Incorporating Team-Based Learning Into Self-Care Education

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Learning Objectives
- Discuss the value of using team-based learning (TBL) in self-care education
- Describe the team-based learning model and explain the importance of each component of the model
- Demonstrate an example of using team-based learning to solve a problem
- Identify opportunities to incorporate team-based learning activities in the self-care curriculum to teach students how to function as part of a team
- Discuss the challenges associated with using team-based learning in self-care education

Outline
- Definition of TBL
- Why change to TBL
- TBL key components
- Sample TBL activities
- Do’s and Don’ts
- Summary
- Q & A

Definition of TBL
- A special form of collaborative learning using a specific 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, PhD
University of Texas-Austin

Why TBL?

Traditional Lecture
- Initial exposure to content
  - Instructor provides content
- Application/learning
  - Primarily outside classroom
  - Student works alone
  - Outside assignments alone or in groups
  - Students 1-on-1 with instructor

TBL
- Initial exposure to content
  - Students working alone (pre-class)
  - Students working in teams (in-class)
- Application/learning
  - Takes place inside classroom with instructor
  - Students working in teams
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Learning Objectives and Instructional Strategies

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Traditional</th>
<th>TBL</th>
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<tbody>
<tr>
<td>Ensure mastery of subject matter</td>
<td>Lecture/class discussion</td>
<td>Pre-class individual study readiness assurance process</td>
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<tr>
<td>Develop ability to use concepts (critical thinking/problem solving)</td>
<td>Class discussion</td>
<td>In-class team work (critical thinking with team members, then discussed between teams)</td>
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<td></td>
<td>Group projects (primarily outside of class)</td>
<td>Individual exams</td>
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<td></td>
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<td>Team projects</td>
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<td>Enhance interpersonal and team skills</td>
<td>Sink or swim</td>
<td>Daily in-class team work</td>
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<td></td>
<td>Generally few group projects; little chance to learn from mistakes; difficult to remediate freeloaders</td>
<td>Tasks require cooperation</td>
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<td></td>
<td></td>
<td>Feedback on both team and individual performance</td>
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Still Not Convinced?
- During lecture, students are not attending to what is being presented 40% of the time
- 4 months after taking an introductory psychology course, only 8% of students have more information than a control group that never had the course
- Rote memory ≠ learning
- "In past 20 years, over 99.95% of the teams have outperformed their best member by an average of nearly 14%. In fact, the worst team typically outperforms the best student in the class!"

Paradigm Shift
- Course goal shifts from knowing to applying
- Teacher shifts from "sage on the stage" to guide
- Students shift from passive to active
- Responsibility for learning shifts from instructor to student
  - Enhances development of "life-long learning"

4 Key Principles
- Large teams are required
  - Diverse
  - Permanent
- Student accountability
  - Pre-class preparation
  - Contribution to team success
- Students make complex decisions
  - Must require application of key concepts
  - Reported in simple form
- Frequent and timely feedback

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**TBL Components**

*Not your father’s group work!*
- Well-structured teams of 5 to 7 students
- Assigned pre-class readings
- Readiness Assurance Process (RAP)
  - Individual Readiness Assurance Test (IRAT)
  - Group (Team) Readiness Assurance Test (GRAT)
- Clarification (mini-lecture)
- Application Exercises (AEs) that require critical thinking
- Simultaneous reporting of answers
- Discussion
- Peer evaluation

**Principles: Structuring Teams**
- Use some form of logical randomization
  - Little solid evidence one way is better than another
  - I have had “luck” using randomization based on:
    - GPA
    - Learning style (VARK)
    - Something totally random such as favorite color from given list
    - Ensuring that “significant others” are not on the same team
    - Providing an option to name someone “detrimental to their learning”

**Principles: Student Accountability**
- Pre-reading(s) with (optional) study guide
- Individual Readiness Assurance Tests (IRAT)
- Contributions to team success on Group Readiness Assurance Tests (GRAT)
- Contributions to team AEs
- Contributions to team projects
- Individual exams
- Peer assessments from team members

**Principles: Complex Decisions**
- ½ to ⅔ of the RAP questions and all of application exercises should require complex decisions
- AEs should follow 4-S Rule
  - Significant problem
  - Same problem for everyone
  - Specific choice
  - Simultaneous report
- Design the RAP after the AEs and determining key points

