



Fire Up Your Classroom with Team Based Learning

Laura Madson, New Mexico State University

If you are exploring open educational resources, you are clearly open to new approaches to teaching and learning. Would you be interested in a tool that kept students so engaged in class they don't notice when the period ends? Or having a discussion where students ask and answer all the key questions from your prepared lecture without you even opening your mouth? If these sound like experiences you'd like to bring to your classroom, let me tell you about team-based learning (Michaelsen, Knight, & Fink, 2004; Michaelsen & Sweet, 2009; Sibley & Ostafichuk, 2014).

Team-based learning is a teaching paradigm, not just ad hoc “group work” slotted into an occasional class period. TBL courses have four characteristics:

- 1) the instructor strategically assigns students to permanent, diverse teams;
- 2) students are held accountable for completing pre-class preparation;
- 3) class time focuses on strategically-designed team activities;
- 4) final grades include performance on tasks that students complete as individuals, performance on team tasks, and a peer evaluation completed by each student's teammates assessing the student's overall contribution to the team.

This might sound like a huge change in course structure, but it is probably consistent with what you are already doing in your classroom. If you use active/cooperative learning, flipped classroom, backwards course design, or frequent low-stakes assessment, then team-based learning will feel more like a helpful organizational structure for your instructional choices than a paradigm shift. Much like a theory functions for researchers, TBL guides all the major choices involved in course design, including development of learning objectives and aligning them with classroom activities and assessment. It can also transform the classroom into a vibrant, buzzing learning environment. In other words, team-based learning will help use your existing techniques and activities more effectively and with even better results.

FORMING EFFECTIVE TEAMS

As the name suggests, the core of team-based learning is diverse student teams. The goal is for each team to provide students with the cognitive and social resources to succeed at complex tasks that require deep, conceptual thinking. Crucially, though, these teams differ from the ad hoc groups used in many classes. Specifically, TBL teams are:

- 1) ***Strategically Created***. Teams should be strategically formed by the instructor because the alternative (e.g., allowing students to form their own teams) results in teams that are too small, too homogenous, or include pre-existing relationships that can impede team cohesion.

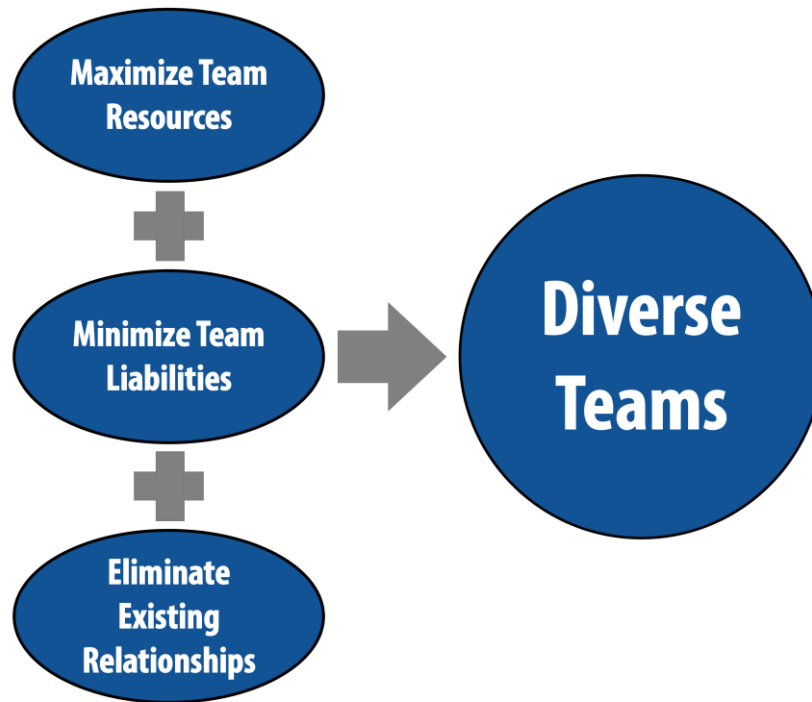
Teams need to be formed in such a way as to distribute students' resources and liabilities as evenly across teams as possible and to make sure that students with pre-existing relationships are placed into different teams. To decide on your team formation criteria for a given class, consider:

A) any characteristics that might give students an advantage in the course (e.g., having completed more relevant coursework, having relevant real-world experience, being fluent in a second language),

B) any characteristics that might give students a disadvantage in the course (e.g., having an overcommitted schedule, lacking helpful foundational skills, having no background in the discipline), and

C) any systematic sources of pre-existing relationships (e.g., students who participate in a campus Greek system or student-athletes who are on the same team).

