teams presenting quantified evidence to support their claims?
Discussion Attitude	8	Did each team properly express their claim with correct pronunciation and behavior?
	9	How did each team use the time appropriately and how did the audience react?
	10	Are the teams polite and polite and actively listening to the comments of other speakers?
Total points: () points / out of 10		

3. Result

As a result of applying the TBL program, university students showed problem solving ability between the level of undifferentiated self - centered thinking and subjective thinking before experiencing the program, but after experiencing the TBL program, they were promoted to mutual and common purpose thinking. It was found that it was appropriate to approach the problem - based learning (PBL) viewpoint as the team collaborated to solve the problem situation. Therefore, it was concluded that TBL approach is effective to improve the clinical situation problem solving ability of nursing students.

3-1. General characteristics of participants

The general characteristics of participants in this study were analyzed (Table 1). Participants in this study were all nursing students and first year students, there were 5 male students (17.9%) and 23 female students (83.1%). The age of students was 18 (3.6%), 19 (26.9%) and 20. There were 8 Protestants (28.6%), 3 Catholics (10.7%), and 17 students (60.7%). There were 8 students attending school (28.6%), 20 students living in dormitories (71.4%). Participants' monthly allowance was less than 100,000 won for four (14.3%), less than 200,000 won for six (21.4%), and less than 300,000 won for eight (28.6%), participants were 2 (7.1%), 9 (32.1%) and 17 (60.7%) students who thought that their school grades were very low.

Table 5. General characteristics of participants

Variables		N	%	Variables		N	%
Gender	Male	5	17.9	Residence	Commute	8	28.6
	Female	23	82.1		Dormitory	20	71.4
Age	18	1	3.6	Pocket money	100,000↓	4	14.3
	19	26	92.9		200,000↓	6	21.4
	20	1	3.6		300,000↓	10	35.7
			300,000↑		8	28.6	
Religion	Christian	8	28.6	School grades	Very low	2	7.1
	Catholic	3	10.7		Low	9	32.1
	None	17	60.7		Middle	17	60.7

N=28

3-2. Pre and Post comparison between Self identity and Self efficacy

The paired t-test was used to analyze the mean difference of self-efficacy and self-identity before and after applying the program (Table 2). The results showed that the TBL program had significant effects on self-efficacy and self-identity ($p < 0.01$).

Table 6. Pre and Post comparison between Self identity and Self efficacy

Variables		Mean	SD	t	p
Self efficacy	Pre	4.39	.71	32.72	.000**
	Post	4.97	.69	38.25	
Independence	Pre	3.11	.45	36.32	
	Post	3.33	.66	26.58	
Proprioception	Pre	3.67	.37	33.93	
	Post	3.79	.59	52.14	
Future conviction	Pre	3.59	.97	19.56	
	Post	3.48	.56	32.84	
Goal orientation	Pre	3.11	.86	19.09	
	Post	3.14	.57	29.05	
Initiate	Pre	3.03	.37	43.54	
	Post	3.10	.68	24.03	
Intimacy	Pre	3.14	.66	25.39	
	Post	3.25	.61	28.32	

** , $P < 0.01$

3-3. Correlation between self efficacy and self identity

Participants' self-efficacy and self-identity were analyzed using Pearson correlation (Table 3). The results showed that there was a strong correlation between self - acceptance, future conviction, goal orientation and intimacy ($p < 0.01$). It is found that there is also a correlation between subjectivity and initiative, self-acceptance, independence, goal orientation, goal orientation, intimacy, and initiative ($p < 0.05$).

