A Randomized Comparison between Team Based Learning and Standard Lecture Format on Learning Outcomes

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**BACKGROUND**

Team-based learning (TBL) facilitates active learning and engagement. Studies comparing TBL to lecture show short-term learning outcomes are the same or better with TBL, including findings within our own curriculum. However, these trials had methodological weaknesses and often evaluated "soft" endpoints (e.g. self-reflections, confidence ratings, etc.). We adopted TBL as a unifying pedagogy for a 5-semester course sequence that was previously taught using lecture and punctuated lecture. To advance our understanding about how learning outcomes have been impacted in our own curriculum, and to address methodological weaknesses that limit utility of other studies, we proposed the following research question:

**RESEARCH QUESTION**

Are there significant differences in learning outcomes between an active learning pedagogy based in part on a concept of a “flipped classroom” (team based learning) as compared to a traditional or punctuated lecture pedagogy evaluated within a rigorous scientific construct?

**METHODS**

Randomized crossover design comparing TBL to punctuated lecture in a therapeutic elective course involving 2nd year pharmacy students with prior TBL experience. All instructors had at minimum 4 years of experience teaching TBL.

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**RESULTS**

Thirty students participated in the course: 13 in Group 1; and 17 in Group 2.

<table>
<thead>
<tr>
<th>% Correct Answers</th>
<th>Exam 1 and 2 - Combined Group 1 and 2</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TBL</td>
<td>Lecture</td>
</tr>
<tr>
<td>Application</td>
<td>88.1 ± 11.7%</td>
<td>83.1 ± 11.5%</td>
</tr>
<tr>
<td>Recall</td>
<td>90.3 ± 9.6%</td>
<td>86.9 ± 8.4%</td>
</tr>
<tr>
<td>Application &amp; Recall Combined</td>
<td>89.2 ± 10.6%</td>
<td>85 ± 10.2%</td>
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</tbody>
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**CONCLUSIONS**

Short term learning outcomes were similar or better with TBL compared to lecture. Students tend to prefer TBL and had a higher level of confidence in providing therapeutic recommendations. Analysis of short- and long-term outcomes is ongoing.