- 2) ***Large***. TBL teams tend to be larger than you might guess. Where discussion groups and traditional group activity teams tend to include 3-5 students, TBL teams include 5-7. Teams must be large because large teams provide a greater quantity and range of resources.
- 3) ***Permanent***. Teams must be permanent because high functioning, coherent teams require time to develop. Students must have time and frequent low-stakes opportunities to know and trust their teammates' intentions and contributions.



FORMING A TEAM: AN EXAMPLE

An example might help. When I teach Introduction to Psychology, there are no pre-requisites for the course and the majority of students are relatively new to college, especially in the fall semester. Thus, my team formation questions tap into very general characteristics and skills. Depending on the course you teach, your team formation questions might be very different. Below are the questions I use with a brief explanation, which I also tell students during team formation. Over time, I've learned that these questions asked in roughly this order characterizes about 10% of students at a time and results in maximally diverse teams.

1) Over the summer break, did you voluntarily read three or more books?

Students who read for fun may struggle less completing the reading assignments than students who do not read for fun.

2) Are you a student-athlete who will be traveling this semester?

This identifies students who might need to miss class frequently and who might have pre-existing relationships.

3) Are you a junior or a senior?

The majority of my students are first- and second-year students. The greater experience upper-class students have can act as an advantage.

4) Are you working 30 or more hours at some form of paid employment this semester?

This question can help identify students who may be over-committed. I always ask this question near the middle of the team formation process. Because this characteristic can be true of about half of my students, asking it too early in the team formation process decreases team diversity.

5) Do you commute to campus from another city?

I consider commuting as a potential disadvantage because it takes time and invites additional reasons students may be unable to attend class regularly (e.g., their car breaks down).

Although my team formation questions largely tap descriptive characteristics, you could also use attitudes or beliefs as a means of forming teams. For example, some TBL faculty development workshops form teams based on attendee's attitudes about advantages and disadvantages of "group work." If particular mental models or attitudes might give your students an advantage or a disadvantage in your class, those beliefs are fair game for team formation questions.

Typically, a handful of questions like these will identify relevant characteristics in roughly 80% of my students. But I need to put 100% of my students into a team. Thus, I inevitably fall back on final questions that may or may not make meaningful distinctions between students to get everyone sorted into a team (e.g., Are you excited about this class? Were you born in an odd numbered month?).

Once you have identified team formation characteristics, there are many ways to collect data from the students and form the teams (McMahon, 2008). For example, students can answer the questions online and you can place students into teams based on their responses. Alternatively, many learning management systems will allow you to create student teams randomly or you can use the free, online resource [Team Maker](#) to do so. Even randomly generated teams will function better than allowing students to form their own.

If you want team formation to be maximally transparent to students, you can ask the questions during class and have students line up around the perimeter of the classroom based on their responses (I do this with 140 students/section and it's manageable). Thus, the line starts with students who answer the first question affirmatively (i.e., the voluntary readers). Students who answer the second question affirmatively then join the line and so on. Once a student is in the line, he/she stays put, regardless of his/her answers to subsequent questions. When all the students are standing in what becomes a very long, single-file line around the perimeter of the classroom, I count off, giving each student a number between 1 and the desired number of teams (e.g., in a class of 140 students with teams of six students, the range is 1-23). Counting

off like this sorts the students who are standing next to each other (e.g., all the voluntary readers, all the student-athletes) into different teams.