Table 7. Correlation between self efficacy and self identity

Variables	Mean	SD	Correlation						
			1	2	3	4	5	6	7
1.self efficacy	4.39	.71	1	-.206	-.104	-.034	-.075	.143	-.102
2.Independence	3.11	.45		1	.457*	.208	.474*	.154	.326
3.Proprioception	3.78	.59			1	.322	.560*	.485**	.511*
4.Future conviction	3.48	.56				1	.577**	.354	.505**
5.Goal orientation	3.15	.57					1	.551**	.790*
6.Intimacy	3.25	.61						1	.785*
7.Initiate	3.10	.68							1

*. $p < 0.05$, **. $p < 0.01$

3-4. TBL Experience of learning

The implications of Giorgi's phenomenological analysis procedure for TBL instructional experience are 4 components and 67 sub-components (Table 4). A representative example of each of these subcomponents is described as follows.

Table 8. TBL Experience of learning

Component	Narrative or phenomenological interpretation
Imagined University classes that in high school	'Imagined University classes that in high school', 'Tension', 'discomfort', 'scare', 'Burden', 'concentration', 'responsibility', 'cooperation', 'concentration', 'embarrassment', 'A friend helps', 'Attention', 'Contents what have not learned', 'Easy', 'Fun', 'Awkward', 'Freshness', 'Cooperative', 'Different classes', 'Impression deep', 'Free riding', 'worried', 'I feel like I have more knowledge to build up', 'I do not get bored', 'new courage', 'significant time', 'Difficulty'.
Effective collaboration for problem solving in a free learning environment	'Intensive', 'evaluated', 'all together', 'sincerity', 'participation', 'getting closer to professor', 'Cooperation', 'concentration', 'free atmosphere', 'richer knowledge', 'More effective', 'lessons that can be heard by friends', 'cooperative'
Active Change in learning attitude	'Preparatory enough', 'Learning in advance', 'Thinking of questions at the same time', 'I want to lead the mood', 'courage', 'preparation', 'I will look until the question is solved', 'Active', 'communication', 'class preparation', 'confident presentation', 'more active', 'Teamwork', 'ability to solve tasks', 'grows', 'skillful', 'participation', 'Ability to summarize information', 'presentation', 'public disgrace'
Learners Embarrassingly Accept TBL	'Lack of time', 'mourning', 'embarrassment', 'no spirit', 'short period', 'Evaluation burden', 'Evaluation is awkward', 'can not catch up', 'difficulty', 'not tidy'

[Component 1. University classes i imagined in high school]

The participants experienced that 'Imagined University classes that in high school', 'Tension', 'discomfort', 'scare', 'Burden', 'concentration', 'responsibility', 'cooperation', 'concentration', 'embarrassment', 'A friend helps', 'Attention', 'Contents what have not learned', 'Easy', 'Fun', 'Awkward', 'Freshness', 'Cooperative', 'Different classes', 'Impression deep', 'Free riding', 'worried', 'I feel like I have more knowledge to build up', 'I do not get bored', 'new courage', 'significant time', 'Difficulty'. In other words, participants feel TBL learning method as a way of university education that they envisioned when they were in high school, and although they were burdensome, they were working on lessons and were considering free riding. The details are as follows.

It was like a university class I imagined at high school. Because the team was fixed, and there was a burden of not being able to damage the team, and I started to be in a state of lack of preparation, and I was nervous and uncomfortable to make my first announcement. <Participants 1>

When I first saw a question full of unfamiliar terms, I got scared. It was burdensome to take the exam right away. I tried to concentrate my hard work more than when I studied alone to avoid the damage to the staffs. In the process of making and publishing the PPT, we were able to see the new appearance of our friends by sharing their opinions with the staffs, justice, cause, treatment, complications, etc.. Responsibility, anxiety, and concentration were thought to be effective in many ways. <Participants 2>

I felt that the learning effect and concentration were getting better by studying the problem together with the motives and rather than being alone. <Participants 4>

The class called TBL was unfamiliar and difficult. It was not easy to study what I first saw, but it was a new experience and it was fun. <Participants 5>

My experience with TBL was a little embarrassing. Having read and summarized illnesses that have never been encountered before, it was difficult to find and understand unknown terms. <Participants 7>

