



Team-Based Learning™ Collaborative

Team-based Learning: An Introduction

Study Guide

- Thursday 7th January 2021: International Network for Health Workforce Education

Facilitators	Pre-workshop Reading
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Recommended reading	
<p>Michaelsen, L, K. & Sweet, M. (2008). The Essential Elements of Team-Based Learning. New directions for teaching and learning, 2008 91660, 7-27.</p>	<p>Hrynchak, P. (2012). The educational theory basis of team-based learning. Medical Teacher, 34(10), 796–801.</p>

Intended Learning Outcomes

By the end of this session you will be able to:

1. Describe what team-based learning is
2. Explain how and why team-based learning works
3. Explain the key components of a successful TBL module
4. Discuss the benefits of using team-based learning
5. Illustrate how to transform a small group into a productive learning team

INTRODUCTION

What is TBL? Team-Based Learning – “A special form of collaborative learning using a special sequence of individual work, group work and immediate feedback to create a motivational framework in which students increasingly hold each other accountable for coming to class prepared and contributing to discussion”. Michael Sweet

Paradigm Shifts

- Course goal shifts from knowing to applying
- Teacher shifts from “sage on stage” to “guide at side”
- Students shift from passive to active
- Responsibility for learning shifts from instructor to student

What does it do? TBL dramatically shifts the focus of classroom time from conveying course concepts by the instructor to the application of course concepts by student teams. In the TBL process, students acquire their initial exposure to the content through readings and are held accountable for their preparation using a Readiness Assurance Process (RAP). Following the RAP, the bulk of class time is used to practice applying content in a series of team application exercises. The components of TBL are very adaptable to many situations, disciplines and classroom types.

Four Key TBL Design Principles

- Large teams are required (5-7); teams should be diverse and permanent.
- Accountability for student pre-class preparation and contributing to team success
- Students make complex decisions that require the use of the course concepts that can be reported in simple form
- Frequent and timely feedback must be given to students.

Instructional focus shifts to learning how to use course concepts TBL shifts the bulk of content acquisition out of the classroom (sometimes known as flipped teaching) and gives students the responsibility for gaining the initial understanding of course concepts through the Readiness Assurance Process.

With TBL, students spend the bulk of class time in the application of

course concepts to problem-solving. This is in contrast to the traditional lecture model, where the bulk of classroom time is spent conveying course content and team application assignments are most often completed outside of the classroom. By shifting application activities into the classroom, the students can better use the expertise of the instructor and get more immediate feedback on their decisions and thinking process. In a traditional course when a student team completes an application assignment, the instructor often only gets to view the final product and therefore has limited opportunity to provide students with timely feedback as their application assignment progresses. By contrast, since TBL application activities occur in the classroom, there are opportunities for rich and detailed feedback from both peers and the instructor.

How TBL WORKS

Getting Your Students Ready

The Readiness Assurance Process (RAP) occurs at the beginning of each major instructional unit. The RAP ensures that students are held accountable for completing the pre-class reading and have acquired the foundational knowledge that they will need for the in-class team work that follows.

At the first class meeting of a module, a multiple-choice test (10-20 questions) is given. This can be as a traditional paper test or specialized electronic response systems/'clickers' using bespoke software or your own learning management system. The test covers key concepts and important foundational knowledge from the readings. The test is first taken individually and then immediately re-taken as a team test using the IF-AT (Immediate Feedback Assessment Technique) "scratch and win" testing cards. At the completion of the team test, teams are encouraged to "appeal" incorrect answers for extra marks. The appeal process requires teams to look up the "right" answer and complete a written form that is only considered after the class meeting. The appeals process pushes students back into the readings right where they are having the most difficulty. Following the appeals process the instructor provides a short clarification in the form of corrective instruction.

The focus of this clarification is often informed by the item analysis from the individual tests (if tests are scanned in real-time in the classroom).