Teams are the centerpiece of team-based learning but teams alone don't yield the instructional magic. There are three other elements of team-based learning that support the transition of your class from good to great. Specifically, you have to assure that students are prepared to do deep thinking, assign teams the right kind of tasks, and use specific procedures to encourage and reinforce good teamwork.

STUDENT PREPARATION THROUGH RAP

The first of these elements is called the **Readiness Assurance Process (RAP)**. It is a three-step process that holds students individually responsible for completing pre-class preparation and provides teams with low-stakes opportunities to work collectively on a well-defined task before attempting more difficult problems.

The individual portion of the RAP is essentially a multiple-choice quiz to assess whether students have gleaned a basic understanding of the pre-class preparatory material. Teams then complete the same quiz. Both student's individual performance and their team performance counts toward the final grade. Finally, teams can regain lost team points via written appeals that use evidence from the preparatory material to argue their point (e.g., there was more than one valid answer to the question or the question was ambiguous).

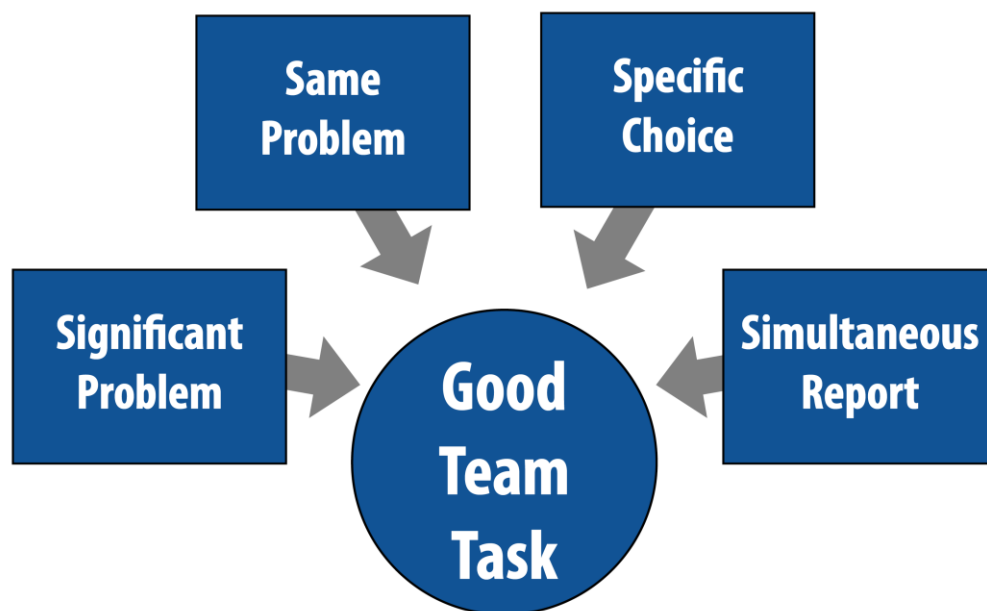


Beyond this basic structure, there are many ways to conduct the RAP. For example, the entire process can be conducted during class or, in the case of online courses, asynchronously. The individual portion of the RAP can be done online before class and the team portion done face-to-face during class. Many TBL instructors create a reading guide to help students glean the necessary information out of the reading assignment. The RAP can also consist of different tasks. When I teach Introduction to Psychology, I assign short-answer reading comprehension questions as the individual portion of the RAP that students complete before class. The team portion of the RAP consists of a short, multiple-choice quiz over the same material teams complete at the beginning of the class period.

TASKS THAT ELICIT TEAMWORK AND CRITICAL THINKING

The next critical element is giving teams the right kind of task. The right kind of task harnesses the diverse resources of the team in order to make a specific decision; in other words, the tasks require a great deal of collective processing that is reported in a concise product. “Group work” often goes astray here because teams are assigned tasks that require sizable products but little collective processing (e.g., term papers or oral presentations). The problem is that tasks like a paper or a presentation invite division of labor; teammates divide the task, (hopefully) take individual responsibility for their portion, and, inevitably, one person does the bulk of the work assembling the pieces into a (questionably) coherent whole. Although students might learn something about their piece of the task, there is little to no integration or critical thinking required as a team.