I was embarrassed because I did not know what to do at first, but I thought that I should not be able to stay still because my friend actively reads the material and extracts important contents. So, I read the data that I received and read about the diseases related to gastritis and explained to my team members. I decided to do my best to prevent damage to my team members. I was in charge of data collection at the anatomy TBL, and I felt that I needed to investigate a variety of materials to help my team members. <Participants 10>

It was a good experience that my friends helped me with what I did not know about the team-building activities, shared my knowledge with friends, explained each other's different perspectives, and showed solutions from various perspectives. <Participants 11>

It was my first class, but it was a very different class and I could cooperate. <Participants 13>

I do not like to be noticed very much. It is difficult to present to me. It was a good experience to be able to talk in front of my friends through TBL class and change my character. <Participants 15>

The TBL experience has given me a new encouragement. I've been reluctant to go out and present myself in front of a lot of people, but I've been able to change my look through TBL and other activities that let my team know what I've investigated. I think it will be much harder now than before. <Participants 16>

It was a new experience to learn about facts I did not know and to learn things I did not learn in class. I did not have much experience in classroom activities, but I felt it was easier and more fun to study because I was studying the subject of difficult anatomy as a team activity. <Participants 17>

It was awkward because it was my first experience, and it was good to understand. I felt fresh because it was my first TBL and I wanted to continue this class. <Participants 18>

It was unfamiliar because it was my first class, but it was a good process to cooperate with my team members. <Participants 20>

It is a class that can cooperate with others and raise teamwork ability. My TBL experience was really different from class time and it was really good. <Participants 21>

It was impressive that teamwork among team members seemed to be intensified during the course of preparing team, arranging contents, organizing contents, and releasing problems, sharing their opinions, sharing their opinions, and studying. <Participants 22>

I've been in contact with TBL for the first time in my life, but it seems not as difficult as I thought. When I first heard the word TBL, I was afraid that I would be free to ride in the team or harm my team due to my mistakes. However, when the team shared their roles and performed difficulty, the team members helped them to solve the problem without burdening them. <Participants 23>

It was a great experience for me to experience TBL's experience in learning more about topics that were different from the usual lectures and class formats, and to build up the knowledge needed for nurses while creating ppt. <Participants 24>

I have seen a lot of team-based lessons, but the team-based lessons that are organized in this order are different. <Participants 25>

It was so fun that it did not feel like a class because it was a class that was held in a free atmosphere without being bored with friends. <Participants 26>

I thought that it would be difficult to do TBL activities for the first time, but it was very good that I could fill my difficulties with other friends and fill the difficulties of other friends. So it was a very significant time and it was nice to know TBL. <Participants 27>

This kind of teaching method is the first experience, and it seems that I wondered what to do from the beginning. I did not have a role assignment and I saw only one piece of data. However, once I experienced this experience, I think it would be less difficult in a real group. <Participants 28>

[Component 2. Collaborate effectively to solve problems in a free learning environment]

Participants experienced the following feeling. 'Intensive', 'evaluated', 'all together', 'sincerity', 'participation', 'getting close to professor', 'cooperation', 'concentration', 'free atmosphere', 'Effective', 'class to listen to friends' thoughts', 'cooperative'. Participants felt that the method of TBL learning was effective because they could concentrate more on classes unlike general classes, and they felt that they were getting closer to the teachers. Especially, this class was collaborative such as being able to listen to friends' ideas in a free atmosphere. The details are as follows.