**Activities Progress Through Bloom’s Levels**

**Principles: Frequent and Timely Feedback**
- Daily feedback
  - AE discussion
  - General class discussion (Q & A)
- 5 to 7 times throughout semester
  - Readiness Assurance Process (IRAT/GRAT)
- Exams
- Peer assessments
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**Pre-class readings**
- RAP (⅓ – ⅓ recall; ⅓ application)
- Clarification mini-lecture

**Majority of class time spent here**

- Application Exercise given to teams
- Review key learning points
- Discussion within teams
- Classroom discussion
- Teams report simultaneously

**Appeals**
- Teams can “appeal” any GRAT
  - Ambiguous question
  - Ambiguous readings
- Only teams can appeal
- Only teams that appeal get credit if appeal accepted
- Submitted within 24 to 48 hours after class

**Mini-Lecture**
- Concludes Readiness Assurance Process (IRAT/GRAT)
- Focuses on any concepts that were most problematic for students
  - Don’t go over every GRAT question
  - Do review questions that majority of class missed on first try
- May provide supplemental information or explanations necessary for concept understanding not found in readings
- Should NOT rehash what was in the readings

**Mechanics**
- Audience response software
- Texting responses
  - Poll Everywhere
  - HootCourse
  - Google Moderator
  - Moodle
  - Class or team wikis

**Let’s Practice the RAP**
- IRAT
- GRAT
How to Pick a Pet Tarantula

The important thing to remember is that not all tarantulas are created equal! Some tarantulas are easier to care for than others. If you haven't owned one before, you might want to start with one that is easy to care for and not very aggressive. Species like the Common Pink Toe, Costa Rican Stripe Knee, Curly Hair, and Mexican Redknee are great starter species. The Goliath Bird eater, Cobalt Blue, and Usambara Orange Baboon are all beautiful species, however they can be extremely aggressive.

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How to Pick a Pet Tarantula

Some species, including the Cobalt Blue, have reportedly significantly dangerous venom. Side effects vary, but are usually limited to itching/swelling at the bite site, intense pain, and labored breathing. There have been reports of cardiac failure and coma as a result of bites from some. Choose a healthy tarantula. Tarantulas that are lying on their backs with their legs up in the air should be okay, as they are probably getting ready to molt. Ones that are curled up or have their legs tucked underneath them (tarantula death pose) are not healthy.

Which of the following statements is true?

A. People who have asthma should not keep Cobalt Blue tarantulas as pets.
B. Tarantulas that are lying on their backs with their legs up in the air are not healthy.
C. The Orange Baboon is a great starter species.
D. People who have hypertension should not keep tarantulas as pets.

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Scoring the “Immediate Feedback Assessment Technique” Form (IF-AT)

- Correct on first try? 4 Points
- Correct on second try? 2 Points
- Correct on third try? 1 Point
- Correct on fourth try? 0 Points

Key Points

- Arachnophobics should not buy pet tarantulas!
Team Development of Higher Cognitive Skills

Which RAP wording would best promote higher level cognitive skills and team development?

A. Which of the following is an ADR of antihistamines?
B. Define the differences between 1st and 2nd generation antihistamines.
C. Rank the following 5 antihistamines in order of their ability to cause drowsiness using most to least.

Developing Challenging AEs

EW is 67 years old and has heartburn from overeating.

Medication Profile: (NKDA)
Naproxen 500 mg BID for severe OA
Warfarin for Afib (Current INR WNL)
Lisinopril for hypertension
Calcium/Vitamin D supplement

Which of the following would be the most dangerous to recommend?

A. Alka-Seltzer Original (aspirin, citric acid, and sodium bicarbonate)
B. Tums (calcium carbonate)
C. Tagamet (cimetidine)
D. Prevacid (lansoprazole)

If You Give Written Team Assignments

Which stage has the greatest potential for promoting student understanding of the concepts related to the project?

A. Discussion on dividing up the work
B. Individuals researching their part of the work
C. Discussion after research/before write up
D. Creation of finished product to be turned in
E. Feedback on the finished product’s quality
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If You Give Written Team Assignments
Would the learning in Stage C be greater if the written part were:
A. 1 page
B. 25 pages

Clear as Mud?