In contrast, the right kind of team task has four characteristics: it involves teams working on the same, significant problem about which they make a specific choice that all teams report simultaneously. Collectively, these characteristics are called the 4S’s.



For example, in a unit on recreational drugs, teams can be given the task of deciding which recreational drug is the most dangerous. Recreational drugs certainly are a significant problem, particularly given the current opioid epidemic in the U.S. Each team is given the same problem – to decide which drug is the most dangerous – as opposed to each being assigned a different drug to learn about or different teams making a different decision about drugs (e.g., which drug is most dangerous, which is most accessible, which is most addictive). Each team must pick a

specific drug as the most dangerous. Depending on the level of the class, instructors can limit the possible choices to a handful of specific recreational drugs (e.g., cocaine, meth, heroin, marijuana, nicotine, and alcohol). Once all the teams have made their decisions, all the teams simultaneously report their choice by holding up a sheet of paper on which they've written their choice. The beginning of a full-class discussion is as simple as asking students to look around the room to see what other teams chose. Contrary to what you might guess, the best discussions usually result when many teams make different choices.

The 4S's result in activities that engage students in high-level thinking and lively discussion, as well as developing team cohesion and minimizing social loafing. Let's unpack each of these advantages in turn. Significant problems are critical to provide enough challenge to meaningfully engage 5-7 students who already have a basic understanding of preparatory material. Working on the same problem and reporting choices simultaneously virtually guarantees vigorous discussion across teams. Simultaneous response also makes it immediately clear to everyone when teams have made different decisions. Because everyone has worked on the same problem, this revelation creates a natural impulse for teams to question each other's reasoning and defend their own. In contrast, when teams work on different problems, they have no stakes in other team's decisions and, even if they did, they would lack the knowledge about the different problems to meaningfully engage in a conversation.

Specific choice is the pedagogical workhorse within teams, facilitating team cohesion and critical thinking while minimizing social loafing. Think about the previous example of deciding which recreational drug is the most dangerous. Students have already been held accountable for having a basic understanding of the characteristics and effects of different recreational drugs. Now, they have to compare and contrast those effects across drugs with their teammates. They also have to unpack the various ways a drug can be dangerous (e.g., easily accessible, causes immediate death, harms non-users) and evaluate which of those factors is the most important. Meanwhile, students are explaining what they know about drugs to each other (i.e. practicing oral communication) and negotiating differences of opinion (i.e. teamwork skills) because specific choice forces a consensus team decision. Also, making a specific team choice builds team cohesion by eliminating the temptation to divide the task.

Four-S team activities are the primary force behind the magic of a TBL classroom, whereas permanent teams, RAPs, and peer evaluations provide the supporting infrastructure. A significant problem structured such that the team must process a great deal of information to make a specific team choice creates the class days where students don't notice the end of the period. Holding students accountable for pre-class preparation enables them to ask and answer in their teams the important questions I used to emphasize during lecture. Diverse, permanent teams and peer evaluations enable students to develop the trust crucial to their willingness to engage in critical examination of ideas.

Activities that fulfill all four S's can be difficult to create. Don't despair if you create an activity that meets only two or three of the four S's. In fact, most of the activities I use meet three of

the four S's. As an example, one of my pedagogically most effective activities fulfills only three S's (i.e., same, significant problem and simultaneous response). At the end of the research methods unit in Introduction to Psychology, teams design an experiment to test the hypothesis, "arousal improves learning." Giving all the teams the same, fairly general hypothesis means students will be interested in comparing their own experiments to those designed by other teams. Teams describe their intended sample, manipulations, and dependent variables on a 24" X 36" poster board. Simultaneous response is accomplished via a gallery walk which replicates a poster session during which teams review and critique each other's work (Rodenbaugh, 2015). I am routinely blown away by the sophistication of student's experiments, some of which rivalled Master's thesis projects. Giving students the right task and the right resources (i.e., each other) enables them to learn effectively with very little direct input from the instructor.