The difference with the general class seems to be that there is no one who plays nothing. There are people who do not concentrate or participate in regular classes, but there is no such class. If I do not participate, my team will suffer losses and I must attend. And in the regular class, I could not see other friends assessing me, but other teams are evaluating our team in the TBL class. <Participants 5>

It is inconvenient to ask for help from other friends because they are doing their own individual rather than collecting power all together. TBL seems to be a good activity because it is good to ask for help and to develop cooperation. <Participants 7>

Until now, university lectures did not go on a group basis, so they showed such a difference. There were many places where students could participate in the class. <Participants 8>

While the general class was one-sided, the TBL class had to produce more immediate results and concentrate more. In addition, the course content is more memorable in the process of exchanging with friends. <Participants 9>

The general class is the class led by the professor in front, so there is not a process that students do voluntarily, and there is not much that can be memorized after the class because there is nothing that can be done by oneself. On the other hand, the TBL class is a voluntary class that students participate in, such as preparing students for a presentation and discussing the evaluation of other groups. Therefore, they are left with much memory after class, I think it will be less. <Participants 11>

It is fun and not drowsy because it is more focused. It was difficult to get closer to the professor because of the large number of people in the general class, but at the time of TBL, the number of people was reduced to half, and the professor was able to take care more and get closer. <Participants 12>

General classes are usually taught by professors. TBL classes are available for all students and classes are led by students and professors. <Participants 15>

It seems to be difference of participation of class. Of course, regular classes do not reduce the participation of the class, but TBL classes seem to be created for everyone to participate actively. <Participants 16>

While the general class is a class in which the students understand and follow the professor's one-sided lecture, the TBL class has the effect that the number of students dropping by helping and cooperating with each other is much smaller and the concentration is higher than in the normal class. <Participants 17>

General classes are taught by professors, but TBL classes are taught with friends in a free atmosphere. <Participants 18>

I think that it is different from general lecture class that team members study the same subject and write ppt based on it and present it to other team members. As students become acquainted with the information that we did not know about each other, our knowledge will become richer and our cooperation with our friends will be enhanced. <Participants 19>

Unlike regular classes, I talk to my team members, share information and study, so I have a feeling of cooperation and class. I think it is more effective to study while talking with the team. <Participants 20>

The general class is a bit boring because it is a professor talking alone, but TBL is a class that everyone can participate and present and listen to the thoughts of other friends. Active participation is possible. <Participants 22>

Unlike general study by oneself, it is a class that can cooperate with people and study. <Participants 24>

[Component 3. Aggressive learning attitude change]

Participants experienced the following through TBL. 'Ready enough', 'Learning in advance', 'I think at the same time a question to ask another group', 'I want to lead the atmosphere to announce', 'Courage is born', 'Preview', 'I will look for an answer until I have an answer', 'active', 'Communication', 'class preparation', 'confident announcement', 'more active', 'well expressed opinion', 'team', 'ability to solve task' also grows, 'skill', 'participation', 'Ability to summarize', 'presentation', 'public disgrace'. In other words, if participants re-do TBL lessons, they will prepare for the lesson in advance and have a positive attitude toward problem solving. Details about this are as follows.

The next time you have a little more preparation, you will be able to communicate more clearly what I think and find out at the time of presentation. It is likely that I will learn about the previously announced topic in advance. <Participants 3>

If I participate again in TBL class, I will think about the questions to ask another group at the same time while preparing the presentation for the first time. I would also like to encourage an atmosphere in which the presentation order or the whole team members can meet and present. <Participants 5>

I am not ashamed to be presenting courageous presentations, and I am afraid that I will be the first student to present. <Participants 6>

I will think back on what I learned at TBL and think it is important to become a nurse and have more time to study. <Participants 7>

I could not follow the lesson because I could not prepare for the lesson. In the next lesson, I will make preparations for the lesson so that I can adapt and follow the lesson well. <Participants 8>

When I was in general class, I overdid it if I did not know it, but it is not excessive in TBL class. So if I repeat this lesson, I will look into the problem that I do not know until the curiosity is solved. I had a negative aspect, but I will be more active in the next class. <Participants 10>

We will have a higher level of communication with our team. <Participants 11>

When I first did it, I could see the shape of the hulking, but if I do it again, I will change to a more skillful way to acquire knowledge and to earn a lot of things by earning faithfulness. <Participants 15>

I will be more precise and participate more accurately. I think I will be able to participate more actively and participate more quickly than last time. <Participants 20>

