



# Student Voices in Team-Based Learning

## Essay Collection

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# 01 TBL in the Eyes of a Swedish Medical Student

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My name is Tim, and I am a student of medicine in Stockholm, Sweden, at the Karolinska Institute since 2022. In the very first course of the program the Team-Based Learning (TBL) format was introduced along with its purpose, tools and well-established study methods such as spaced repetition. The format is part of the teaching plan and examination criteria of every course and each term the group constellations are switched out to provide social diversity. In other words, I have been exposed to this learning environment consistently for almost three years in various courses and settings.

This essay will dissect three key elements of the TBL and InteDashboard environment that

to me are its most powerful strengths: One, TBL as a knowledge and reasoning acquisition method. Two, the flexibility of a digital platform. Three, the innate capability of honing social and collaborative skills in the TBL format and why this is important to the future clinician. Throughout the text, anecdotes and studies will be incorporated with my own thoughts and reflections.

To me the format has always been a multifaceted learning moment. For one it helps me catch up on things that I might have missed or forgot to study, which to be frank, is something that can happen quite a lot to a stressed-out med student. Secondly, it challenges my perception of my already

established knowledge by either forcing me to explain my ideas to a peer or reevaluating my perception when a peer explains their ideas to me. Learning by teaching is a well-established study method and have been advocated by many in academia for a long time. Einstein famously said that if you cannot explain something to a six-year-old, you do not really understand the subject yourself. I have yet to meet a medical student that is six years old, but I still think there are bits of truth in that statement applicable here. Thirdly, the format involves application, where basic ideas are extrapolated to more abstract and complex scenarios which leads to deeper learning.

Exploring the ideas above and the phases of the TBL process, one can see that there are elements of repetition in that there are self-studies, individual testing, team-based testing, where learning by teaching appears the first time, and finally application where learning by teaching once again is present. This is congruent with a key

element of learning that I mentioned in the very beginning when I was introduced to TBL the first time – spaced repetition. This is a method that has shown to be more effective in consolidating knowledge compared to mass repetition (Smith & Scarf, 2017). The power that lies in this model is that learning by teaching is woven together with spaced repetition. Repetition is not only spaced out over a week of TBL sessions, but also an entire term or even several courses where past topics are being constantly revisited as they lay the foundation for later courses.

Certainly, one can argue that this is something that is adherent to the study of medicine and not TBL itself. Even if one accepts that point, it is impossible to escape the fact that the format is facilitating long-termed repetition. It is an active form of repetition where questions to be answered in RAT or application can depend on past courses as much as new ones, which revitalizes ‘old’ knowledge much more effectively than a passive



lecture with a quick recap in the beginning of the presentation. As an example, the past year we have been studying internal medicine, starting off broadly followed by narrowing down on its subspecialties. This means that when we studied antibiotics and infectious disease a few weeks ago, which is impossible to isolate from its umbrella subject internal medicine, we are exposed to topics we studied the term before. before. It is easy to get narrow-minded and think zebras when having just read about Chagas and African sleeping sickness, but thanks to nuanced discussions in both tRAT and application sessions one can touch on everything from pneumonia, to heart failure to malaria. This is spaced repetition on both new and old knowledge.

The second element to be discussed is the power of complementing on-campus activities with digital tools such as InteDashboard. I am very much an advocate of physical lectures and activities. However, digital tools are not only useful

but ultimately necessary to enable a smooth workflow for both teachers and students. Its possibilities include attending sessions digitally when physical attendance is impossible and accessing overviews of past sessions and results. My own experience with TBL has always included InteDashboard in one way or another, but I have never had a reason to prefer another alternative. InteDashboard is a very effective and intuitive tool to use as a student. The digital setting makes it versatile, allowing me to do the iRAT and tRAT remotely when we are allowed to do so, or when illnesses hinder me to participate physically. This is a powerful advantage compared to more analogue alternatives. Since TBL is very present in our education, any missed attendance means that it is very difficult to catch up on RAT or application. It is not just a lecture where one can read up on the past week's slides. With InteDashboard and any chosen media of communication one can still join in on the discussions in the team and not miss a thing.

One powerful tool that I like to use in revision and studying before an exam are the stored sessions and statistics. It facilitates the opportunity to review and revise areas of weakness and drilling down on key elements. The problems that the teams are tested on are almost exclusively highlighted areas that the professors think are the most important. This is reflected not only in the written and practical exam but also in a professional setting. That way I can improve on the areas that I see are my weakest, as well as understand which parts are the most important to carry with me into my professional career.

Finally, I want to discuss the presence of teamwork and collaboration in TBL and what makes it so useful to a future clinician. Just like how I think TBL is multifaceted in its ways to facilitate learning, I think it also brings a plethora of team-building aspects. It is intricately tied together with the learning element already discussed, but at the same time a lot more comprehensive.

Teams are presented with problems in both RAT and application and are then set out to solve them together. Groups of five, six or sometimes seven people bring at least as many perspectives together to solve one problem. There is seldom a single correct answer, but there is always a single best answer. The trick is then to navigate among the collective ideas and attitudes, sometimes quite strong, to single out the best answer. This requires many important traits and skills such as self-awareness and humility but also confidence and verbal prowess, along with people-awareness and team-working. Everyone brings a subset of these clinically important traits to the table from the get-go whilst developing the other traits over time. The traits are easy to see why they are useful in medicine, given that most clinicians work with patients and in interdisciplinary settings. Especially in clinical courses abstract reasoning and teamwork are present and I think TBL fulfills an important role here. I am not alone in these thoughts, a



review in BMC found that TBL in clinical courses had positive impact on several of the aforementioned aspects such as clinical reasoning and teamwork (Sterpu et al., 2024).

I am constantly developing in terms of awareness of other people's skills and points of view. A single problem does not always have a single road to solution, which is sometimes difficult to accept for a person with a strong will. The past three years have really taught me how I can find my role in a new setting and enunciate my strengths whilst using other people's strengths to the whole team's advantage. This has prepared me to become a better team worker and leader once I am a certified MD. The skills that I am still developing and looking to master are skills that I can see in doctors that I look up to when I am on rotations in the hospital. To mention a few: respectful and humble consultations, perceptive and effective rounds, and strong leadership in acute situations. These exact situations are not necessarily emulated in TBL but

many of the skills required to complete them are.

Over time team compositions are changed and everyone gets to work with new members. Every switch leads to a new dynamic and constellation that everyone must adjust to and develop. Some groups evolve quickly into friends whilst others are more neutral, and some might even hit roadblocks along the way to overcome. As an individual in all these scenarios one gets to practice social navigation in different settings but with the same goal in the end, team-based problem solving. I think this is extremely helpful, and will be of great importance in the future, as the medical team is constantly switched up in a hospital setting. In every team I get to practice how to adapt to varying driving forces and roles, which is a super-power, not just in the medical profession but really in any social scenario. We do not choose our colleagues, but collaboration is mandatory, hence this is essential practice.

One of the earlier and especially

memorable examples of TBL was a course in anatomy and histology two years ago. Spanning over roughly six weeks each team were dissecting a human specimen several times a week, working through every major structure from limbs to thorax to abdomen. At the end of each week, iRAT and tRAT were in the form of time constrained quizzes on structures of the actual specimen. I remember this time as very intense, with high demands not only on anatomical knowledge, but also our ability to cooperate as a group. To an outsider it might sound strange, but working through a human specimen is technically difficult and testing of one's patience. Doing it together with five strangers is even more so. Perhaps the peculiar and sometimes uneasy setting of dissection managed to bring our team very close together and we managed to exchange a lot of ideas and lessons learned. Ultimately, we passed the course and some of the team members are still close friends of mine.

difficult than I imagined. I thought 2,000 words would be more than enough to cover the main lessons and experiences from TBL. I was wrong. With each new paragraph a new memory and idea arose. However, I think I have managed to catch the essence of what TBL has taught me and what I will bring with me to my professional career. It is an invaluable study method; I would not have remembered half as much from my education so far if it was not to TBL. It is very flexible when combined with a digital solution. Lastly and most of all, it is an incredible way to train and perfect the social aspects of clinical skills. All in all, I think it is the perfect format to foster the next generation's medical doctors.