You might be wondering how to assess the product of a 4S activity, given that it is "just" a specific choice. Again, instructors have a number of options. First, some instructors don't grade team activities at all; activities are used as a means of generating deep thinking and class discussion. Second, you can ask teams to generate a small amount of text in addition to the specific choice. Typically, I require teams to submit a 3-4 paragraph defense of their specific choice; I evaluate the accuracy and consistency of their application of course material in their defense. Team activities can also be graded solely in terms of completion. It is critical, however, to include some measure of team performance in students' final grades or students may be less motivated to contribute to the team.

ACCOUNTABILITY THROUGH PEER REVIEW

The last critical element of TBL is specific procedures for encouraging and reinforcing good teamwork. Properly formed, permanent teams and well-designed team activities go a long way toward encouraging and reinforcing good teamwork. What seals the deal is the peer evaluation process, where students rate their teammates regarding their respective contribution to the team. These ratings become part of each student's final grade.

The peer evaluation directly addresses a key source of students' initial reticence about TBL. Although students may say they dislike group work, what they really dislike is having to trust strangers with little or no ability to hold teammates accountable for making a positive contribution. The peer evaluation gives each student control over a piece of each teammates' grade that he/she can use to reward teammates who reliably make a positive contribution to the team and to hold some sway over teammates who fail to do so.

As with the RAP, there are a host of ways to conduct peer evaluations, as well as recommendations for how many evaluations to conduct during the term and how the evaluations can be incorporated into final grade calculations (Cestone, Levine, & Lane, 2009; Lane, 2012; Levine, 2008; Michaelsen & Fink, 2004; Sweet & Pelton-Sweet, 2009). Similarly,

peer evaluations can be collected on paper, using one's LMS, or via one of many online services (i.e., [iPeer](#), [InteDashboard](#)). Thus, there is considerable room for instructors to adopt the process that suits their individual needs and preferences. For example, I collect peer evaluations at the end of the term using [TEAMMATES](#). Each student's peer evaluation is the average of the evaluation scores they receive from each of their teammates; a student isn't penalized if a teammate doesn't complete the peer evaluation or if one teammate provides an unrepresentative positive or negative response. I weight the peer evaluation scores to be worth 15% of each student's final grade. This weight is large enough that students take the peer evaluation scores seriously but not so large as to have an undue influence on anyone's grade.

An important factor to consider in planning peer evaluations is that teams change over time. It usually takes several weeks for them to move from newly formed groups to coherent, trusted teams. Behaviors that might be viewed positively by teammates early in the term, such as strong leadership from one team member, might be viewed negatively at the end of the term, when the team no longer needs such strong leadership (Michaelsen & Fink, 2004). Although there is merit to providing students with formative feedback from their teammates during the semester, there is some debate about the best way to do so (Cestone et al., 2009; Lane, 2012; Levine, 2008; Michaelsen & Fink, 2004). For example, because the needs of the team can change significantly over time, using only midterm and final peer evaluations runs the risk of providing some students with misleading feedback.

Another approach to peer evaluation is to focus formative feedback at the team level, rather than the individual level. In this approach, teams evaluate their problem-solving strategies after each major team assignment and a summative peer evaluation of individual teammates occurs at the end of the term. This approach eliminates concerns about having the "right" number of formative individual peer evaluations during the term. Team-level formative feedback is also less intimidating for students with little experience evaluating their peers. Also, the goal of the process is to improve team functioning. Evaluating the behaviors of individual teammates may or may not be the most effective way to maximize team performance.

I developed a team processing activity consisting of ten, closed-ended items that correspond to the broad characteristics of well-functioning groups (Barker, Wahlers, & Watson, 2001). Each teammate answers these questions individually first, to allow each student to consider their team's interactions privately prior to discussing them with others. Then, as a team, students articulate three specific things they believe their team did effectively on the previous team assignment and three specific things they will do differently on the next team assignment to be more effective. These might be ways to improve the team's time management during class (e.g., We will all put our phones in our backpacks during class), their preparedness for the activity (e.g., We will text each other when we complete the pre-class preparation reading), or ideas about improving the team product (e.g., We will all read the final product to check for missed ideas, confusing statements, and so on). To motivate students to take this task seriously, the responses to these latter two items are worth a handful of points based on the level of specificity and likely effectiveness of the responses. When I collect summative peer evaluations

at the end of the term, the items on the evaluation is based heavily on the closed-ended items from the team processing activity.