I think I can express my opinion better. <Participants 22>

If I repeat the TBL class, I will be more active than class time and work with my team members to think that I will learn more than class time. <Participants 24>

I would like to share my opinion and make good teamwork. In other words, it is likely to have a positive impact on the formation of sociality because it carries out the task with the team. Also, since their own roles are divided, the ability to solve individual tasks is likely to grow. <Participants 25>

I think I can change more quickly so that I have the ability to tell what I want. If I come back to TBL class again, I would like to distribute the role of the team members even more carefully than last time, share many opinions and work hard for the perfect presentation. <Participants 26>

The more TBL activity lessons are taught, the better the problem solving ability will be. It seems that it will gradually shorten the time, and also the cooperation will be improved. I would like to study the part that I once worked for. In the last hour, if another team comes in, I have to answer the question. And I was surprised to see that each team scored. I can not say that I am good at presentation but I am trying to do it. <Participants 27>

[Component 4. Learners embarrassingly accept TBL]

Participants felt TBL after class, 'Lack of time', 'mourning', 'embarrassment', 'no mind', 'short period', 'evaluation burden', 'evaluation is awkward', In other words, after participating in the TBL, participants did not have enough time to learn, and as a new learning method, the learner was embarrassed, and learned and evaluated in a short period of time, The details are as follows.

I was so embarrassed at the time that I had to make a ppt on the spot and suddenly I had to study on the spot and take a note test and make a team presentation. <Participants 3>

I was a little sad to evaluate. Of course, I have to do it, but in the case of me, I can not make a presentation without making mistakes. I think there will be frequent mistakes even if I try. Of course i will have plenty of practice, but there is something to be worried about. <Participants 4>

Time seems to be a little short. It is because we need to spend a lot of time if we get a little deeper when we share opinions among the few people. But if i do that, it will hinder our next activity. <Participants 5>

It was a little inconvenient for us to make our own assessments. Of course, it is right that there should be evaluation after the activity, but it was awkward and uncomfortable to evaluate the same classmates.<Participants 6>

If the preparation period is short, and there is no background knowledge at all, it will be a great burden to students if they do TBL.<Participants 7>

I did not know what to do. So I think that understanding of contents is a little low.I did not have enough time to do more PPT activities.<Participants 9>

I do not have enough time to make announcements, and next time I want to have time to make and publish a project in advance! I regret not being able to finish all of the time in the given time. <Participants 10>

It is hard to concentrate because the class atmosphere is cluttered as we work by teams. <Participants 18>

[Component 5. Teacher in TBL helps and gives directions]

In TBL, students experienced the professor as follows. 'Being able to help us', 'Being helping us', 'Progressive guidance', 'Being able to help us', 'Helping me', 'filling in the missing parts', 'correcting the wrong contents', 'telling me the way', 'going in the wrong direction', 'organizing knowledge', "And the position of the bystander '.The details are as follows.

It is special. It was good for you to take a new class. Unlike the existing lecture method, I was given something to do on my own, so I liked that part. <Participants 1>

The professor looks at us behind us and leads us like a leader. <Participants 2>

Professor is a person who explains goals to students and helps them reach them. <Participants 4>

The professor is the one who lets the students know about the problem on their own and makes them realize it themselves. It's easy and simple to explain. At least, the time for lectures is less than that in general classes, and students are more likely to learn from lectures and listen to lectures. <Participants 5>

The professor seems to be helping students to participate more actively in class. The professor guided me how to proceed in the process and helped me when I did not know what to do. <Participants 6>

Unlike other professors' classes, they are pleasant and funny, and they lead students to follow and enjoy. <Participants 7>

The professor is giving us more information to let us participate in ourselves. I thought it was annoying (TBL) but it was better than I thought. The professor seems to lead TBL well. Help to solve problems that students can not solve. <Participants 8>

