Attitudes and Effectiveness as Measures of Student Satisfaction with Team-Based Learning

Drs. Danhong Chen, Foy D. Mills, Jr., Shyam S. Nair, and L. A. Wolfskill
Background

• Extensive implementation of TBL
• Applying course materials to problem solving via TBL is the primary goal of TBL
• Introduction of TBL Student Assessment Instrument (TBL-SAI)
• Application of TBL-SAI
• Accountability, preference, and satisfaction in TBL
Objectives

• Classify the questions in TBL-SAI and create reliable and distinctive subscales
• Investigate the relationships among the new subscales
• Assess the factors associated with satisfaction towards TBL consisting of positive attitude and effectiveness subscales
TBL Implemented in 2 Classes (n=308)

Number of Students per Semester

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course 1</th>
<th>Course 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2015</td>
<td>47</td>
<td>25</td>
</tr>
<tr>
<td>Fall 2015</td>
<td>61</td>
<td>23</td>
</tr>
<tr>
<td>Spring 2016</td>
<td>70</td>
<td>26</td>
</tr>
<tr>
<td>Fall 2016</td>
<td>56</td>
<td></td>
</tr>
</tbody>
</table>

AGBU 2317 Principles of Agricultural Economics
AGBU 4363 Agricultural Sales & Consulting
New Subscales based on TBL-SAI

This study used 31 questions developed by Mennenga (2010). Each question is assessed on a 1-5 Likert Scale with 5 being “strongly agree”.

- **Accountability (8)**
  - Preparation (2)
  - Contribution (6)

- **Preference (14)**
  - TBL recall (5)
  - Lecture recall (3)
  - TBL distraction (3)
  - Lecture distraction (3)

- **Satisfaction (9)**
  - Attitude (6)
  - Effectiveness (3)

(numbers in the parentheses indicate the number of questions for each construct)
New Subscales based on TBL-SAI

Preparation (α=0.60)

<table>
<thead>
<tr>
<th>Prepare_need</th>
<th>Prepare_study</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.28</td>
<td>3.67</td>
</tr>
</tbody>
</table>

Contribution (α=0.68)

*Reverse coded
New Subscales based on TBL-SAI

TBL Recall ($\alpha=0.79$)  
Lecture Recall ($\alpha=0.65$)

*Reverse coded
New Subscales based on TBL-SAI

TBL Distraction (α=0.80)

- TBL_unrelated
- TBL_distracted
- TBL_bored

Lecture Distraction (α=0.74)

- Lecture_unrelated
- Lecture_distracted
- Lecture_sleep

*Reverse coded
New Subscales based on TBL-SAI

**Positive Attitude**  \( (\alpha=0.92) \)

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBL_enjoy</td>
<td>4.0</td>
</tr>
<tr>
<td>TBL_fun</td>
<td>3.5</td>
</tr>
<tr>
<td>TBL_positive_attitude</td>
<td>4.0</td>
</tr>
<tr>
<td>TBL_good_experience</td>
<td>4.5</td>
</tr>
<tr>
<td>TBL_dislike*</td>
<td>1.0</td>
</tr>
<tr>
<td>TBL_waste*</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**Effectiveness**  \( (\alpha=0.88) \)

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBL_learn_better</td>
<td>4.5</td>
</tr>
<tr>
<td>TBL_effective</td>
<td>3.0</td>
</tr>
<tr>
<td>TBL_improve_grade</td>
<td>3.5</td>
</tr>
</tbody>
</table>

*Reverse coded*
Structural Equations Model (SEM)

- Preparation
- Contribution
- TBL recall
- Lecture recall
- TBL distraction
- Lecture distraction

Ovals: latent constructs
Rectangles: observed variables

- Attitude
- Effectiveness
- Prior group experience
- Gender
- Classification
- GPA class
- Expected grade
- Close friend through TBL
- Etc.
Structural Equations Model (SEM): Results

- Preparation
- Contribution
- TBL recall
- Lecture recall
- TBL distraction
- Lecture distraction

Attitude

Effectiveness

Prior group experience
Gender
Classification
GPA class
Expected grade
Close friend through TBL
Etc.

CFI: 0.939
TLI: 0.933
RMSEA: 0.052

Green: positive association
Red: negative association

***p ≤ 0.001; **p ≤ 0.01; *p ≤ 0.05; †p ≤ 0.10
Discussions

- Gap between intention of preparation and actual preparation
- Negative association between preparation and effectiveness
- Contribution to group work is essential and is positively related with satisfaction of TBL
- Better recall and less distraction in TBL may contribute to higher satisfaction
- Other factors such as prior group work experience and developing a close friend may help improve satisfaction