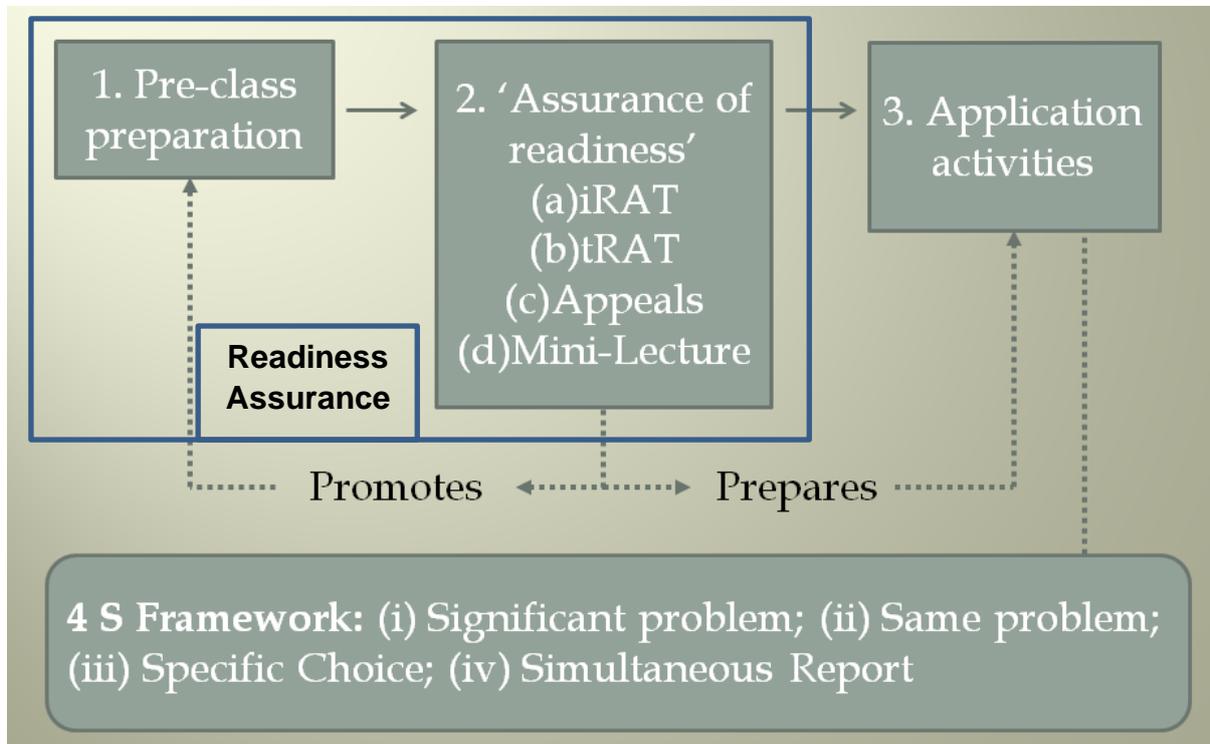


Figure 1: The Team-based Learning framework (please note pre-class preparation/pre-reading is considered part of the readiness assurance process)

**READINESS
ASSURANCE**

- 1. Pre-class study** Students receive a 30-50 page Student Study Guide (or similar) consisting of a combination of text to read, activities and signposting to supporting material (e.g. textbook chapters, pod-casts, you-tube clips, web-resources etc.) “Less is More” with straight text. Students tend to less reading when page counts get too high. They seemingly devote a fixed length of time to reading, no matter the length or complexity of the readings, so use their attention wisely.
- 2. Individual Readiness** The Individual Readiness Assurance Process Test (iRAT) typically consists of 10-20 multiple-choice questions. The iRAT holds

Assurance Test (iRAT) students accountable for acquiring important foundational knowledge from the readings that will prepare them to begin problem-solving in subsequent class sessions. The questions are typically written at Bloom's levels: remembering, understanding and simple applying. The test may be administered using electronic MCQ marking or using Student Response Devices ('clickers') and technology such as TurningPoint.

