What I Learned from Team-Based Learning (TBL)

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1. Passive, slide-based lecture courses dominate basic science instruction.

2. This precious ‘face-time’ could be used to develop higher-order cognitive and social skills.
3. In 2013, I converted my 100+ Intro Bio class entirely to a Team-Based Learning (‘TBL’) course.

4. By the end of this talk, you will understand the basic structure of TBL and the benefits and drawbacks of this kind of course.
Why Choose TBL?

“The dilemma for educators is that the routine cognitive skills, the skills that are easiest to teach and easiest to test, are also the easiest to digitize, automate and outsource.”

Andreas Schleicher
“Education for the 21st Century”
Unique Features of TBL

1. Permanent, strategically-formed teams
2. Readiness Assurance Process
3. Team Application Activities
4. Rigorous peer review (>10% of course grade)
A TBL Module
L. K. Michaelson

Before Class
- Individual Study & Reading (3-4 hours)

In-Class
- Individual & Team Tests (1 hour)
- Guided Lesson (1 hr)
- Application Exercises (1-2 hours)
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<th>Individual Performance (450)</th>
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<td>– Individual Readiness Assessments (iRATs)</td>
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<td>– Midterm Exam I</td>
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<td>– Comprehensive Final Exam</td>
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<th>Team Performance (250)</th>
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<td>– Team Readiness Assessments (tRATs)</td>
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<td>– Team Application Activities (TAPPs)</td>
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<td>– Peer Evaluations</td>
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| TOTAL TBL                                   | 700   |
| TOTAL LAB                                   | 300   |
| GRAND TOTAL                                 | 1000  |
Readiness Assurance Process

- Individual Readiness Assurance Test (iRAT)
- Team Readiness Assurance Test (tRAT)
IMMEDIATE FEEDBACK ASSESSMENT TECHNIQUE (IF AT®)

Name ______________________ Test # ___________
Subject ________________ Total ________

SCRATCH OFF COVERING TO EXPOSE ANSWER

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Immediate Feedback Assessment Technique (IF AT®)

Name: GROUP 12
Subject: BIO 192
Test #: 1
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Scratch off covering to expose answer

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Total Score: 11
Individual vs. Team Scores

15-20%
Top-Scoring Teams on Ch 26 iRAT

Individual scores (MIN – MAX)

- 70 – 80
- 65 – 75
- 50 – 85
- 55 – 85

Team scores

- 90
- 92
- 94
- 97
- 100
Cumulative Scores – Week 5
Application Exercises (1-2 hours)

No more than 8 minutes per problem!
Individual preparation + Individual testing + Team testing & feedback

Intra-team Discussion + Inter-Team Discussion = Braingasm!
Midterm Grades, TBL vs. Lecture

= 4 chapters, 4 hours lecture

16 hours lecture
Final Grades, TBL vs. Lecture

**2013, TBL**
- A: 12%
- B: 46%
- C: 28%
- D, F, FX: 14%

**2012, Lecture**
- A: 13%
- D, F, FX: 18%
- B: 40%
- C: 29%

n = 96  
n = 113
TBL Benefits

- High attendance rates (>90%)
- Advanced-content lectures
- Improved in-class discussion
- Better labs and lab writing
- Students get excited
- Students make friends
Student Survey (2013; n = 96)

Yr = 1: 50%
Yr = 2: 17%
Yr = 3: 21%
Yr = 4: 11%
“My team worked well together.”
“Individual readiness tests made me read more before class.”
“Solving problems in a team was an effective way to practice what I learned.”
“Lectures are better for learning material.”
“I think TBL raised my grade.”
“I would take a TBL class again.”
Conclusions

1. Bio 192 lecture time can be reduced by 75% without affecting individual assessments.

2. TBL modules achieve similar content delivery, yet also train in key social skills: communication, negotiation, and debate.
Conclusions

3. Students find TBL modules as effective as lectures for learning course material.

4. TBL improves attendance, lecture, discussion, and labwork.

5. Over 85% of students would take TBL again.
“The world no longer rewards people for what they know—Google knows everything—but for what they can do with what they know.”

Andreas Schleicher
“Education for the 21st Century”