Common Questions
• Do I have to implement TBL for every topic at once?
  ➢ No; however, make sure that at least \( \frac{1}{3} \) of the topics are TBL interspersed within the rest, otherwise student acceptance is poor

Common Questions
• Should I give a RAP every week (or for every topic)?
  ➢ No, no, and again no!
  ❏ Promotes memorization of minute details
  ❏ Students unwilling to be responsible for excessive material
  ❏ Details always changing
  ❏ If long-term recall is goal, better to reinforce concepts
  ❏ Detailed material more likely to be retained when encountered in a meaningful context (AEs)
Common Questions
• Can I do TBL with a large class >100 students?
  ➢ Yes, the more teams you have, the more diverse the answers and thus better discussions/learning results (up to a point)

Common Questions
• How do I set up an effective grading system?
  ➢ Must
    □ Provide enough individual accountability
    □ Reward team learning
    □ Include your comfort level with % for team scores
  Example: My current weighting:
          | IRAT | GRAT | Exam 1 | Exam 2 | Assignment 1 | Assignment 2 | Peer Evaluations | Comprehensive Final
          | 7%   | 13%  | 22%    | 22%    | 5%           | 5%            | 4%                | 22%

Common Questions
• How do students know what is important to take away from the reading(s) if I haven’t covered the subject first?
  ➢ Provide study questions
  ➢ Provide objectives
  ➢ Provide online tutorials
  ➢ Answer “Muddiest Point” questions before RAPs

Common Questions
• How do I avoid freeloaders?
  ➢ Have enough individual accountability built into the grade weights
  ➢ Emphasize the importance of peer evaluations
    □ Count toward final grade
    □ Formative and summative
    □ Forced scoring: cannot give all students in team a perfect 10 - at least one student must be scored a 9 (or below) and one student an 11 (or above)
    □ Multiply peer average by average GRAT score to obtain final peer score

Common Questions
• Can a team “vote someone off the island?”
  ➢ Pros
    □ Disruptive students or freeloaders have to fend for themselves
    □ Team cohesiveness increases
  ➢ Cons
    □ Doesn’t mirror real life
    □ Students who don’t like “group work” may purposely sabotage their acceptance so they will be released from team responsibility

Do’s and Don’ts
• Don’t introduce 1 to 2 sections of TBL into the course late in the semester
• Do spend sufficient time introducing TBL to class (e.g., why you are using it, benefits to students)
• Do use team folders
  ➢ Include a tracking sheet
    □ High/low IRAT scores
    □ Team average on IRAT
    □ Team average on GRAT
  ➢ Use to hand out or return papers
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### RAP Scores
(Cumulative Scores After 4 RAPs)

<table>
<thead>
<tr>
<th>Team #</th>
<th>IRAT Low</th>
<th>IRAT Avg.</th>
<th>IRAT High</th>
<th>Team Score</th>
<th>Gain Over BEST Member</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>142</td>
<td>169</td>
<td>188</td>
<td>204</td>
<td>16</td>
</tr>
<tr>
<td>2</td>
<td>126</td>
<td>154</td>
<td>168</td>
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<td>181</td>
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</tr>
<tr>
<td>6</td>
<td>107</td>
<td>166</td>
<td>187</td>
<td>207</td>
<td>20</td>
</tr>
<tr>
<td>Average</td>
<td>130.8</td>
<td>163</td>
<td>182.2</td>
<td>206.3</td>
<td>24.2</td>
</tr>
</tbody>
</table>

13% higher than the best team member

### Do’s and Don’ts
- Do let students take a practice IRAT/GRAT
- Do use the 4-S rule when designing AEs
  - AEs can have more than one "right" answer
  - Best ones may require "rankin" or open-ended answers
- Do include Key Point information after AEs
- Do request and answer “Muddiest Points”
- Do be flexible

### Do get your “ducks in a row” before introducing to students

### Summary
In which of the following ways do I believe TBL will be most helpful to me and my students?

A. Allowing my students to work on more difficult problems than they could work on as individuals
B. Engaging my students so they will be more alert and enthusiastic than they would be during a lecture
C. Helping my students do better on their tests by learning how to apply information and understand that memorization alone does not equal learning
D. Helping my students discover the value of their contribution to a team’s success so they will be better health care providers

### Resources
www.teambasedlearning.org
www.epsteineducation.com/how.php