

---

**研究報告**


---

## Experiences of nursing students undergo TBL through flipped classrooms

Hiroshi Ota<sup>1)</sup>

### Abstract

**Purpose:** Team-Based Learning (TBL) refers to an active learning method in which a problem assigned beforehand is independently solved by the individual, and then as a member of a team (group). In this study, the learning experiences of students who underwent TBL by using a flipped classroom technique were qualitatively analyzed to investigate effective teaching methods.

**Method:** The group interview was conducted with 15 students (subjects) who experienced TBL in the subject of “health assessment” for 2nd year students in nursing universities. The interview was recorded and transcribed into text, and the contents were then analyzed. In the TBL involved in this study, teams of 5-6 students underwent pre-learning before attending the class. In the class, a lecture was followed by individual learning (5-10 minutes) and group learning (15-20 minutes). The contents of the discussion were then submitted as a deliverable within the class period, and were used in the assessment for each group.

**Result:** With respect to the students’ experience with TBL, the categories of “effect of pre-learning on group learning and awareness of personal problems,” “interest in group members,” “changes in attitude towards group learning,” and “effect of group dynamics” were extracted.

**Conclusion:** For the teacher using TBL with the purpose of improving the quality of student learning, support that took the students’ self-awareness and interest into account, as well as attitude and group dynamics, was deemed important. Accordingly, support was deemed necessary in areas such as grasping the students’ response to TBL in detail, feedback on awareness and interest, considerations for group structure and theme setting, and the teaching of the group learning method.

**Keywords:** Nursing Education; Team-Based Learning; Flipped Classroom

### I . INTRODUCTION

In basic nursing education, effective nursing support that corresponds to various situations needs to be provided under limited time, which necessitates that nurses have superior assessment skills. However, present day university nursing students have low levels of “basic learning and problem-solving skills” and “self-awareness of being an efficient learner,”<sup>[1]</sup> and exhibit characteristics such as “lack of confidence in deciding nursing support,” “self-affirmation in considering effective support for the patient,” and the “perception of difficulty in intangible

support.”<sup>[2]</sup> Therefore, many difficult aspects are being observed in learning activity support. In recent years, to solve such problems, the introduction of teaching methods such as Team-Based Learning (TBL) and flipped classrooms that utilize information and communication technology (ICT) are being tested; their effectiveness appears to be promising<sup>[3-7]</sup>.

Unlike the conventional teaching format, TBL refers to an “active learning” method in which problems are assigned beforehand, and are then solved individually and also as a team (group)<sup>[3]</sup>. In basic nursing education, it has also been found

---

<sup>1)</sup> Faculty of Nursing, Shijonawate Gakuen University, Osaka, Japan

to be effective in areas such as the experience of independent learning in students and the impact of interpersonal skills acquisition<sup>[4-7]</sup>. Moreover, the flipped classroom refers to a method in which the conventional format of “classroom lecture, homework exercises” is “flipped”<sup>[8-10]</sup>, explanatory lectures are undertaken in a learner-centered format, and classroom time is spent for individual and group-centered learning. Thus, this method provides a learning environment that focuses on comprehension and application. The flipped classroom method includes TBL, and has been reported to increase student satisfaction even in basic nursing education<sup>[9]</sup>. However, a perusal of previous reports on TBL and the flipped classroom in basic nursing education reveals that, although various problems such as operational readiness, the effects of human factors and learning resources, and the assessment of learning methods and learning attainment have been cited, very few have studied the individual learning behaviors of students in detail, the flipped classroom method from a TBL-support standpoint, or the efficacy of ICT utilization<sup>[10, 11]</sup>. The approach in TBL and the flipped classroom teaching method matches very well with the skills required for contributing to team-based clinical care, and is also presumed to be effective in basic nursing education. Therefore, the development of an educational method to effectively support TBL is considered worthwhile. Accordingly, in this study, aiming to develop a teaching method to support team-based learning in basic nursing education, the experiences of students who underwent TBL that incorporated the flipped classroom strategy were qualitatively analyzed to investigate effective teaching methods. In this study, a TBL approach was applied to basic nursing education to examine its effects on student experience. TBL was conducted using a flipped classroom technique. This approach involves using the knowledge that students already have to attempt group-based active

learning activities; it was anticipated to develop the students’ ability to disseminate information, which is required in contemporary medical care teams. Clarifying the experiences of students who took these classes can yield suggestions that will be useful when conducting basic nursing training in the future.

## II . MATERIALS AND METHODS

### Subjects

The subjects were 15 students who completed the sessions of “respiratory system assessment (90 min lecture×2 times, 90 min practice×2 times)” and “brain and nervous system assessment (90 min lecture×1 time, 90 min practice×1 time)” in the subject of “Health assessment” for 2nd year university nursing students.