3. Team Readiness Assurance Test (tRAT) The Team Readiness Assurance Process Test (tRAT) is completed in teams using the same test as the iRAT. A special type of scoring card known as an IF-AT scratch-card (Individual Feedback Assessment Technique) is used. Teams negotiate which answer to choose and then scratch off an opaque coating, hoping to find a star that indicates a correct answer. If the team does not discover a star they continue to discuss the question and sequentially select other choices. Students score 4 marks for an initial correct answer, 2 marks for second attempt, 1 mark for a third attempt and 0 marks for subsequent answers. Every student leaves this test knowing the correct answer to every question.

4. Appeals During the closing of the team test, the instructor circulates around the room and encourages teams to appeal questions they got incorrect. This forces students back into the reading material exactly where they are having difficulty. The team then researches the "right" answer and may choose to complete the appeals form with their rationale and defence for their answer. The instructor collects these forms and considers them after class.

5. Mini-lecture To conclude the Readiness Assurance Process, the instructor reviews the item analysis from the individual tests and focuses a short discussion on the concepts that are most problematic for the students. In the words of Bob Philpot at South University, "TBL helps me understand the 10-15% of the course material that I really need to talk to the students about." Following the Readiness Assurance Process, the bulk of class time is spent with students working in teams applying course concepts and solving problems.

APPLICATION ACTIVITIES

In the TBL classroom, the bulk of class time is spent having student teams solve and discuss relevant, significant problems. Structuring the problems around the TBL 4S's lets you leverage the power of team processing without many of the problems (like social loafing) that are inherent in other forms of small-group work learning. The structure of the TBL activities gives individuals, teams and the whole class many opportunities to reflect and receive feedback on the specifics of their thinking and their process for arriving at their answer. The activity reporting allows students to engage with a diverse set of perspectives and approaches to problem-solving.

4 S Framework

I.	Significant problem	Teams work on a relevant, significant problem.
II.	Same problem	Teams work on the same problem.
III.	Specific Choice	Teams are required to make a specific choice.
IV.	Simultaneous Report	Teams report simultaneously.

I. **Significant Problem(s)**

For a successful application activity, it is best to select a significant, relevant and authentic problem that captures the interest of students. The quality of the problem ultimately is the most powerful factor in influencing the effectiveness of an application activity. Problems should require students to use course concepts to solve them. Backwards Design can be used here: first to decide on the problem, and then trace things back to the course concepts that the students would need to solve the problem.

By understanding the course concepts at play, you can then select appropriate readings and construct appropriate Readiness Assurance Tests.

II. **Same Problem**

Giving the same problem to all teams lets you create reporting

opportunities for teams to defend, challenge, discuss, and examine each other's thinking and problem-solving process. Having the teams work on the same problem ensures the comparability of student decisions and acts as a potent discussion starter. The sequential report, where teams work on different problems, is often a very low energy event, where other students have little motivation to examine the thinking and decisions presented.

III. Specific Choice Open-ended questions have long been the hallmark of our efforts to foster critical thinking in our students, but complex, open-ended question might be too challenging for the novice learner. The most significant drawback in using open-ended questions is the difficulty in efficiently letting students report their answers and the difficulty in comparing their answers with their peers. This opportunity for comparability of decisions is one of the major strengths of the TBL reporting process

IV. Simultaneous Report Simultaneous reporting can be accomplished with the simple holding up of a card indicating a particular choice. When a particular team sees that another team has made a different decision, they naturally want to challenge the other teams' decision. In the ensuing conversation, the teams challenge each other and defend their own thinking. The reporting requires teams to articulate their thinking to other teams – putting their thoughts into words. This helps cognitively with the process of creating enduring, deep understanding. The feedback from their peers is very immediate and focused on “how did you arrive at your decision” and not “which is the right answer.”