EVIDENCE FOR TBL

If you're still with me, you may be buzzing with questions. What do students think of team-based learning? Does it lead to better learning outcomes than other teaching approaches? And how much time and effort are required to adopt team-based learning?

Most students enjoy TBL (Kubitz, 2014). Personally, I've used TBL for nearly 15 years with over 5,000 Introduction to Psychology students at a Hispanic-serving institution where many students are first-generation college students, for whom English is a second language, or who are under-prepared for college-level scholastics. My students' most frequent response to "What did you like most about this class?" is either TBL or the usefulness of course material; I rarely received comments about the usefulness of the material before I adopted TBL.

TBL also improves student behavior. It reduces attrition (Comeford, 2016) and improves attendance and engagement compared to lecture-based courses (Dinan, 2004; Haidet, Kubitz, & McCormack, 2014; Kubitz, 2014; Sisk, 2011). It also results in equal or better learning of course material than lecture on midterm and final exams (Jakobsen, 2017; Kubitz, 2014). In one particularly impressive study using Introduction to Psychology students, students who learned a subset of course material via team-based learning were more likely to provide correct answers on exam items over that material than other students taught using lecture (Travis, Hudson, Henricks-Lepp, Street, & Weidenbenner, 2016).

TBL is consistent with recent pedagogical recommendations from national organizations. For example, students in a TBL classroom are reinforced for "monitoring and enhancing their own learning" as recommended in the [*Principles for Quality Undergraduate Education in Psychology*](#) (American Psychological Association, 2011; Coleman, 2012). TBL also provides a framework in which students can develop skills like those detailed in the [*Guidelines for the Undergraduate Psychology Major*](#) 2.0 such as "engage in innovative and integrative thinking and problem solving," "refine project management skills," and "enhance teamwork capacity" (American Psychological Association, 2013). Similarly, teamwork is one of the [*16 Essential Learning Outcomes*](#) articulated by the Association of American Colleges and Universities [*Liberal Education and America's Promise*](#) initiative advocating for the importance of liberal education (Association of American Colleges and Universities, 2007; Association of American Colleges and Universities, 2015). What's more, oral communication and teamwork skills were rated as very important skills in prospective hires by more than 80% of U.S. employers surveyed (Hart Research Associates, 2015).

So, TBL produces positive outcomes. But you may be balking at the amount of time and effort required to adopt TBL. Frankly, the work associated with adopting TBL is primarily a function of

your current pedagogical practice. I adopted TBL and redesigned my courses around behavioral learning outcomes at the same time (i.e., organizing a course around what students should be able to do at the end of the term). The latter was a much greater paradigm shift for me than was TBL. If your courses are already planned around behavioral learning objectives, the biggest shift in adopting TBL might be planning activities for class time now that you are freed from “covering the content.” Although some materials are available from the [Team-Based Learning Collaborative](#), adopting TBL will likely necessitate developing some of your own materials. Doing so absolutely requires time, effort, and advanced planning. Once created, however, in-class activities are every bit as reusable in future terms as any other materials. Also, I find creation of TBL materials to be FAR more intellectually engaging and rewarding than writing lectures or creating PowerPoint slides.

GETTING STARTED WITH TBL IN YOUR COURSES

You might be thinking that team-based learning sounds terrific but it won’t work in your class because you have too many students/your class is online/your accreditors require you to cover too much content/your students are underprepared for deep thinking/etc. Although these are the most common concerns voiced by instructors, instructors’ experiences with team-based learning are a testament to its versatility. TBL has been used successfully at all levels of education, across disciplines, in large- and small-enrollment courses (Michaelsen, 2004), and in asynchronous, online classes (Palsole’ & Awalt, 2008). It works well with a broad range of students including nontraditional, underprepared students (Goodson, 2004), students with disabilities (Nakaji, 2004), middle-school life science students (Kubista-Hovis, 2012) and post-graduate health sciences students (Hawkins, 2014; Michaelsen, Parmelee, McMahon, & Levine, 2008).