### TBL overview

Each of the groups consisted of 5-6 students. In the “First phase,” students had to undergo individual learning as a prerequisite. In the “Second phase,” prior to commencing the lecture, tests were conducted to ascertain student preparedness in applying the acquired knowledge. The tests were conducted again after the completion of group discussions. In the “Third phase,” after the lecture, group learning was conducted after completing individual learning. The teacher conducted a follow-up of the learning contents. The document prepared in group learning was submitted as a deliverable, and was used in assessment.

### Data collection method

A research period is from April, 2016 to September, 2016.

The 15 students were divided into 3 groups to conduct interviews. The groups consisted of five members each, including male and female students, allocated regardless of their grades.

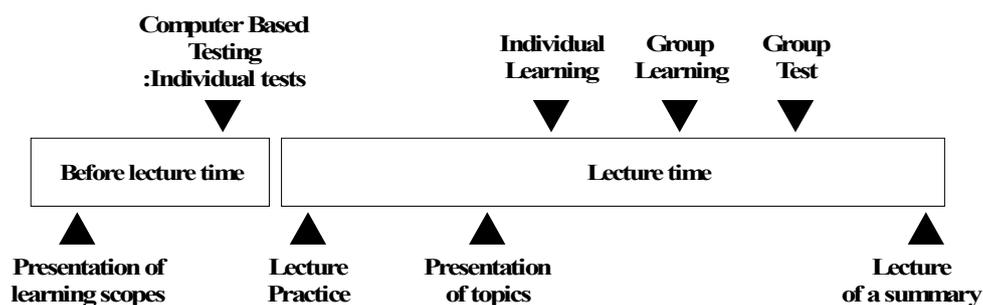


Figure 1. Class flow

Each group interview was held one time for an hour. The researcher was in charge of hosting and managing the interviews. The interviews were recorded, transcribed into text, and the contents were then analyzed.

### Interview contents

A semi-structured interview was conducted regarding the classroom lecture and the effect of ICT-based instructional material, and the group interviews were recorded and transcribed into text to be used as data. During the interviews, the students were asked the following questions regarding their learning experience under TBL that used the flipped classroom technique: aspects they found problematic during their learning, aspects they found to be positive, perceived differences when compared with past group learning experiences, and impact it had on their learning behaviors.

### Analysis method

Verbatim recordings of the interviews were converted into text, which was then used in qualitative content analysis using categorization. For analysis, TBL and flipped classrooms experiences were examined from the perspective of students' learning behavior. The analysis was supervised by research cooperators who had experience in qualitative research.

### Ethical considerations

Informed consent was obtained from the participants about the purpose and method of the

research, as well as for voluntary participation. This study was conducted after obtaining approval from the research ethics committee of the affiliated facility. The data collection was conducted outside of class hours, and verbal and written explanations were provided to the participants regarding the significance, purpose, and method of research, as well as the anonymization of responses, voluntary participation, non-participation as not affecting credits and assessment, and the protection of personal information privacy.

The study was conducted after obtaining approval from the research ethics committee of the affiliated facility.

## III . RESULTS

Based on the interview results, with respect to the experiences of students who underwent TBL, the four categories extracted were as follows: "effect of pre-learning on group learning, and awareness of personal problems," "interest in group members," "changes in attitude towards group learning," and "effect of group dynamics."

Through TBL, the students became aware of "variation in self-learning and knowledge among members," "similarity," and "learning attitude." Reflecting on their own learning behavior made them aware of the "effect on the group and personal problems" (i.e., "effect of pre-learning on group learning, and awareness of personal problems").

Moreover, interest was also heightened regarding how the members expressed their

opinions, “status of other members” during the meeting, and “interest and curiosity in learning method” (i.e., “interest in group members”).

With time constraints and the assessment method differing from traditional group learning, the TBL experience positively influenced the students’ learning attitudes (“changes in attitude towards group learning”). At the same time, learning was also affected by group members and group dynamics, such as “subordination” to members expressing themselves actively, and “active or passive participation” driven by the level of one’s knowledge (“effect of group dynamics”).

#### IV . DISCUSSION

The nursing subject area of analysis in this study (i.e., “health assessment”) is about acquiring assessment skills to decide and provide care deemed appropriate based on the health condition and needs of patients who are subjects in the nursing training. Utilizing previously acquired knowledge on anatomy and physiology, the students learn about the basic techniques of physical assessment. It is an important subject that requires the students to integrate knowledge and become conversant with the grounds and techniques that form the basis of assessment. The sections of “respiratory system assessment” and “brain and nervous system assessment” are often encountered in actual clinical situations, and the challenges associated with acquiring the knowledge and techniques are also complex and diverse. In particular, in learning the stethoscopic technique of physical examination in “respiratory system assessment,” the judgment of normal/abnormal is considered very difficult. Accordingly, it may be considered a suitable subject for acquiring knowledge through active learning using TBL, in which the limits of individual learning are essentially removed.