WHY TBL WORKS

Teams focus on making decisions

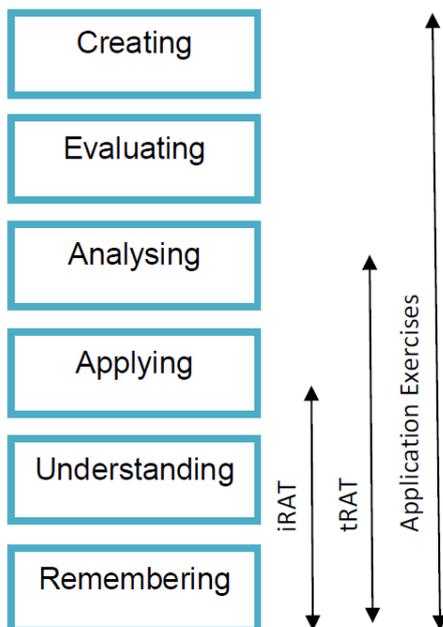
Having TBL assignments based on discussion and decision-making, and not building lengthy product prevents many of the

undesirable group behaviours common in “divide and conquer” product based assignments. Many traditional group assignments are actually individual assignments, with little reason for student interaction, except at final product compilation.

Teams problem-solving improves

Teams quickly switch from voting/compromise to real problem solving as they get to know and trust each other. Birmingham and Michaelsen found that two thirds of teams (n = 192 teams) started by using voting and compromise to avoid decision-making conflict early in team development and that NO teams used voting or compromise after only 5 tests together. Focus changed from “who is right” to “what is right”.

Activities progress through Bloom’s levels



Since the primary course goal in TBL shifts from conveying course content to helping the students learn how to apply course concepts to solving relevant, interesting and significant problems, the TBL instructional sequence naturally progresses to higher Bloom’s levels as individual’s progress through the modules. The initial acquisition of content and important Foundational knowledge occurs during the Readiness Assurance Process which has the students progress through **Remembering**, **Understanding** and into the simple **Applying** level of Bloom’s taxonomy. The Application Activities can take students through the higher Bloom’s levels of **Analysing**, **Evaluating** and **Creating**. The whole class discussions following the simultaneous report in the Application Activities give the students the opportunity to articulate and examine their

own thinking, to explore a variety of different perspectives, and finally arrive at a socially verified version of the “truth” or optimal solution.

Teams outperform the best member

By reviewing student performance part way through the semester you can send a powerful message about the effectiveness of team work. Michaelsen et al (1989) reported that over 99.95% of the teams they facilitated across 20 years of work have outperformed their best member by an average of nearly 14%. In fact, the worst team typically outperforms the best student in the class!

Attention focuses on harder concepts

	Easy Concepts	Hard Concepts
Readings	✓	✓
iRAT	✓	✓
tRAT	✓	✓
Appeals Process and inter-team discussion		✓
Appeals process written justification		✓
Instructor clarification		✓

As students progress through the Readiness Assurance Process, there is a natural shift in instructional focus to the harder, more difficult concepts.

This shift is caused by the underlying structures in the Readiness Assurance Process. The differential attention on more difficult concepts begins in the Team Readiness Assurance Test. During the tRAT, the teams will often vote on questions, accepting consensus when it exists and quickly moving on. On more difficult questions, where there is no simple consensus, they will discuss for a longer period of time. The length of the discussion is affected by the overall difficulty of the question and the underlying concepts. Each time the team scratches off the [IF-AT card](#) and does not find the correct answer, they return to the question for further discussion. Following the tRAT, the teams are encouraged to appeal incorrect answers. Once the Appeals Process

is complete, the instructor can provide a targeted mini-lecture on the most troublesome concepts.

Works in large class settings

TBL was originally developed by Larry Michaelsen, at the University of Oklahoma Business School when his classes went from 40 to 120. He was unwilling to give up the effective outcomes that were possible in the smaller class using Socratic discussion. When he first tried TBL, he was surprised at how effective it was. TBL is now routinely used in large classes (up to 400, but more typically 120-150 students with a single facilitator) and is even possible in difficult classroom spaces (i.e. tiered lecture theatres).

Bottom line is - give students something compelling enough to work on and they will ignore the limitations of the room.

