

Thriving in Academe

Team-Based Learning

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Wouldn't it be great if your students predictably held each other accountable for coming to class prepared?

This article describes Team-Based Learning (TBL), an approach first developed to facilitate active learning in large undergraduate classes, but which has subsequently proven to be effective in a wide range of instructional settings.

The advantages of TBL include improved attendance, increased pre-class preparation, better academic performance, and the development of interpersonal and team skills, in class sizes ranging from 10 to 400-plus, with courses in hundreds of academic disciplines and students ranging from freshmen on academic probation, to doctoral level students.

TBL has also been shown to reduce faculty burnout by promoting increased student

responsibility, engagement in the learning process, and increased opportunities for positive teacher-student interactions.

The defining characteristics of TBL include: (1) using permanent and purposefully heterogeneous work groups; (2) beginning each instructional unit with a Readiness Assurance Process to ensure content coverage and promote team development; (3) using peer evaluations to facilitate interpersonal skill development and ensure equity in grading; and (4) devoting the vast majority of the class time to small group activities, necessitating a shift in the role of the instructor from dispenser of information to manager of the learning process.

MEET LARRY MICHAELSEN AND MICHAEL SWEET



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Tales from Real Life

THE READINESS ASSURANCE PROCESS

DURING THE FALL SEMESTER OF 1979, I faced a crisis that turned out to be a blessing in disguise. Management course enrollments at the University of Oklahoma were booming, but budgets had been slashed. My senior colleagues solved the problem by "throwing me, the junior member, to the wolves" —increasing the size of my classes from 40 to 120 students.

The thing I loved most about my teaching was that in 40-student classes, I could use most of my class for group work on content applications. Unfortunately, I knew my approach simply would not work in a much larger class.

Unless I could find a better way to motivate students to prepare for class, I would have to spend most of class time lecturing (which meant there would be little time for group work on applications), or I would have to spend class time working on applications on the assumption (a very unlikely one) that enough students would prepare so that I wouldn't face the disaster of "the blind leading the blind."

The solution came in the form of the Readiness Assurance Process. I assigned the readings for Unit #1, gave the individual test, collected the answer sheets and held my breath as I listened in during the group test.

Much to my relief and delight, what I heard was students giving each other the very lectures that I had hoped to avoid giving myself. They were learning from each other and, even more importantly, were developing into real teams in the process.

—Larry Michaelsen

The Least You Should Know about TBL

Team-Based Learning consists of four basic elements: carefully formed, permanent teams, a Readiness Assurance Process, peer evaluation, and team application activities.

Team-Based Learning (TBL) is an instructional strategy that requires teachers to focus less on what they say and more on what students *do* in class. Team-Based Learning can best be described as consisting of four elements: (1) strategically-formed, permanent teams; (2) instructional units that begin with a Readiness-Assurance Process; (3) peer evaluation; and (4) team-based application activities.

Strategically form permanent student teams

Strategically forming teams requires determining what student characteristics will make the course easier or more difficult (for example, previous coursework in the discipline or anxiety about the subject matter) and ensuring that those characteristics are distributed fairly across teams. Further, groups need time to overcome the rocky, early stages of their social history. So, once the teams are formed, keep them together for the entire course.

The “Magic” of the Readiness Assurance Process (RAP)

Instead of relying on lectures to ensure content coverage, students are assigned readings they must complete before the first day of each major content unit, and each unit begins with a RAP. During a RAP, students first take a short, multiple-choice, individual Readiness Assurance Test (iRAT) covering assigned readings. As soon as students turn in their answer sheets, they take the exact same test again, but this time as a team (the group Readiness Assurance Test, or gRAT) reaching a consensus on the answers and receiving immediate feedback on the team’s performance.

When students receive immediate feedback on the gRATs—and it is vital that they do—the Readiness Assurance Process promotes three precursors of effective group work. Students are motivated to prepare in advance, participate in group discussions, and learn how to interact effectively. Students are motivated to prepare for the iRATs and participate in the gRATs because both tests count toward students’ grades and, often more importantly, they want to help their group succeed and they want to avoid being seen as a slacker. Further, when students receive immediate performance feedback, they improve their performance because they learn to recognize



and use even subtle cognitive and affective cues to make better collective decisions next time.