Writing this essay was more

# 02 Revolutionizing the Workforce Through Fostering Scholarly Transformation, Knowledge Building, and Leadership in Pre-Professional Academia

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**Postbaccalaureate Premedical Program 2024-2025**

Greetings to all whom it may concern! My name is Antolice Thomas and I am an aspiring physician, currently concluding the University of California San Diego Postbaccalaureate Premedical Program and preparing to apply to medical school. I have had the pleasure of experiencing the Team-Based Learning (TBL) methodology on the InteDashboard platform for an entire year as my professor, Steve Schneid, has incorporated his uniquely modified version of TBL as an integral component of

each course he teaches throughout the year, totaling 20 units. His courses are designed to teach us a significant portion of fundamental concepts we will learn in the first year of medical school to demonstrate academic readiness, and foster a seamless transition to the inevitable advancement in academic rigor. In that regard, his coursework is extremely challenging and in theory, likely the most difficult of all the program's courses. However, I've found it to be the highlight of my experience in the

program, both objectively in terms of my ability to effectively learn the material, as well as the subjective psychosocial aspects of my learning experience. These triumphs are due, in very large part, to how he progressively empowers his students through the use of TBL. From my experience and the confidence I've gained with respect to my ability to excel in my future academic and professional endeavors, it's evident to me that TBL's impact transcends beyond the pre-professional setting in which it is utilized. It will revolutionize various industries as it transforms each new generation of professionals entering the workforce.

Intuitively, one may reason that the magic of TBL lies within its inherent constructive development of students' teamwork skills, for the purpose of mutually and effectively enhancing each other's learning experience and assessment outcomes. While this is undoubtedly a true hallmark of the methodology that is not to be minimized, having now

become very familiar with TBL myself, I confidently venture to say that the magic actually resides within the transformation it ignites at the level of the individual, which then summatively translates to creating an impactful team-based learning experience. Beyond "Team-Based Learning," for me, TBL has represented Transformation, Building, and Leadership: transformation of the very essence of my scholarly identity and how I approach my studies, building of my fundamental knowledge base, which will be the indispensable foundation of my career, and leadership through recognizing my individual responsibility to contribute to optimal team dynamics and learning outcomes. In each aspect, I've had the humbling and inspiring privilege of witnessing the evolution of my TBL group members, including myself, yielding the strong bond and academic success we have achieved as a unit this past year.

Academic excellence is a core personal and cultural value of mine, so I have generally always

been a responsible student. Even so, I found that TBL has holistically revitalized my scholastic approach and refined the principles on which I have built my identity as an intellectual. It's done so in part by serving as a powerful source of accountability, motivating me to actively engage with course material in preparation for each TBL session. Knowing that my team trusts me to be well-prepared and contribute to our collective success instills a strong internal sense of responsibility to complete the pre-work. This sense of duty is a vital intrinsic motivator that constantly pushes me to deepen my understanding and stay committed to the learning process, even when the intensity of my workload grows and I become weary. This preparation empowers me to fulfill my desire to make meaningful contributions to my team's discussions, thereby enhancing both our collective comprehension and our performance on the Team Readiness Assurance Test (TRAT), which counts towards our overall grade. In this way,

TBL has transformed my previous approach to consuming course material, once characterized by an initial state of passive learning followed by a progressive increase in active engagement, to consistent active engagement from the time I am introduced to the material through final examination. It creates an environment where the academic growth of my team as a whole, is driven by mutual accountability and a shared pursuit of excellence.

The InteDashboard platform has played a unique role in catalyzing this transformation and fueling my long-term commitment to the learning process for the benefit of my team. My instructor's use of the 360 Evaluation feature has single-handedly reshaped my learning experience and subsequent outcomes by fostering a culture of intentional growth. Through structured self-reflection, it helps me clearly identify both my strengths and areas for improvement, not only in mastering course content but also in my effectiveness as a team member. Its transformative

nature in my experience is rooted in its ability to turn insight into action. My instructor designs the evaluations in InteDashboard such that I am challenged to create targeted improvement plans grounded in SMART goals, ensuring my efforts are specific, measurable, achievable, relevant, and time-bound rather than the futile, all-encompassing endeavor to “just study more.” In my experience, this cyclical process of introspection and strategizing for improvement after each TBL session has proven to yield increasingly stronger learning outcomes both at the individual and team levels. Furthermore, its benefits extend beyond academics by reinforcing habits of accountability, healthy communication, and productive collaboration that directly enhance team dynamics, nourish camaraderie, and prepare us to be valuable assets to the numerous teams we will be a part of in the workforce.

My professor strategically designs his courses such that TBL sessions are scheduled relatively soon, often a couple days after a

new set of material has been launched. Given that the content is still fresh for us, he fully anticipates that we haven’t gotten to completely digest it by the time we arrive for TBL. This is intentionally done to allow TBL to serve as a tinkertlab where we get to dynamically engage with the material, embrace our mistakes, and hone our abilities to apply the concepts in a low-stakes environment. In doing so, we incrementally build our mastery of the content as well as the breadth and depth of our knowledge base. His modified implementation of TBL in which the difficulty level of the questions is significantly increased, but the assessments are open-note and the Individual Readiness Assurance Test (IRAT) is not counted towards our grade, constitutes this optimized environment for exploration, risk-taking, and knowledge building. It emboldens me to fully lean into the learning process rather than stress about the grade, granting myself the freedom to make mistakes and use them as tools to begin fine-tuning my knowledge. Team



discussions further enrich this process by exposing me to a variety of perspectives and approaches to applying course concepts, allowing me to refine my thinking through dialogue and debate. Not only do I get to pinpoint and rectify the origin of my mistakes, but I also get to affirm and fortify my correct lines of thinking. As such, I have never felt more comfortable with making mistakes in any other setting in my entire academic career as I feel in TBL.

While this comfort is duly attributed to the collaborative low-stakes environment, it is also notably due to TBL's unique utility as a continuous improvement tool rather than an isolated learning experience, supported by the InteDashboard platform. During the IRAT, I have the capability of distributing a fixed number of points equivalent to the number of answer choices, across the answer choices as I see fit in order to demonstrate full confidence in one answer or uncertainty between multiple answers. Moreover, I am not

shown the correct IRAT answers at any point, even after it has been submitted. This design allows me to memorialize the evolution of my thought processes so that I may bear witness to my own intellectual growth. Since a significant amount of time elapses between TBL sessions and exams, I typically don't remember the answers to the TBL questions. I seized this reality as an opportunity to gauge my improvement and assess my readiness for exams. As a standard final step in my study routine, I return to InteDashboard and redo the relevant IRATs—this time with no external resources, just the knowledge I've built along the way. Not only am I consistently amazed at how much easier the questions seem, but additionally, seeing my previous answers makes me extremely proud to see how far my understanding of the concepts has come. Hence why I call it “the magic of TBL,” because there's something extraordinary to be observed in the ability to go from 40% IRAT scores to above 95% on exams—

the heaviest lifting of which is done on the playground that is TBL.