BACKWARDS DESIGN

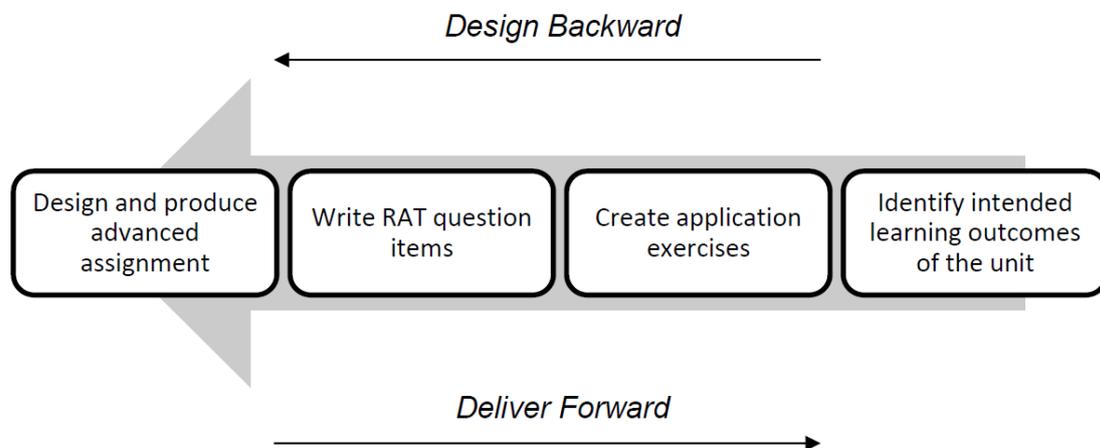
Backwards design

Our lessons, units, courses and programmes should be logically inferred from the results sought, not derived from the methods, books and activities with which we are most comfortable (Wiggins and McTighe (2005). It is a common mistake to begin with, and remain focussed on, textbooks and other reference sources i.e. the inputs, rather than deriving those means from what is necessary for the desired results i.e. the

outputs. Wiggins and McTighe state that teachers focus too much on the teaching and neglect the learning. The time the teacher spends is focussed on what they will do in class, what resources they will use and what they will get students to do rather than considering what the learner will need to do to achieve the learning outcomes. Designing curricula, modules, units and sessions should be carried out backwards from the outcomes i.e. it should be process-driven rather than content-driven where the process here is learning.

Backwards design for TBL

A backward design approach to each TBL unit is recommended; this involves sequentially: identifying the intended learning outcomes – these should be in alignment with (informed by) the module and programme intended learning outcomes; creating the team application exercises (tAPPs); writing the question items for the readiness assurance test (RAT); design and produce the advanced assignment – self-instructional material.



John Purvis 2013

Further Reading

Haidet, P., Kubitz, K. and McCormack, W. T., 2014. Analysis of the Team-Based Learning Literature: TBL Comes of Age. *Journal on Excellence in College Teaching*, 3&4 (25), 303-333.

Michaelsen, L. K., Watson, W. E., and Black, R. H. A Realistic Test of Individual Versus Group Consensus Decision Making. *Journal of Applied Psychology*, 1989, 74(5), 834–839.

Sisk, R. J., 2011. Team-based learning: systematic research review. *Journal of Nursing Education*, 50 (12), 665-669.

Wiggins and McTighe (2005) *Understanding by Design*. ASCD: Alexandria, VA.

Books

Team-Based Learning for Health Professions Education - A Guide to Using Small Groups for Improving Learning. Eds. Larry K. Michaelsen , Dean X. Parmelee , Kathryn K. McMahon, Ruth E. Levine (2007) Sterling, VA: Stylus Publishing

Team-Based Learning in the Social Sciences and Humanities Eds. Michael Sweet, Larry K. Michaelsen (2012) Sterling, VA: Stylus Publishing

Websites

[IF – AT \(Immediate Feedback Assessment Technique\) Cards](#)

[Team-based Learning Collaborative](#) (which includes extensive resources)