I think professor is an assistant in TBL. Because the professor investigates for us to make announcements and arranges them, if there is something we do not know, we help you to fill in the missing part, or if we make a mistake while making presentation as a facilitator, if the progress is not smooth, I think. <Participants 9>

When we announce the contents of our learning to other students and present it to them, it seems that the professor corrects the missing or wrong contents and informs us properly. It also tells you how to proceed with TBL classes. In TBL, the professor is like an assistant. Help students with directions to the class and help students go the wrong way. <Participants 10>

In TBL, we need to find out information, summarize, and make a ppt. I think the professor is important at the end to sort out the knowledge and explain the deficiencies. <Participants 11>

The professor is a thankful person who leads me like a white paper with nothing. I think it is the person who helps me acquire accurate knowledge by getting more information that is not correct or important information in the information I have found.

<Participants 12>

Professor in TBL class is absolutely necessary. Because we are still inexperienced, let us know how to make TBL better, and professor give us a lot of details when we do not know. I am also very honored to be able to do these activities through professor!

<Participants 13>

The professor is like someone who wants to give us more activities and give us more information. So so good. <Participants 14>

The professor at TBL seems to have a position of a bystander. Last time, when students did not ask any questions, the professor asked questions on their behalf. In the case of TBL classes, we seemed to have

nothing to ask and act on. Eventually, it seems to be based on team learning and explaining to other teams. I do not know exactly what the professor is. <Participants 15>

4. Conclusion

The purpose of this study was to investigate the effects of teaching method developed by TBL (Team Based Learning) for problem solving on the self - identity and self - efficacy of nursing college students by reviewing existing literature and collecting expert opinions. Participants in the study were nursing students who voluntarily agreed to participate, The effect of TBL was analyzed by collecting data using self-report questionnaires before and after the participants, After the program was completed, in-depth interviews were conducted on volunteer participants' experience of the program. The in - depth interview data were analyzed using the Giorgo phenomenology analysis procedure.

The results showed that the TBL program was effective by increasing self-efficacy and self-identity($p < 0.01$), The meaning of the TBL experience is 4 (meaning that the learners embarrassed TBL, aggressive learning attitude change, effective collaboration for problem solving in a free learning environment, university classes imagined in high school), and 67 sub-components Respectively.

This study is based on PBL which has been studied so far, and the researchers constructed according to the procedure suggested by Barrows and Mayers[10], After consulting with experts, they were revised and supplemented to verify their validity. Particularly, this study tried to supplement the TBL program by in-depth interviews with participants about the program experience after the end of the program. Therefore participants' experiences should be used as valuable information to be supplemented in subsequent studies. It is doubtful that the current curriculum is not a learner-centered class, but a teaching course for the instructor Participants also responded that collaboration for problem solving was effective in a free learning environment. Then they can conclude that the TBL learning method feels more free and communication is more effective than the other methods. And they are changing the active learning attitude through TBL learning. In other words, it may be judged that the active learning attitude has been formed by the consciousness of solving the problem on its own unless the teacher gives the answer by finding the answer for solving the problem by oneself. But one concern remained. In other words, one TBL study, rather than an ongoing education, made the learners embarrassed. It is thought that this can be overcome sufficiently by orientation and supplementation of TBL class continuously. Participants also expressed feelings of discomfort about evaluating their peers. Of course, an evaluation may be necessary, It is clear that nobody will feel better if they underestimate them in front of their eyes. Students may be hurt until they get used to it. Therefore, an objective assessment tool to complement this problem should be created before the TBL class. It is therefore advisable for all students to be informed in advance of acceptable performance assessment tools. Particularly, it is important for students to feel that the students and professors are teaching together in the TBL class. It is very important that we work together to improve the effectiveness of the class. This is a big achievement that can not be achieved in general classes. However, it seems that teachers only need to be trained in their knowledge of major studies and TBL classes.

Based on the results of this study, TBL program is an effective teaching method in nursing education, and the result of this study is used as basic data for development of nursing education using TBL.

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