TBL has profoundly sharpened my leadership skills by heightening my cognizance of my individual role in ensuring that all of my group members feel seen, heard, and valued. It has reinforced within me that a hallmark of an effective leader is not just knowing when to speak, offering input or guiding discussions, but more importantly knowing when and how to listen with empathy and awareness. I've learned to recognize subtle cues that indicate a teammate may be struggling, whether academically or personally, and to respond with sensitivity and intention. This requires discerning how to honor their unique circumstances, respecting their boundaries while finding ways to uplift and engage them so they are not left behind in the learning process. Becoming more attuned to the needs of others and practicing this kind of responsive and inclusive leadership came naturally for me as a result of

being the first in my group to struggle as I was led to vulnerably express a need for their support in the beginning of the program. I distinctly recall the first of many times I communicated with them about the series of unexpected hardships I encountered, and how they verbally and nonverbally reassured me that I could lean on them, respecting my silence, but occasionally gently asking what I thought about a particular question. I saw and felt each of my teammates embody these principles, consequently fostering a more cohesive and compassionate team dynamic that stood the test of time as each of us encountered our bad days throughout the duration of the program. As future physicians, this will prove to be an imperative skill when we work in teams with nurses and patients' families. We will need to preserve a level of objectivity, pressing on towards the ultimate goal of achieving optimal health outcomes. Nonetheless, subjectively, we will also need to remain mindful and sensitive to

the fact that we are still humans, therefore subjected to the ebbs and flows of life, yet still worthy of being seen, heard, and valued.

and improved era of lifelong, active learning and a revitalized progressive culture of professionalism in the workplace.

To no small degree, TBL has redefined my identity as a scholar and enhanced my trajectory as a future medical student and physician. I am a more efficient student and well-rounded human being because of TBL. This individualized, multi-faceted evolution has translated to the cohesive, high-functioning teamwork and lifelong bonds my TBL group has had the pleasure and privilege of crafting. TBL's ability to ignite such transformational change in pre-professional academia will revolutionize the workforce as it becomes saturated with an increasing proportion of professionals who experienced TBL during their education. Through scholarly transformation, knowledge building, and leadership, TBL continues to prove through students including, but not limited to myself, that it is far more than just team-based learning. It's a gateway to a new

# 03 TBL: A Lesson in Being Wrong

**Julia F. Goebel**

**Touro University California - College of Osteopathic Medicine  
Doctor of Osteopathy, Class of 2028**

As a future physician, I intend to be involved in collaborative patient care for the rest of my career. My active involvement in teamwork started when I was an undergraduate and graduate student, when I would send recurring reminders to my teammates that our project was due in one week, five days, tomorrow, and that they should please at least contribute something; it permeated through my time as an emergency medical technician for six years, learning from and assisting paramedics, nurses, firefighters, and physicians. Collaboration was absolutely necessary when running a “code” – performing CPR on a patient – while I was an EMT, where every role had to be filled and communication was absolutely vital to the outcome. I

learned to appreciate a good team, how to address a weak link, I had known by then that I wanted to be a physician, and that teamwork would drive nearly every decision I would make – my success or mistakes would not occur in a vacuum, without input from anybody.

I was first introduced to “team-based learning” when I applied to medical school. Doing my due diligence, I investigated the different academic teaching styles that each school offered, and was intrigued by the recurring mention of team-based learning classrooms. It both fascinated and scared me. What would it mean that part of my grade would depend on the democratic input of other classmates? I had the initial

hubris to assume that this would be detrimental to my grade, but as I pared down my list of schools and asked active medical students about their experience with the TBL concept, I warmed to the idea and almost exclusively applied to medical schools that incorporated TBL into its curriculum delivery – not a difficult feat now, since TBL is increasing in popularity across United States medical schools (Parmelee et al., 2012).

My personal TBL experience, though, had an admittedly rocky start. When I was assigned my team in the first week of medical school, I was convinced that we would clash in every way possible. One teammate was too loud, one was very quiet, one questioned everything others did... By the end of the first week, I was quietly dismayed by the differences in our personalities and thought that whoever had assigned us to work together as a group must have been gravely mistaken. I had thus far prided myself on my leadership skills developed prior to being a medical student as

both a first responder and a master's student, helping drive the conversation in small groups and raising up others who would otherwise not speak for themselves. This self-image clashed, though, with my difficulty wrapping my head around working effectively with five other high-powered, "Type A" individuals who all had something to say on any matter.

As the weeks progressed, though, something clicked. It was a combination of revving up the amount of energy spent on studying, the desire to make deeper connections, and the realization that I was not in the top-performing quartile by any stretch that made me warm to this type of collaboration with others, even if the interactions lacked refinement at times. It certainly helped, too, when around the same time my teammates – "assigned besties," as I referred to them – also began to mold their own personalities and drop their reservations in order to create a more collaborative environment when we worked together.

Naturally, there were times where we clashed – but now, it was with amity and healthy competition instead of just wanting to be heard at all costs. We all found it progressively easier to say “I don’t know this answer” and ask our teammates for an explanation than to sit in embarrassed silence and not understand how others got to the correct conclusion, which would have otherwise led to a missed learning opportunity and an unresolved knowledge gap.

At one point, we spent nearly half an hour passionately discussing the potential diagnosis of a singular radiographic image within a question packet. At some point, we had to finish the packet and came back to that one image to spend the remainder of our allocated time debating the variety of options for this one case. I breathlessly explained, using wide gesticulations, that the cross-sectional image couldn’t possibly show anything other than an undescended testicle in the presence of androgen insensitivity, while one of my

teammates adamantly dug his feet into the ground and was convinced that it was a very large inguinal lymph node on a woman born without a uterus. The rest of our teammates listened on in bemusement. While this was undeniably a high-energy discussion, I remember the situation fondly due to the freedom I felt debating my friendly opponent, where we respected each other deeply in spite of our differing interpretations. This could very well have been the largest turning point in our collective TBL relationship.

InteDashboard played a significant and positive role in my TBL experience, as well. In previous sessions with the same group, we would do our team exam using scratch-off cards and printed questions. This could result in confusion and miscommunication, as not every teammate would see the question at the same time, and there were some embarrassing moments where I, the designated scratcher, accidentally scratched off the incorrect answer that the



team had not chosen. This type of error, along with the miscommunication, was eliminated with the use of InteDashboard, as all students saw the same question at the same time, and received the feedback immediately. This allowed for us to see whether our answer choices were correct and we had the opportunity to troubleshoot our thought processes. We were able to ask for clarifications or challenges together, resulting in a feeling of community over competition.

This type of learning environment is also preparing me – perhaps subconsciously, but also very deliberately – for professional teamwork with members playing roles differing from my own. What wisdom will the respiratory therapist bring to this discussion? What pattern in this patient is the charge nurse recognizing from a long career identifying these patterns? What comment or body language could the medical technician have picked up on before I enter the room? Being exposed to team-based learning is preparing me

for having respectful, collaborative interactions with any possible combination of other professionals working towards the common goal of diagnosis, treatment, and proper care of our patients. Some of my classmates who are in different TBL groups are not quite as lucky as I am. There are certainly instances where these groups clash and have great difficulty reconciling, be it due to prejudice, an unwillingness to compromise, or a level of maturity that has not quite yet been reached. I check in on these friends often, and with time, more and more are stating that their group dynamics are improving as participants soften to the idea of being wrong. There is even a lesson to be learned in such dynamics as well, though: Not every relationship is destined to be perfectly smooth, and collaboration must still occur in suboptimal teams; future patients won't magically delay their ailments while they wait for us to resolve issues. In contrast, there are TBLs that have a celebratory lunch at the end of every week – that, to me, may be

a little bit too much effort spent on this group, although it certainly does help members get to know each other on a vastly more personal level. I have laughed, cried, and overcaffeinated with my assigned besties over the past year, and we celebrated the end of the academic year with a lunch that I just claimed was overkill – who else would I want to celebrate this accomplishment with, though, than the people who most directly saw me through it? Even as our time in TBL groups is dwindling as we progress through medical school, we still all sit in our “unassigned assigned seats,” paying tribute to our group as a unit, recognizing our fist-bumping ritual leading up to exams as a superstition not to be tested. We still check in on each other in our group chat, despite not having as many assignments together.