Enabling students to know immediately whether or not they have made correct choices has an extremely powerful impact on both learning and the development of team skills, so we strongly recommend using scratch-off “Immediate Feedback-Assessment Technique” (IF-AT) answer sheets for the gRATs. With IF-ATs, students receive real-time feedback by deciding on an answer and scratching off a covering, much like a lottery ticket, to see

if they find a star that indicates they have chosen the correct alternative.

Further, with IF-ATs, pushy students are one scratch away from having to “eat humble pie” and quiet students are one scratch away from being seen as a potential resource and two scratches away from being asked to speak up. For example, if we’re students on the same team and you thought the answer to a question was “A” but I bullied the team into answering “B”—and your answer turned out to be correct—then next time around, I would be very hesitant to ignore your opinion and our team-mates will make sure that the best arguments get heard.

As this process repeats, teams become increasingly more effective. Students learn to communicate what they don’t know, how to disagree without being “disagreeable,” and teams become cohesive as their performance improves. Though the RAP is a test and an intense learning activity, it also encourages the development of “team spirit.” The gRAT is also energizing for the teacher because he or she has the opportunity to both “hear students thinking” and observe the team development process.

The RAP takes only an hour or so at the beginning of each course unit to administer, but is dense with content-focused thought and discussion. At the end of the RAP, the teacher knows what still must be covered in lecture, and what does not need to be lectured about because students have already “covered” it themselves! For example, if all the teams got the first five ques-

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tions right, then the instructor can assume the content of those questions has been “covered”—either through individual reading or team discussion—and it need not be repeated.

If, however, performance on other gRAT questions reveals gaps in students’ understanding, then the teacher knows the specific points that need additional clarification. Furthermore, students, who collectively arrived at a wrong answer which they thought was correct, tend to be eager for teachers to “explain themselves.”

What if a team wants to argue for their “wrong” answer?

If students are motivated to pull out books and dive into course content at the place where their understanding is weakest—let them! This is the intention behind the RAP “appeal” process.

Once correct answers to the RAP have been revealed, teams are allowed to appeal any question for which they failed to receive full credit. Appeals must be written and can come only from teams, not individuals. Appeals are not merely opportunities to dig for points: they must consist of an argument and evidence from the reading in support of that argument, or an explanation of why a question was misleading accompanied by a suggested re-write. Thus, appeals provide the opportunity for students to enrich their understanding as they prepare and present a scholarly argument in support of their case.

Finally, appeal decisions should come later (by e-mail or at the beginning of the next class). The motivational energy stimulated by the RAP makes it difficult for students to gracefully take “no”

for an answer! As a result, it is best for everyone for appeals to be handled after the energy generated in the RAP has dissipated.

In summary, the RAP consists of four critical components: the individual test, group test, immediate feedback, and appeals—followed by clarifying instruction from the instructor.

How do I avoid free-loaders?

Regardless of how much the gRATs count, the “freeloading question” will inevitably arise. Counting the iRATs makes students accountable to the instructor but not to their team. By far, the best way to make students accountable to the team is using a combination of gRATs to provide ongoing, clear evidence about members’ contributions and a peer evaluation to enable members to determine appropriate consequences.

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What comes after the RAP?

The “readiness” in RAP refers to students’ readiness to apply course material to solve problems. After the RAP and instructor clarification, the rest of a TBL unit is spent with teams applying course materials to make specific choices using the knowledge they have acquired. For example, should a company buy, lease, or rent these trucks? Which story best depicts the Roman virtue of dignitas? Where on this cross-section of a wing is the highest value of X?

In this article, we have laid out a general overview of TBL. Specifics on how to implement these building blocks in TBL are laid out in detail in our book, *Team-Based Learning: A Transformative Use of Small Groups in College Teaching*.

BEST PRACTICES

Using Assignments that Promote Discussion

The single most important idea behind TBL is that group assignments will only enhance learning if they promote give-and-take, content-related discussions.

Divide and Conquer—the Enemy of Learning

The worst group assignments aren’t really group assignments at all. Asking groups to produce a lengthy document or PowerPoint presentation, will NOT promote discussion. Writing is inherently an individual activity. As a result, students will talk less about the content of the assignment and more about how to get it done—who will write what piece or how to “funnel” information about the pieces to the member who will actually do the writing. Either way, the majority of what happens will be done by individual members working alone on their piece of the finished product.

Effective Assignments Require Groups to Produce Decisions.