In this study, TBL was combined with the flipped classroom technique. TBL has the same

methodological approach as flipped classrooms; as such, TBL can be said to have a high affinity with the flipped classroom technique. TBL is conducted based on the three stages of review, preparatory confirmation, and application of learning content<sup>[3]</sup>. In this research, students learned independently and in advance using such materials as class references and reference books. The students then had to take a computer-based test on the day before the class. During the class, class and group exercises were conducted using electronic materials. The students stated that these experiences allowed them to confirm the aspects they were lacking, both individually and as a team member, and resulted in a deeper understanding of their learning. This outcome supported past findings on the effects of TBL and flipped classrooms strategies<sup>[4,7, 10]</sup>. Therefore, the use of TBL in this study was also suggested to be effective.

Through TBL, the students were able to experience various opportunities to reflect upon their own knowledge and learning behaviors. This is very important for nursing university students at a time when they transition to adult learners, and also for professionals who are expected to exhibit self-decisive learning behavior, suggesting that TBL is likely effective in basic nursing education.

In teaching the use of TBL for improving the quality of learning in students, support that takes students’ awareness and interests into account, as well as their attitudes and group dynamics, was considered to likely be important. Accordingly, support related to the detailed grasping of the responses of students undergoing TBL, feedback regarding awareness and interest, appropriate consideration for group structure and theme setting, and the teaching of group learning theory, was deemed necessary.

Table 1. Analysis results

|  |
|--|
| <b>Categories</b>  |
| <b>Effect of pre-learning on group learning, and Awareness of personal problems</b>  |
| [Sub categories]   |
| Variation in self-learning and knowledge among members                               |
| Similarity   |
| Learning attitude  |
| Effect on the group and personal problems  |
| <b>Interest in group members</b>   |
| [Sub categories]   |
| Status of other members  |
| Interest and curiosity in learning method  |
| <b>Changes in attitude towards group learning</b>                                    |
| [Sub categories]   |
| Time constraints and the assessment method differing from traditional group learning |
| Experience positively influenced the students  |
| <b>Effect of group dynamics</b>  |
| [Sub categories]   |
| Subordination  |
| Active or passive participation  |

### Conflict of Interest

The authors declare that there is no conflict of interest.

### References

1. Nishizono T, A Study of Changes in Factors Comprising the Capacity for Self-Directed Learning in Nursing Students. *Osaka Medical College Journal of Nursing Research*. 3: 90-99, 2013
2. Nasu M, The attitude constructs of students who have difficulty in learning and nursing teachers who have difficulty in instruction of practical training. Master's thesis Niigata College of Nursing. 2011
3. Larry KM, Dean XP, Kathryn KM, Ruth EL, Team-Based Learning for Health Professions Education: A Guide to Using Small Groups for Improving Learning, Stylus Pub Llc, VA, 2007
4. Igarashi Y, Iida M, Shinpuku Y, Teaching Maternal-Newborn Nursing (Basic) Using the Team-Based Learning Method: An Innovative Approach (1), *Bulletin of St. Luke's College of Nursing*. 40: 67-70, 2014
5. Igarashi Y, Iida M, Shinpuku Y, Teaching Maternal-Newborn Nursing (Practical Method) Using the Team-Based Learning Method: An Innovative Approach (3), *Bulletin of St. Luke's College of Nursing*. 40: 75-79, 2014
6. Saitoh M, Saitoh F, Student Evaluation of a Pediatric Nursing Course that used Team-Based Learning (TBL), *Bulletin of Department of Nursing of Hirosaki Gakuin University*. 8: 35-45, 2013
7. Sugisaki K, Introduction of Team Based Learning (TBL) in Adult Critical Care Nursing, *Journal of Yokkaichi Nursing and Medical Care University*. 7 (1): 63-68, 2014
8. Miyashiba T, Funashima N, Development of the self-evaluation scale of learning behaviors in nursing skills laboratories. *Chiba Academy of Nursing Science*. 17 (12): 31-38, 2011
9. Nakayama T, Funashima N, Yamashita N, Development of the Scale of Learning Activities in Nursing Clinical Practicum. *Journal of Japan Academy of Nursing*

Education. 18 (1) : 1-10, 2008

10. Missildine K, Fountain R, Summers L, Gosselin K, Flipping the classroom to improve student performance and satisfaction, Journal of Nursing Education. 52 (10) : 597-599, 2013
11. Diane M B, Judith A H, Teaching in Nursing: A Guide for Faculty, 4th Edition 4th Edition, Saunders. Philadelphia, 2011