In overcoming my own difficulty collaborating with others and recognizing that personal growth, I also acknowledge the benefit of having effective TBL groups assigned to us and of having

supportive technologies such as InteDash to complement our learning and collaboration – groups with poorly selected teammates can create an imbalance in respect, contributions, or knowledge gaps, and immediate feedback offers another easy learning modality to assess knowledge gaps, if present (Verma, 2022; Burgess et al, 2014). As I prepare for my second year of medical school, I am finding myself looking forward to seeing my TBL-mates in August. Their refreshing perspectives and amicable support have enriched my pre-clinical experience thus far, and I am grateful for what working with them has taught me about cooperation, trust, and how it is okay to be wrong when I have a team to support me and give me perspectives from their own experience.

# 04 Perspective of TBL from a tired, overthinking, shy medical student who does not usually study

**Chung Lung (Dante) Cui**

**Touro University of California - College of Osteopathic Medicine  
Osteopathic Medicine, Class of 2028**

It's 3:30pm on a Thursday and the auditorium is silent. I stare at the clock, waiting for the hour hand to edge closer to 4, knowing that what lies after class is an hour-long commute followed by hours of catching up on lectures. "No one wants to volunteer?" asks the professor as he picks a random number out of 32 on [randomnumbergenerator.com](https://www.randomnumbergenerator.com). I turn to avoid eye contact with the professor, hoping this will discourage him from calling on us. I see that all 6 members of my team-based learning (TBL) group are doing the same thing. In the corner of my eye, I see him stare directly at us, give a big smile and say, "team four." Wide-eyed, I

glance at my TBL group, and we all look at each other, silently volunteering someone with our eyes to step up to the mic and share our answer. After what felt like 30 minutes of silent nomination, I decide to take one for the team and begrudgingly stand up. A lot of thoughts race through my mind as I walk up to the mic: "What's the point of TBL when I'm already behind on lectures?" But one thought stays and reassures me: "We already discussed the question in my team, and we have an answer." The question was, "What regions can you reach from the Pterygopalatine fossa?" To be honest, none of us in the group knew the answer definitively, but

some of us remembered during our anatomy lab a professor pointing out the pterygopalatine fossa and explaining its significance. When I finally reached the microphone, with a blushed face and a shaky, non-confident voice, I answered “Sphenopalatine foramen”. A sigh of relief came rushing over me as those words rang across the auditorium, as I felt I could now sit back down. But then my nightmare continued. The professor followed up with “And what else?” still with that big smile on his face.

I panicked. I looked down at my team’s paper. There were no other words written down for that question. We thought it was a one answer question. We weren’t aware of anything else. We were just tired medical students, barely watching the lectures on time. I looked around and made eye contact with the other groups and they started whispering answers to me. Without thinking, I shared their answer, “foramen rotundum,” without hesitation. The professor kept asking what else and I

started to get more and more answers from other groups. It turns out, the answer was everything in the face. The professor wanted to highlight that the pterygopalatine fossa has connections to the orbits, nasal cavity, oral cavity, pharynx, and the brain and it’s significant because an infection in this fossa can impact so many different structures. I walked back to my group, feeling like a champion, receiving pats on the back, fist bumps, not ever forgetting this material that I learned in that brief nightmare.

My name is Chung Lung (Dante) Cui and I am a first-year medical student at Touro University California, College of Osteopathic Medicine. At first glance, this moment might have appeared insignificant, but for me, it marked a turning point in how I viewed TBL. While it's easy to describe TBL as a method of promoting a safe and collaborative learning environment, experiencing it firsthand was something entirely different. In that moment, I realized that volunteering to

share my answers in such a setting carries little risk and, offers far greater benefits such as reinforcing my understanding and identifying any mistakes I might have made. In fact, since we discuss the case in our teams beforehand, we build off the knowledge of each other. Since then, I have begun to share my answers more and put more effort into engaging with my team during these activities instead of silently sitting or about the amount of materials we are expected to learn.

Graduating from a large university during my undergraduate years and not knowing many people with the same major as me, I adopted a strategy of studying at home by myself. My study method consisted of rewatching lectures and answering practice questions. I am the guy that sits in the second to last row (never the last row since it will make me stand out) and stays quiet until the lecture is over. I would never volunteer to answer questions and would only participate if my grade depended on it. My first

experience with TBL was during my last year of undergraduate when I took an anatomy course. They placed us in different teams on the first day of class, which I thought was for them to manage the flow of the course easier. It turns out that it was meant for our team to work together, look at anatomy dissections together and learn and teach each other. Initially, I tried studying by myself but failed. The amount of material was just too much. I knew I had to change my studying style, so I started studying with my TBL group. We would quiz each other, draw images together, help make mnemonics together, and it was a surprisingly effective way of studying for me. It also connected me with lots of resources and allowed me a chance to network and reach out of my comfort zone to talk to teaching assistants and professors. That is why when I was applying for medical schools, I wanted a similar learning style, a team-based learning style.

A lot of the same studying skills apply here at Touro University -

California, where we would share notes, quiz each other and share mnemonics that we made, but one thing that was different was that a portion of our grade was based on team assessments. After taking our individual tests, we would have a chance to take the same assessment as a team. After taking a few of these tests in my first year of medical school, I started looking forward to them as it puts less weight on individual questions and allowed me to focus on learning the materials. My favorite part of these team assessments was when two group members confidently had conflicting answers. The discussions that followed were productive and it was interesting to see how each person explained their perspective on how they got to a specific answer. Reflecting on this as I completed my first year of medical school, I realized how valuable these explanations were. Understanding the process behind a disease, rather than just memorizing facts, makes a significant difference in long term memory of the material and clinical decision making. Thus,

having a team with which to discuss such processes proved to be a great opportunity to learn and communicate in an engaging and thoughtful way.

Our school uses two different formats for exams. One format involves using a software package (Examsoft) for the individual assessment, followed by a physical scratch-off card for the team-based portion. The second involves using InteDashboard and taking both the individual and team assessment on the same program. Although the format is similar, I personally prefer the latter one because the scratch-off method can limit participation during the team assessment. The person responsible for scratching off the answers has to focus on doing it carefully, which can be tricky to do accurately. This often makes the person miss out on the group discussion while trying to keep up with recording the team's responses. I usually ended up being the primary "scratcher" since I'm the fastest, but during most exams, that meant I was often more focused



on scratching than on actually engaging with or learning from the discussion. This is especially challenging during questions with “obvious” answers, where my team quickly calls out a letter and moves on without explaining their reasoning, leaving me trying to catch up both physically and mentally. By contrast, when we take the exam on InteDashboard, it eliminates the tedious process of physically scratching off the answer and allows us to solely focus on the group discussion. InteDashboard also keeps everyone on the same question, encouraging the team to move through the exam together at a steady pace. This helps ensure that everyone understands each question before proceeding. To further expand on this, I’ve noticed that when we use InteDashboard for team assessments, we tend to take longer to complete them compared to the other method, since it encourages more in-depth discussion about why each team member chose a particular answer. In essence, different technologies (as simple as the way we take an examination) can

really assist in promoting discussion and teamwork in a TBL environment. The discussions during examinations and learning activities were essential in my first year of medical school. Medicine is a career pathway that requires teamwork and interpersonal skills no matter which specialty we end up pursuing. The earlier we begin collaborating in teams, the more opportunity we have to nurture these essential skills. The skills that TBL provides extend beyond the classroom, as it enhances skills I use in my club activities, my research experience, and even my summer internship. From here on out, we will be working in teams to plan, learn and ultimately strive towards the shared goal of healing the patient. While, the obvious benefit of TBL is to nurture the ability to work in a team, other benefits will also continue to grow throughout our careers. For example, as I shared in my introductory story, having the courage to step out of my comfort zone will be essential, especially when a patient's life is at stake. Team-based learning

fosters this courage by offering a supportive environment where we can take risks and grow. We're encouraged to speak up and take the initiative, all while knowing our group is there to back us up if we get something wrong. Lastly and perhaps the most importantly, having a TBL group provides a firm support system, through all the hardships of medical school. Supporting words from my teammates are one of the important reasons why I can keep pursuing my dreams of becoming a doctor.