Think of the task of a courtroom jury where members are given complex



information and asked to produce a simple decision: guilty or not guilty. As a result, nearly 100 percent of their time and effort is spent digging into the details of their “content.” In the classroom, the best way to promote content-related discussion is the use of assignments that require groups to use course concepts to make decisions such as:

- Which line on this tax form would put the company at the greatest risk of being penalized as a result of an IRS audit? Why?
- Given a set of real data, which of the following advertising claims is least (or most) supportable? Why?
- What’s the most dangerous aspect of this bridge design? Why?
- Given four short paragraphs, which is the best (or worst) example of an enthymeme? Why?

This works in virtually any discipline.

References & Resources

Books

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Articles

McInerney, M. J. & Fink, L. D. (2003). Team-based learning enhances long-term retention and critical thinking in an undergraduate microbial physiology course. *Microbial Education*. 4(1), 3-12. Michaelsen, L.K., *Three Keys to Using Learning Groups Effectively. Teaching Excellence: Toward the Best in the Academy*, 9, 1998. POD Network, Ames, IA, 1998.), Sweet, M. and L. K. Michaelsen (2007). "How group dynamics research can inform the theory and practice of postsecondary small group learning." *Educational Psychology Review* 19(1): pp 31-47.

Web sites

www.teambasedlearning.org (the "official" TBL site), www.ticollaborative.org (a site for health professions educators) and http://cis.apsc.ubc.ca/wiki/index.php/Team-Based_Learning (a site for engineering educators). Each of these sites has multiple sub-sections many of which have valuable resources for educators from any discipline.

TBL Listserv

Anyone can sign up for this listserv from www.teambasedlearning.org main page. It currently has approximately 200 people, 20 percent of whom live outside the U.S. It usually has an active dialogue when people pose questions.

ISSUES TO CONSIDER

What Do You Want Students to Do?

Knowing your course goals is essential for effective TBL.

How should I design my course to maximize incentives and opportunities for positive interaction within and between teams?

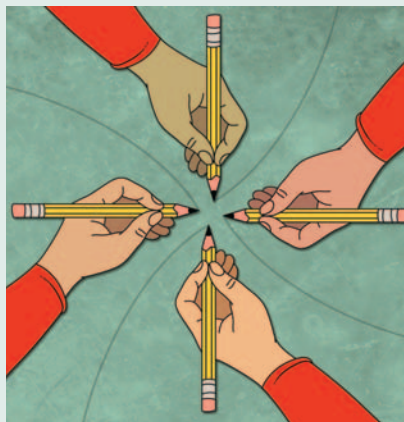
Team-Based Learning (TBL) engages students by requiring that they make active use of course material in specific ways. As a result, you as the instructor must have a clear and detailed vision of what exactly you want students to be able to do with the course material, so you can design and assess activities requiring it.

This has always been good educational practice, but in TBL it is absolutely essential. In fact, if you don't know what you want students to do with your material, you shouldn't even consider using TBL.

When designing your course, start by asking yourself "What handful of specific problems will this course equip students to solve?" Then design your course around the choices students must learn to make in order to solve those problems. Some call this "backwards design" and—while it can be difficult at first—it can also breathe a refreshing air of vividness and creativity into how you think about teaching.

Do students ever resist TBL?

Traditional "chalk-n-talk" college lectures have trained students to expect a passive classroom experience. Unless students clearly understand why they are being tested on their understanding



before the material is discussed in class, they can feel this is unfair.

As a result, you should make sure that: (1) from the very beginning, students understand why you are using TBL and why they will benefit in the long run; (2) your reading materials are high quality with a thorough coverage of the key issues but, an absolute minimum of "fluff;" (3) you

help students develop good self-study skills by doing such things as providing 'reading guides' to help focus their preparation; and (4) you reinforce, throughout the class, the fact that students are developing conceptual and interaction skills that will be critical to their future success.

Is TBL right for every teacher?

Unintuitive as this may sound, a typical TBL classroom full of bright, curious, and energized young people can be, for some, a very threatening place. As a litmus test, imagine a bright student in front of the whole class asking you a content-related question that you have no idea how to answer. If this vision triggers discomfort, then you may need to develop more experience teaching your subject before you are ready to engage students in the way that TBL requires. If, however, this vision energizes and delights you, then you are probably ready to lead your students to a new level of instructional power and fun by implementing TBL.

THRIVING IN ACADEME

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