Maybe I’ve convinced you that team-based learning is worth a try but you’re unsure whether you can implement the entire paradigm. There are piecemeal ways to integrate TBL into your courses as long as you acknowledge that “TBL lite” is less effective than “full bodied” TBL. For example, you can use team activities as a means of provoking discussion and critical thought without grading the products. Similarly, one can provide feedback on the team products but factor those points lightly into final grade calculations.

Some elements of team-based learning can be used to increase the effectiveness of a traditional class without adopting teams at all. For example, simply holding students accountable for completing pre-class preparation (via a quiz or answering questions about the preparatory material) can do wonders for invigorating class time. That said, students who come to class with a basic understanding of the preparatory material will have little patience for a lecture that reiterates the same material. Thus, implementing any accountability procedure may also necessitate developing in-class activities that require students to use their newly acquired knowledge. Also, a recommended tool for the RAP process, called [Immediate](#)

[Feedback Assessment Technique](#) forms, can be used as a response sheet for any multiple-choice exam. Instead of filling in circles on a typical scantron sheet, IF-ATs work like lottery tickets where students scratch off a metallic coating to choose an answer. The forms provide immediate feedback because scratching the correct answer reveals a small star. These forms are recommended for use with team readiness assessment tests in TBL but they can also be used with traditional, individual multiple-choice exams.

Keep in mind that adopting TBL does not require that you abandon other tried-and-true assignments. Individual tasks such as formal or informal writing assignments, research papers or essays can be used in a TBL class just as in a traditional class. Similarly, TBL instructors can still assess individual student knowledge via traditional exams. Any assignment that students complete as individuals can be used in a TBL course without modification.

Perhaps you are sold on TBL but unsure how to prepare your students for a class that might be very different than their expectations. There is considerable consensus among TBL practitioners that it is important to explicitly discuss (early and often) the ways that TBL may differ from student's existing models of teaching and learning. Students who are accustomed to courses where pre-class preparation is optional and class time is spent passively listening to a lecture may need help shifting to a TBL paradigm. That said, once students understand that completing pre-class preparation makes the engaging and interesting in-class activities possible, most students get on board.

Many TBL instructors explain TBL in terms of important skills it helps students develop. For example, over 80% of U.S. employers surveyed rated oral communication skills and the ability to work effectively in teams as very important skills for future employees (Hart Research Associates, 2015). I ask students to consider whether these skills are better developed via individual study (outside of class) or via collaboration with others during class. This framing makes it fairly obvious that TBL can help students develop skills critical to their later career success.

The bottom line for orienting students to TBL it is that TBL makes in-class learning fun. My students report that attending class is never a chore because they know they will do something interesting in class. Although completing pre-class preparation can sometimes be tedious, my students appreciate having manageable reading assignments and low-stakes accountability tasks that encourage them to use the required textbook. They also value the opportunity to connect with and learn from their peers.

So, are you ready to add team-based learning to your teaching toolbox? There is a vibrant community of TBL practitioners and a variety of published and online resources to help new TBL users. We're happy to answer your questions about TBL, share our materials, and help you negotiate whatever challenges you encounter in your classroom, big or small. Come join us!

FOR MORE INFORMATION

Websites:

[Team-Based Learning Collaborative](#)

[Learn TBL](#)

[Free listserv of over 1,000 TBL practitioners worldwide](#)

Books:

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AUTHOR

Laura Madson earned her Ph.D. in social psychology from Iowa State University and joined the faculty of the New Mexico State University Psychology Department in August 1996. There, she directs the graduate program in psychology and specializes in using team-based learning to teach Introduction to Psychology. She is on a mission to help more instructors adopt team-based learning. When she's not working, she spends time with her husband Keith and sons (Ian age 12 and Erik age 10), or reads, runs, knits, or crochets, often with a nice pint of beer.

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