# 05 TBL: Together we Build Leaders

**Taylor Nicole Triplett**  
**Harding University**  
**Masters of Speech Pathology; Class of 2026**

My name is Taylor Triplett, and I am in my first year of Harding University's Speech-Language Pathology Masters Degree program. Until a few years ago, I was completely unaware that the incredible, unique, and vast field of Speech Pathology existed. However, I am extremely thankful for the experiences I endured that enabled me to become well acquainted with a career that I wholeheartedly believe to be my calling. My heart was originally set on becoming a doctor for as long as I could remember, but the hardships I endured while pursuing that path helped me to realize that was not the career the Lord intended for me. I worked in various healthcare settings as a Certified Nursing Assistant (CNA) throughout the majority of the COVID-19

pandemic, and the situations I encountered were the most challenging and overwhelming experiences I have ever had to overcome. I witnessed an incredible amount of death and grief, but the most severe impact of the entire pandemic that I came to recognize through working so closely with patients was the detrimental lack of communication.

Strict COVID guidelines resulted in extreme isolation of those who were terribly ill, and while I saw first-hand the impact that this disease had on patients, the inability to communicate with their loved ones seemed to be the primary factor that contributed to their decline. Whether it was the physical inability to speak because of placement on life support,

separation from loved ones because of quarantine, or not having the opportunity to tell loved ones goodbye- these were the true things that harmed patients. They had been completely stripped of one of the fundamental aspects of living: communication. It was heartbreaking to witness so many individuals feel helpless and unheard. Yet, it instilled a new desire in me to advocate for those who are unable to advocate for themselves- to assist others in finding their voice, in overcoming their circumstances, and in preserving their dignity. This desire led me to the discovery of the field of Speech-Language Pathology, and eventually to the graduate program at Harding University where I was then introduced to the concept of Team Based Learning (TBL) within the classroom.

### **The Impact of TBL**

I was initially skeptical of the idea of TBL when it was first introduced to my cohort upon beginning graduate school because for my entire academic

career, up until that moment, education had simply been sitting in a classroom, listening to a lecture, and completing some assignments pertaining to the material. However, I was now expected to learn material and course concepts individually prior to entering the classroom. It honestly did not make any sense to me at the beginning because I could not understand the purpose of continuing to attend classes if I was going to be the one teaching myself, but I eventually came to realize the true intentions and purpose of this concept: teamwork. It was no longer just about me- it was about the impact that my preparation for class had on my fellow classmates as well; I became responsible for the success of my team as well as for myself. Because of this, I was more motivated and determined than ever before to truly attempt to learn and understand concepts before arriving to class in order to help my team succeed in quizzes, application cases, projects, and so much more.

While I did not fully understand

every concept prior to lectures, I found myself to be increasingly engaged in lectures because I had some foundational knowledge of what was being taught, which aided in reinforcing what I did understand while also solidifying the areas I needed additional understanding in. Furthermore, because my team was expected to study the same material before class as well, I had access to additional perspectives if I still struggled with grasping concepts after lectures. This new form of teamwork has proven time and time again to be an incredible asset to personal and overall team growth. TBL helped to remove the previously ingrained notion of constantly being in a competition with fellow classmates, and promoted the reality of working together as a team. Accountability, collaboration, and communication made evident the importance of working with instead of against one another. Together we could grow, together we could encourage and support one another, and together we could build leaders

through fostering a positive environment for one another to recognize strengths and build upon weaknesses.

### **Skills Developed Through TBL**

Being a part of TBL has helped me to develop and strengthen several skills that have assisted in shaping me into the student I am today. Because of TBL, I have learned to effectively and professionally communicate with my fellow classmates in order to express my opinions, to think critically and abstractly to solve complex problems, to adapt to different learning modalities, to fully listen to and integrate my teammates' ideas into a given problem or task, to designate and fulfill assigned roles and responsibilities, and to take charge when necessary in order to lead team discussions. Each of these skills have been fostered by the environment within my TBL group, and have contributed to the success I have found as a student inside and outside of the classroom. There is no singular project in particular that played a significant role in the development of these skills

because each project and activity completed through TBL truly helped to strengthen the relationships within TBL groups, which aided in the overall gradual development of these integral skills.

Whether it be a quiz, an application case, or a project, our team is expected to be prepared to complete any assigned task with excellent quality work in a timely manner. This is impossible unless every member of the team is willing to contribute their individual skills and knowledge to work together as a whole in order to produce the best results. With each task, the TBL group quickly learns the strengths and weaknesses of their peers in order to best designate roles within groups, and assist one another in growing in areas that need additional focus. Furthermore, my graduate program requires that each TBL group complete a form that enables each member of the team to rate the performance of their teammates two times during the semester. The form provides the opportunity for

team members to state honest and constructive feedback regarding every members' strengths, participation, overall attitude, and areas for improvement. Teammates can access the feedback given to them by their peers in order to gain the insight from those they have been working closely with. This information helps each member to feel more confident in their strengths as well as to identify and recognize ways in which they can grow to contribute more to the team's overall success.

Additionally, every TBL activity, project, and review form is completed virtually on computers through the InteDashboard program, which further assisted in the development of these skills as the program is simple to use and navigate. This allows for more time for team members to communicate and discuss the true problem or activity at hand rather than spending the limited time available to understand the software. InteDashboard has enhanced my personal TBL



experience through allowing my team the ability to seamlessly transition through quiz questions, make edits to projects, and most importantly the opportunity to truly work together as a team. Every task can be viewed on each individual's computer, which provides the unique opportunity for each member to view and edit tasks simultaneously. This has assisted in significantly increasing communication between team members, which in turn increases the efficiency of the team as a whole through reducing the amount of time it takes to complete assignments.

### **Future Career and Application**

I believe that the skills I have learned through participating in TBL will prove to be vital and beneficial in any setting that I choose to work. The skills of communication, teamwork, critical thinking, and leadership are crucial skills to develop before entering the workforce, but especially in the field of Speech-Language Pathology. SLPs are expected to adapt to sudden changes in work

environments, to maintain professional communication with and work alongside a transdisciplinary team, to think critically in order to determine the best plan of treatment for patients, and to be leaders in the facilities they work in to advocate for the patients they serve while also educating others on topics pertaining to the discipline. I truly do not believe that I would have the ability to fulfill the majority of these responsibilities and expectations without the skills I have developed through TBL; however, because of TBL, I have acquired the confidence and skills necessary to meet what is expected of me in my future career.

For example, I once encountered a situation with an SLP I was observing in which the director of the facility she worked in attempted to hold a meeting regarding one of her patient's care without her presence. The director of the facility had called the patient's family to inform them that they were ready to be discharged from the facility;

however, the patient was not in the position to safely or adequately maintain her nutritional needs, so the SLP had to take the initiative to professionally explain to the director that her patient required additional therapeutic services before they could be discharged. The director did not fully listen to the SLP until she utilized her skills of advocacy, critical thinking, and education to effectively prove to the director that she has the clinical competency and experience to determine the status of her patients. If the SLP had not learned to develop these skills, the patient would have been discharged from the facility, and likely would have faced detrimental and unsafe consequences. This scenario further reiterates the importance of developing, maintaining, and strengthening vital skills because there will be circumstances that arise that require you to draw on those skills to succeed.

