A Case Study on Team-Based Learning (TBL)

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Abstract. This descriptive survey research investigates nursing students’ academic achievement and perception following the application of team-based learning (TBL) in class. A TBL session comprised seven steps and lasted for three hours. A total of eight topics were addressed in the TBL class. As for the academic achievement, the group readiness assurance test (GRAT) score proved more significant than that of the individual readiness assurance test (IRAT) (t=-29.57, p<.001). In contrast, the perception of TBL and teamwork as per academic achievement levels war insignificant (F=0.78, p=0.59)(F=1.06, p=.369). Therefore TBL is considered as an effective learning method of using communication with teammates and professors in nursing education.

Keywords: Team-based Learning, Nursing education, Perception, Academic achievement, student

1 Introduction

Nurses are required to share knowledge and skills to solve problems in diverse nursing settings, which warrants a team-based approach to task fulfillment as well as an analytic and critical thinking process towards right decision making [1]. Yet, the traditional lecturing as an instructional method mostly involves simple receptive learning [2], which is why diversified curriculums and instructional methods should be formulated to improve practical skills and outcomes.

Team-based Learning (TBL) is a learner-oriented instructional method where students are encouraged to actively in critical thinking and learning activities [1], and a teaching-learning method that draws on team approaches to achieve performance objectives with an efficient communication system[3]. According to previous reports, TBL proved more effective than lecturing as an instructional approach in nursing
education[4][5][6]. Thus, TBL has been applied to an increasing number of nursing subjects. Still, TBL application in class and relevant research are insufficient[7].

In this context, the present study aims to provide some reference data for efficient management of TBL by analyzing nursing students’ academic achievement and perception following the application of TBL to the nursing for patients with gastrointestinal diseases among other adult nursing subjects.

2 Method

2.1 Design and Subjects

This descriptive survey research is intended to investigate the learner perception following the TBL class for nursing students and to verify the difference in academic achievements in view of the scores on individual and group readiness assurance tests. The subjects of this study were 187 sophomores in nursing as of 2015 at K University in Gyeonggido. The subjects attended the TBL class about nursing the patients with gastrointestinal diseases.

2.2 Instrument

Learner perception refers to students’ subjective evaluation of TBL in class and teamwork following a team-based learning. Student Perceptions of Team-based Learning[6], whilst the academic achievement was measured in reference to the difference between the individual Readiness Assurance Test (IRAT) and Group Readiness Assurance Test (GRAT) scores.

2.3 Data collection and Analysis

For an ethical consideration of participants, subjects were fully informed of the objective and procedure of the present research, and signed the informed consent beforehand. To measure the learner perception, a questionnaire survey was conducted upon completion of the TBL class. To measure the readiness assurance test scores, question items were provided in every 8th session on nursing the patients with gastrointestinal diseases. For the purpose of this research, the TBL class consisted of 7 steps, i.e. preparation (the 1st step), IRAT (the 2nd step), discussion between teams and GRAT (the 3rd step), confirmation of correct answers and feedback from the professor (the 4th step), traditional lecturing for summary (the 5th step), application case and presentation (the 6th step) and keeping a log for reflection (the 7th step). One session lasted for three hours. SPSS version 18.0 for Window descriptive statistics (real numbers, percentage, means and standard deviations). The academic achievement based on the readiness assurance test scored were analyzed with the pair-
wise t-test. Differences in learner perception depending on achievement levels were determined with ANOVA.

3 Result

3.1 Subjects’ demographics and academic achievement

Subjects were 158 females (84.5%) and 29 males (15.5%). In terms of age, 84 (44.9%) and 71 (38.0%) subjects were 20-21 and 22-25 years old, respectively. 32 (17.1%) subjects were 26 or older. 51 subjects were ‘satisfied’ with university life (22.7%). 90 (48.1%) subjects were ‘satisfied’ with majoring in nursing. 58 subjects (31.0%) had attended other schools. As for the academic achievement based on the mid-term and final exam scored following the TBL class, 47 (25.1%), 65 (34.8%), 49 (26.2%), and 26 (13.9%) subjects scored 80-100, 70-80, 60-70 and 60 or less, respectively.

3.2 Academic achievement

As for the IRAT and GRAT scores verified with the pairwise t-test, the GRAT score significantly increased in 8 domains (Table 1).

Table 1. Comparison of IRAT and GRAT according to the Subjects (N=187)

<table>
<thead>
<tr>
<th>Variables</th>
<th>IRAT Mean ±SD</th>
<th>GRAT Mean ±SD</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peptic ulcer</td>
<td>2.13±1.26</td>
<td>4.15±1.09</td>
<td>-19.14</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Care of operation</td>
<td>2.90±1.07</td>
<td>4.43±0.90</td>
<td>-19.68</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Stomach cancer</td>
<td>3.91±1.20</td>
<td>4.75±0.58</td>
<td>-10.00</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Non inflammatory and Inflammatory bowel disease</td>
<td>6.44±2.57</td>
<td>8.76±1.82</td>
<td>-14.47</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Colon and rectal cancer</td>
<td>3.67±1.21</td>
<td>4.55±0.82</td>
<td>-10.09</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Introduction of liver and hepatitis</td>
<td>5.63±2.21</td>
<td>8.26±2.10</td>
<td>-13.98</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Liver cirrhosis</td>
<td>7.16±2.31</td>
<td>9.16±2.05</td>
<td>-14.18</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Biliary and pancreatic disease</td>
<td>6.06±2.40</td>
<td>8.27±2.00</td>
<td>-14.36</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Total Mean</td>
<td>4.73±1.06</td>
<td>6.81±0.90</td>
<td>-29.57</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

IRAT: individual readiness assurance test, GRAT: Group readiness assurance test
3.3 Learner perception

Learner perception was analyzed in light of the academic achievement based on midterm and final exam scores. As a result, the difference between the perception of TBL and that of teamwork proved insignificant (Table 2).

Table 2. Students’ perception of TBL and teamwork in Team-based Learning (N=187)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Honors (n=47)</th>
<th>High Pass (n=65)</th>
<th>Pass (n=49)</th>
<th>Fail (n=26)</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceptions of TBL</td>
<td>6.45±4.09</td>
<td>6.15±5.40</td>
<td>5.27±4.10</td>
<td>5.15±5.13</td>
<td>.78</td>
<td>.509</td>
</tr>
<tr>
<td>Perceptions of teamwork</td>
<td>7.96±5.08</td>
<td>7.95±5.06</td>
<td>6.86±3.68</td>
<td>6.54±4.09</td>
<td>1.06</td>
<td>.369</td>
</tr>
</tbody>
</table>

4 Conclusions

The analysis of academic achievement based on the difference between IRAT and GRAT scores indicated that the TBL class applied to a nursing subject at K University in Gyeonggido proved to be an effective teaching-learning method for the improvement of academic achievement. As for the analysis of learner perception, the difference between the perception of TBL and that of teamwork was insignificant, whereas the mean scores slightly varied with the academic achievement levels. Therefore, it is urgent to develop proper strategies for providing TBL application guidelines and class environment and for improving the perception of TBL and teamwork in order facilitate an efficient application of TBL to nursing education. Moreover, the present findings suggest that practical discussions should be ensured in a range of nursing major courses, that relevant TBL application steps should be designed and that effects of research findings should be continuously verified with intent or boost the TBL.

References

