



ASSESSMENT OF THE LONG AND SHORT TERM EFFECTIVENESS OF TEAM BASED LEARNING IN PATHOLOGY

KEY WORDS

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ABSTRACT

Pathology is taught in 2 semesters (4th and 5th) at St Matthews University Cayman island spanning 6 months. This course is taught via didactic lectures and TBL sessions. We tried to understand the effectiveness of TBL session by looking at their performance on questions on TBL related topics versus the topics taught via lectures only. Since our exams are cumulative we had the opportunity to compare their performance of the learning objectives which were included in the exams of both semesters. In addition, we also tried to survey students' perceptions to these TBL sessions via an online questionnaire.

Introduction:

TBL sessions allowed us to supplement some of the Pathology topic lectures with the active learning sessions (TBL) that enables students to work individually and as a team. Compared to the passive learning associated with traditional didactic lectures, team interactions allow student participation that fosters both activation of prior knowledge (1) and knowledge construction (2). In the past few years, numerous medical schools adopted TBL in the delivery of basic sciences (3), clerkships and the residency programs (1). Since many medical schools are creating integrated and interdisciplinary courses in the preclinical years, TBL is particularly useful because of its emphasis on team-work, mastery of content, and problem solving skills for clinical application. TBL is an attractive strategy to adopt for medical Pathology, because it requires students to learn pathological facts, pathogenesis and morphological changes for clinical problem solving. To find out the effectiveness of the TBL sessions we did a comparative study at our university on the fourth semester students and a follow up study on the same students in their fifth semester to observe the students immediate and long term performance on block and final exams on the items discussed in the TBL versus materials taught through didactic lectures only.

Material & method:

Pathology department at St Matthews University Pathology is taught in two semesters; in each semester (15 weeks) is divided into 3-4 blocks. Pathology I (4 blocks) and II (3 blocks) are taught in 4th and 5th semester respectively. Block exams are conducted after completion of each block and a final exam is held after completion of all block examinations.

In Pathology I, we conduct 1/2 TBL sessions during each block (4/5 TBL sessions/semester) and 4/5 TBL sessions in Path².

Each session begins by asking 10 case based questions, which students' answers online individually. Then they assemble in a group and re-answer same questions as a team. Block exams are conducted after completion of each block. Students who are writing block exams are exposed to at least one TBL sessions prior to the block exams. We tried to evaluate students' performances/responses on the questions that are asked on the topic discussed in TBL (TBL positive topics) versus on the students responses on the questions on the topic that are not discussed in the TBL sessions. This activity is conducted once in the 4th semester and then in the 5th semester. Since our examinations are cumulative, similar topics are used in the examination of both semesters, which enabled us to evaluate the students' performance on these TBL positive Versus TBL negative topics.

These two studies are conducted in Fall 2014 semester and in the Spring 2015 when the 4th semester students (Fall 2015) moved on to

the 5th semester (Spring) to complete the Pathology course. This study also tried to understand students' perceptions of TBL using an online questionnaire survey.

Our study on the assessment of TBL had **three parts**:

In the first part (short term memory): We randomly selected responses (facility index) of ten questions from Pathology block exams (in the fourth semester) topics of which were discussed in TBL (TBL positive questions). We also randomly selected facility index of another ten questions from the same block exams topic of which were not discussed in TBL (TBL negative questions). These exams are conducted within 4 weeks after the completion of TBL.

In the second part we did a follow up study on the same students while they were in the 5th fifth semester. The same process described above is employed. These exams and evaluations were conducted after 3 months of the completion of TBL.

In the third part of our study, these 5th semester students were asked to respond to an online questionnaire for their feedback on the TBL sessions.

Results and Discussion:

In this comparative study we observed that 75.33% students could correctly answer TBL positive questions as compared to 60.89% students for TBL negative questions (Figure 1). In the follow up study that was conducted after four months in their fifth semester, correct responses for TBL positive & TBL negative questions were 81% and 72% respectively (Figure 2). These results show that in the initial comparison there were 14% more correct responses for TBL positive questions whereas in the follow up that was 9%. So it reveals that TBL has a long term beneficial effect in remembering the facts taught in TBL sessions. Thompson et al noticed in a follow up study of ten medical schools that 9 schools continued to conduct TBL and added TBL session in additional 18 courses⁴.

In this study 90.77% students liked The TBL sessions. Majority of them liked the group discussion part of TBL and also the explanation of the answers by the instructor. 29.79% students liked the individual questions & answers sessions. Wiener H et al concluded in their study that these TBL sessions help students developing the understanding and skills needed to work productively in task-groups. He remarked that it is beneficial even for the students who like to study alone⁵.

Our study at St Matthews University School of Medical revealed 80% students felt that their performance was better after the group discussion (Figure 3). Majority of the students voted for group discussion as the most favorite component of the TBL session. In an intensive study by Vasan et al on TBL in a large group of students revealed both positive and negative feedback by the students on TBL.

One important positive feedback was that their retention of the subject topics was much better after the group discussion similar to our findings ⁶. Koles et al. in his study on TBL effectiveness at Boonshoft school of medicine concluded that Medical students' higher performance on examination questions related to course content learnt through TBL suggests that TBL enhances mastery of course content. He also observed that students in the lowest academic quartile benefit more than highest-quartile students from the TBL strategy ⁷. In our study each of the group for TBL sessions were consisting of 4-6 members which the participating students felt as a comfortable team size. 58.33 % students observed that this group size was helpful for actively participating in the assigned teamwork. However, in a study conducted by Vasani et al found satisfactory results with group size of eight students. They observed that these small group TBL sessions have increased learners' engagement and preparedness, communication and team work skills. (6)

In another study by Sisk RJ was found that students have a higher percentage of active engagement in TBL classes compared to other classes ⁸. It also requires consistent preparation and attendance. Compared to passive learning associated with traditional lectures, TBL allows more active student learning.

Conclusion:

We concluded from the results of our study that TBL is an effective method particularly in a highly condensed and concept based course like Pathology as real-time feedback motivates students to put in more effort to learn. TBL exercise provides students an opportunity to coach others the methodology of learning, and take an active role in a team which will help them as a future medical practitioner as medical care is not delivered by an individual; rather by a trained team.

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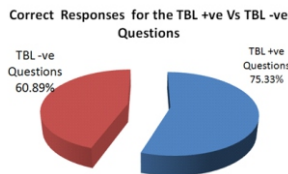


Figure 1- Short-term Effectiveness of TBL

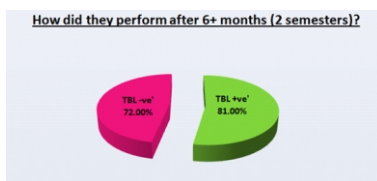


Figure 2- Long term effectiveness of TBL

Q. HOW OFTEN WERE YOUR ANSWER CHOICES USED TO BE CORRECT AFTER THE GROUP DISCUSSION?

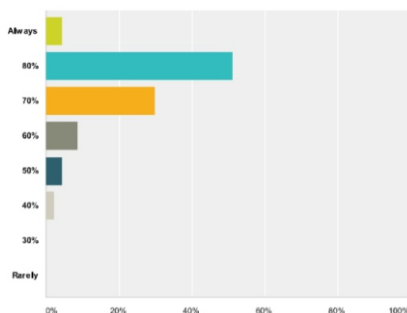


Figure 3- Feedback on TBL