Overall, the concept I was originally skeptical of proved to be a tremendous help in many

aspects through shaping my academic and professional growth. TBL has provided me the opportunity to develop necessary skills to succeed as both a student and a professional, the ability to read and understand material independently, the motivation to engage and participate more within lectures and group assignments, and the realization that working together as a team allows for more growth than working independently ever will. Through my TBL team, I have been shown my strengths as well as the different areas in which I need to make improvements, and I have learned to be confident in expressing the knowledge I obtain of different subjects. The concept of TBL has encouraged me to grow in so many ways so that I may develop the skills and attributes necessary to be an important asset to my team because I want to contribute to the team's overall success. Upon reflecting on all of the ways I have grown personally since beginning this graduate program and being introduced to TBL, I have come to realize the true

intention of TBL. This concept allowed students to understand that through encouragement, support, and constructive feedback, you have the opportunity to help those around you grow in the confidence and the skills they need to become the leaders that they will later be called to be.

# 06 How TBL shaped my path to becoming a Future Physician

*Anonymous*

*Touro College of Osteopathic Medicine*

It was a typical Tuesday morning when my TBL group sat in our usual formation, with printed packets and a Scantron form in front of us. We had just completed our individual readiness assurance exams, and it was time to collaborate and submit our team-based answers. Most of the team, confident in their reasoning, agreed that the correct choice was A. But one member raised a hand and quietly said, "I think it's B." The room paused. A brief silence followed, and then an open, respectful debate began. I initially felt pulled toward the majority's opinion, but the lone voice's reasoning was rooted in sound logic and strong clinical rationale. We revisited the material. To our surprise, B was the correct answer. That moment stuck with me not just because

we came up with the right answer, but because it demonstrated that the majority is not always right and that the courage to voice a dissenting opinion is a life-saving skill, especially in medicine.

I am a medical student at Touro College of Osteopathic Medicine. I was introduced to Team-Based Learning (TBL) during my first year in medical school. At first, I saw it as inefficient and thought a simple answer key with explanations would be a more streamlined learning tool. However, as I became more engaged in the process, I realized that discussing answer choices and reasoning with my teammates revealed blind spots in my understanding, the gaps I hadn't noticed on my own. These experiences allowed me to

transform abstract knowledge into concrete understanding, and I learned how to arrive at the best decisions through collaboration and mutual insight.

TBL has transformed the way I learn. Before medical school, I mostly studied in isolation, reading, memorizing, and rehearsing on my own. TBL introduced me to a more interactive, dynamic format of learning. It required accountability, as I had to come prepared not only for myself but for the benefit of my team. The individual readiness assurance tests (iRATs) pushed me to study the material, but it was through the team readiness assurance tests (tRATs) that my understanding became deeper and more concrete. Explaining concepts to peers, discussing differential diagnoses, and clinical decision-making, all those steps strengthened my comprehension and my ability to communicate complex ideas clearly. Learning no longer stopped at identifying the right answer, but it became about understanding why that answer

was correct and how it could be applied in real-life clinical situations.

One particularly memorable experience occurred during a TBL session focused on dermatology cases. The question involved distinguishing between similar-looking rashes with overlapping features. Our team was initially divided between two answer choices. Drawing from my pre-reading and class notes, I helped guide the discussion by walking the group through each clinical feature and comparing them to the diagnostic criteria. Rather than simply asserting my viewpoint, I asked questions and invited others to share their reasoning, which created a truly collaborative atmosphere. By building on each other's input and narrowing the differentials together, we arrived at the correct answer. That experience not only reinforced my understanding of dermatologic conditions but also gave me a glimpse of what it means to lead through cooperation, which is an essential skill in team-based clinical settings.

These experiences helped me develop skills far beyond academic performance. TBL significantly improved my teamwork and interpersonal collaboration. Working closely with a team meant I had to listen actively, acknowledge diverse perspectives, and navigate disagreements constructively. These were not just classroom debates. They were rehearsals for the clinical environment, where interdisciplinary teams must work together to provide optimal patient care.

My communication skills also evolved under the unique pressure of TBL sessions. I had to articulate my thoughts with clarity, even when I felt uncertain or hesitant. With time, I became more confident, more concise, and more open to feedback from peers. I learned to welcome disagreement as an opportunity to refine my thinking process. TBL taught me that the best answers often come from rigorous, but respectful debate. In addition, TBL sharpened my critical thinking and clinical reasoning. Medical questions are

rarely straightforward but involve gray areas, overlapping symptoms, and multiple treatment options. During the TBL, we evaluated evidence, debated options, and narrowed possibilities which mirrored the complexity of medicine. It helped me think as a clinician rather than a test-taker.

Leadership also emerged naturally in the TBL environment. With a sincere desire to support my group's success, I often found myself guiding discussions or clarifying difficult concepts. Sometimes I had to respectfully challenge popular consensus, and other times I was the one being challenged. TBL taught me that leadership requires facilitating growth, encouraging diverse voices, and knowing when to step forward and when to step back.

TBL has also prepared me to thrive in interprofessional collaboration. In the real world, patient care is delivered by a team that includes nurses, pharmacists, social workers, and many other professionals. Each



brings a unique perspective and area of expertise. TBL taught me how to value those contributions, even when they differ from my own. It trained me to consider different approaches with humility and openness, which are essential for practicing in a system that depends on mutual respect and communication across disciplines. I now better understand how to navigate team dynamics, resolve conflicts respectfully, and advocate for patients as part of a unified care team.

Beyond clinical knowledge, TBL also deepened my sense of empathy and awareness. Hearing different perspectives from my teammates reminded me that every future healthcare provider carries unique life experiences into their interpretation of cases. Some of my peers offered insights based on cultural understanding, personal encounters with healthcare, or volunteer experiences in underserved communities. These conversations expanded my worldview and helped me

appreciate the complexity of patient care beyond textbooks. TBL, therefore, became a way for me to not only grow intellectually but also emotionally and ethically.

Another important lesson I learned through TBL is the value of preparation and shared responsibility. Knowing that my team counted on me to contribute meaningfully motivated me to study not only harder but more thoughtfully. I was no longer learning solely for exams, but I was learning to support my peers and, ultimately, to care for patients. This shift in mindset helped me internalize the idea that excellence in medicine is not just about personal mastery, but about contributing to collective success. Every team member brought something valuable to the table, and I found great satisfaction in being both a learner and a resource for others. TBL showed me that teaching and learning are intertwined roles in medicine.

Technology, particularly InteDashboard, enhanced our TBL experience. It streamlined the entire process, allowing us to complete iRATs and tRATs, view immediate feedback, and track team progress. What stood out most was its ability to foster meaningful discussion. When we got an answer wrong, we talked about why, revisited the material, and came to a new decision together. InteDashboard supported that reflection and helped bridge the gap between digital and human interaction in a clinical learning space. Even more, the platform allowed us to identify knowledge gaps and adapt our study strategies accordingly. It provided a shared sense of ownership over our learning outcomes.

As I look forward to my career as a physician, I see how deeply TBL has prepared me for the demands of real-world medicine. The skills I've developed, collaboration, communication, critical thinking, problem-solving, empathy, and awareness are essential in clinical practice. Physicians work in teams every

day. Diagnoses are discussed, treatment plans are formulated collaboratively, and patient care is coordinated across a spectrum of healthcare professionals. My TBL experience has equipped me to engage in these professional dialogues with confidence, humility, and a commitment to shared success.

In hospitals, especially in high-pressure settings like emergency departments and operating rooms, effective collaboration is critical. The ability to voice concerns, share insights, and challenge assumptions, even when I am unsure, is what keeps patients safe. TBL gave me a safe environment to practice that courage. It allowed me to learn that silence, especially in medicine, is never safer than respectful dialogue.

TBL also reshaped my professional identity. It reminded me that knowledge alone isn't enough. What matters more is the ability to share that knowledge, to communicate it clearly, and to apply it thoughtfully. I've come to see

disagreement not as a confrontation but as an opportunity to come up with better decisions, and that a strong team is one where every voice is heard.

In summary, Team-Based Learning has been a cornerstone in my development as a future physician. It taught me that learning is not just a solitary endeavor, but a shared journey of growth and refinement. The habits, insights, and values I gained from TBL will stay with me long after medical school. They will follow me into every clinic, hospital ward, and patient encounter. TBL shaped me into the doctor I want to be, one who listens deeply, collaborates openly, thinks critically, and leads with compassion. I am grateful for the opportunity to reflect on this experience, and I hope this essay encourages other students and educators to embrace the profound transformative potential of TBL.

# 07 From Classmates to Teammates: The Power of Learning Together

**Chloe Cohan**

**Creighton University School of Medicine–Phoenix  
M.D. Program**

Hello reader! I'm Chloe Cohan, a current third-year medical student at Creighton University School of Medicine in Phoenix, Arizona. I was introduced to Team-Based Learning (TBL) at the start of my first year of medical school, as team-based learning activities were an instrumental part of our curriculum. For the past two years, InteDashboard TBL activities have been a cornerstone of me and my peers' learning and the development of our critical thinking skills as budding clinicians and professionals.

For our learning, we had TBL sessions 2–3 times a week on average, in which we got together to answer 5–10

problem-based questions about a patient or disease process involving diagnosis, treatment, or management. InteDashboard's interface made it so convenient for us to work interactively as we tackled each case and problem individually first, then together as a group the second time around. This setup had so much utility. First off, the first time around we got to gauge our own understanding by seeing our performance on the questions without the help of others. We then opened the floor to go through the same set of problems again as a group (usually of about eight people) and shared our thoughts as we defended our answers and heard out each other's points for each answer or approach to the

problem—much like a real medical team! This really sharpened our ability to not only answer questions but also have good reasons why we answered that way, pushing us to defend our answers effectively and deepening our level of understanding.

Throughout this second round of going through the questions, InteDashboard allowed us to follow along nicely, as our personal screens mimicked that of the student moderator—so we were always on the same page. Whether it was selecting an answer choice or typing out a short answer response, we could see the moderator's selection or what they typed in real time, which was so helpful in keeping us engaged since we were able to follow along. The moderator role alternated among us groupmates each week, prompting each of us to take turns taking initiative and responsibility as we typed in and represented the team's final consensus. The suspense and ultimate reveal of whether we were correct as a team built a

sense of excitement for us. It felt like a fun game!

Afterwards, we went through everything again as a whole class with our faculty moderators—often our professors who initially taught us the concepts covered in the TBL assignment—to really consolidate any remaining questions or confusion. These iterations were made super easy by the clean and organized InteDashboard interface, and it was nice to see the InteDashboard response statistics on a group and individual level projected after all the groups were done. These statistics were also helpful in showing the staff where knowledge gaps remained across the whole class and on what concepts or topics we needed supplemental instruction. This helped instructors be extra intentional with their teaching and helped us students be thorough with our learning.

In terms of the content and learning flow involved, we received information a day or

two in advance—either through lectures or patient case examples—and then applied what we learned to new situations during the TBL session. This pace and model of learning is especially useful for the field of medicine, which is truly an applied science that requires constant learning on a daily basis with the necessity to consistently apply new knowledge to each subsequent clinical situation. Training with the TBL format has taught me to balance my “gut feeling” judgements and own critical thinking with the thoughts of others when approaching an issue. It has called upon me and my classmates to truly create a strong backing for why we decide on a diagnosis, treatment, or course of action (represented by answer choices) when we are working through each case. This has served me well when working on clinical teams in a clinical setting, weighing various factors and assessments into a single course of care for my patients.

At the end of each TBL cycle

with our groups, we gave ourselves and our groupmates valuable feedback about our performance and professionalism, which we could reflect on and use to better ourselves constantly. This experience allowed us to reflect on ourselves and also refine how we provide feedback at constructive criticism to our peers, an invaluable skill that will serve us well as future doctors in the professional world.

Now that I have begun clinical rotations, I feel that the learning process in this stage mimics that simulated during TBLs. We would be presented with information earlier in the week and were expected to learn it efficiently and effectively, allowing us to assess where we were at in the middle of the week before higher-stakes assessments—and more importantly, clinical applications during clerkships—came along. TBLs offered so many useful tools in one: assessing our own learning, providing a time to hear input from our classmates and professors that shaped how I



understood concepts and approached complex problems. I frequently think back upon how a classmate explained a concept during our group sessions or how we worked through a problem together when a similar one comes up again in clinic—and I'm better prepared to tackle it head on.

Our TBL groups stayed the same for a couple of months before we switched, allowing us time to bond, get to know each other, pick up each other's good habits, and form friendships along the way. This boosted rapport within our class, growing our respect for each other's fund of knowledge and hard work. This has led to the formation of lasting friendships that extend outside of the classroom into our personal lives and ultimately into the clinical setting as we work together on real-life medical teams. Looking back, one of the most meaningful aspects of TBL was how it helped foster a sense of mutual trust and accountability. Knowing that my group was counting on me to come prepared and contribute

created a strong sense of purpose and responsibility. It wasn't just about individual performance anymore—it was about showing up for each other. That shift in mindset has stayed with me, especially now on clinical rotations, where being a dependable team member truly impacts patient care. TBL taught me that medicine is not a solo journey—it's a collaborative effort, and when we support one another, everyone grows stronger, smarter, and more compassionate together.

Overall, the TBL experience has taught me to be a critical thinker, attentive listener, effective teacher, and flexible team player. It called on me to study hard so I could bring useful knowledge to my group each session and contribute to the team in a meaningful way. It also taught me to apply new knowledge learned that week to a realistic case, honing my critical thinking skills and pushing me to be the best student and team player I can be. Finally, my TBL experience has given me the best friends I could ever ask for! It

gave me the platform and opportunity to engage with my peers and get to know them throughout our collaboration. It was nice to see all the different personalities and what everyone brings to the table, and we grew to really care about each other. Together, we learned valuable lessons beyond the lecture and are better scholars and leaders because of it. For that, I am forever grateful.

# 08 To Prepare for the Future is to Learn from the Past

*Anonymous*

*Oakland University William Beaumont School of Medicine*

The ongoing challenge of fusing science and the art of human connection has influenced my academic path as a second-year medical student at Oakland University William Beaumont School of Medicine. Team-Based Learning (TBL) was presented to me early in my first year as a fundamental part of our curriculum. I did not fully understand at first why the sessions were purposefully structured, requiring us to study in advance, complete both individual and group tests, and spend hours discussing clinical situations with colleagues. But as time went on, I came to see that TBL was more than simply another teaching strategy; it was preparation for the actual medical field.

My learning was greatly improved by TBL, which made the classroom a lively,

interesting, and cooperative environment. I took an active role in my education and stopped being a passive consumer of knowledge. I was forced to think critically, support my arguments, and—above all—listen to and adjust to the opinions of others because of the mix of group discussions and individual accountability. This harmony between independence and interdependence reflected the kind of setting I anticipate working in as a future doctor, when providing patient care is almost always a team effort rather than an individual one.

The differential diagnosis of chest pain was the focus of one particularly noteworthy TBL session. The real learning started when we started the group application exercise, even though my team and I had already gone over the literature and finished

the individual readiness assurance test (iRAT). A case involving a 60-year-old man who had diaphoresis, shortness of breath, and chest pain was presented to us. The conversation heated up as we discussed the possible diagnoses—myocardial infarction, pulmonary embolism, and aortic dissection. Another team member contested my original diagnosis based on the ECG, pointing out important lab results I had missed.

I was impressed by our team's handling of the disagreement, not by the fact that I had overlooked anything. We took a moment, went over the matter once more, sought clarification, and used the facts to come to an agreement. In that instance, I enhanced not just my clinical reasoning skills but also my capacity to integrate information from many sources, handle disputes politely, and speak succinctly under duress. These are not only academic abilities; they are necessary for providing patients with safe and efficient treatment.

TBL taught me that communication, flexibility, and humility are necessary for success in the workplace, particularly in the medical field. Intelligence alone is insufficient. I developed my ability to listen intently, communicate ideas clearly, and participate without taking over organized team talks. I improved my emotional intelligence and leadership skills by practicing discussion facilitation and making sure the voices of the quieter participants were heard when I was in charge of sessions.

Another important element that surfaced was adaptability. Black-and-white responses were uncommon in TBL clinical scenarios. I developed my ability to effectively manage my time, deal with uncertainty, and change course as new information became available. These abilities are essential in hectic healthcare settings.

Furthermore, TBL assisted me in developing trust in myself as well as in my colleagues. Healthy interprofessional collaboration

began with the belief that others have value, even if their viewpoints are different from mine. I was able to argue for patient-centered decisions because I trusted my preparation and judgment, even when I was questioned.

The TBL experience was considerably improved with InteDashboard. Its software made group performance tracking visible, expedited readiness tests, and offered immediate feedback. InteDashboard contributed to preserving the intensity and purity of TBL throughout remote and hybrid sessions. Instant peer feedback, timer-based cases, and real-time voting were among the features that promoted participation and responsibility.

More significantly, I was able to pinpoint my areas of weakness as a team and as an individual thanks to InteDashboard's data. I looked over the item analysis after one session on acid-base disorders and saw that our group frequently overlooked questions on compensatory mechanisms.

We increased our review time as a result of this realization, reaffirming our shared accountability for education.

The interdisciplinary, team-based organization of contemporary healthcare is reflected in TBL. As aspiring doctors, we have to work together with social workers, nurses, pharmacists, and patients. TBL offered a secure environment for me to hone this teamwork, which improved my leadership and following skills.

I expect my success in clinical rotations and residency to be directly impacted by the abilities I developed via TBL. Effective communication and respect for one another are essential for every task, including code blue resuscitations, discharge planning, and patient handoffs. Students are prepared to handle these high-stakes situations with competence and confidence because to TBL's emphasis on collaborative decision-making and shared information.

Furthermore, the development of

critical thinking skills through TBL enables me to combat cognitive biases and handle diagnostic ambiguity. I now regularly weigh alternate diagnoses and support judgments with evidence-based reasoning rather than relying just on one hypothesis—habits that will make me a safer, more successful physician.

the value of team learning.

In addition to broadening my understanding of medicine, team-based learning has changed the way I approach education and leadership. It has taught me to be open to criticism, embrace ambiguity, and lean on teamwork. These abilities are essential in a field where people's lives are at stake.

I have no doubt that the habits I've formed through TBL will help me overcome obstacles, lead with empathy, and make a significant contribution to whatever team I join as I pursue a future in medicine. I am appreciative of the chance to think back on this trip and share my perspective because I want to encourage other kids to see the

# 09 Team Work Makes the Dream Work

*Anonymous*

*Creighton University School of Medicine - Phoenix*

I am a Vietnamese American third-year medical student aspiring to become an obstetrician/gynecologist.

Applying to medical school, I initially wanted to pursue a general surgery specialty; however, seeing my parents grow older and learning of the immeasurable sacrifices they have made as refugees from Vietnam and starting a family without a how-to manual, I became more invested in taking care of parents—especially first-time mothers. I further involved myself with this population and discovered major disparities in women's health in America, prompting me to delve into the gynecologic aspect of this specialty as well. My area of passion lies in addressing and eliminating environmental factors in maternal mortality through my scope of practice as a physician

in the future. Regardless of the field I decide to apply for at the end of my third year, I know that even with the greatest library of knowledge, I will only go as far as my future medical team does. Team-Based Learning was a core part of my first and second year didactic curriculum, and it has allowed me to get to know a special group of individuals in my class, problem solve in a team setting, and grow my critical thinking skills by learning from my peers' unique perspectives. Medicine heavily involves rapid, critical decision-making in a team setting, thus TBLs have been paramount in incorporating that aspect of my future career in the classroom setting prior to working with real patients.

The learning process in medical school is often compared to drinking water out of a



firehouse—however, I believe that being inside a pressure cooker is more accurate. Within this high pressure environment, my peers and I inevitably run into each other and get to know each other, sometimes just in passing. Thankfully, TBLs have allowed for a more controlled space for getting to know some of my peers whom I would otherwise have not gotten to know on such a personal level. Not only did we learn the nuances of each others' learning styles, we also found ourselves socializing and spending time de-stressing outside the classroom. One of my fondest memories during my second year with my TBL group was dressing in pink and red and passing out candy grams to each other on Valentine's day. It was a nostalgic way to reminisce on childhood traditions and showed that we care about each other as humans beyond the tasks at hand. For Christmas, we gathered together in our usual TBL room and recorded holiday song covers together while dressed head to toe in holiday paraphernalia. On our last TBL, we all dressed in black and wore

sunglasses to mourn the end of a memorable era (please see above photos). We still keep in touch to this day despite being assigned to different clinical rotation sites, which is a testament to the friendships we fostered under pressure together. My experiences with them also taught me how to balance professional and personal relationships with the same people, and reminded me that it's the people around you that give you joy.

In our curriculum specifically, we had Case-Based Learning sessions that were paired with TBLs the following day. One particular CBL-TBL that fostered my professional teamwork development was when we were in our last block, "Multisystem Diseases" of our didactic year. It was the integration of every organ system we had learned thus far, involving us to pull facts, remember medication interactions, and think of the patient as a whole to determine the best treatment steps. The case involved knowing the coagulation cascade and being

able to distinguish different coagulopathies from another, such as Von Willebrand Disease being an issue with platelet adhesion versus Hemophilia involving deficiencies of certain coagulation factors. As a team, we were placed in a pressure cooker to differentiate how deficiencies in different factors would yield distinct outcomes on bleeding time, prothrombin, and partial thrombin time. Luckily, I had been working with the same 7 people throughout the year in my TBL, and we became comfortable and unafraid to voice our opinions, be wrong, and learn from one another. I was unsure of Von Willebrand Disease affecting any of the bleeding or coagulation parameters, to which my teammates reassured me I was right in thinking that the numbers are all largely unaffected. We were also able to go through the coagulation cascade and quiz each other and understand the concepts rather than knowing discrete facts through rote memorization. Through this CBL-TBL, and all the ones throughout the past two years, I am grateful

to have been in a safe and nurturing learning environment and get to know my teammates not only on a professional, but also a friendship level. A major shout out to Sennett, Tana, Tanner, Conner, Danielle, Alex, and Megan. I miss them dearly and wish them all the best.

The technology aspect has greatly enhanced my TBL experience by creating a central area of focus for my team to reference and ensuring that we were all on the same page. In the Creighton lecture hall, there are 3 projectors and a TV screen at each team's table. While we are with our team, we can easily read the questions from the table without having to strain to see the projector. Additionally, we all have InteDashboard open on our laptops, which refreshes in real time to reflect the answer our delegated team leader selected on our behalf. This has immensely helped in ensuring that we select the right answer and can give immediate feedback prior to submitting the assessments. I particularly appreciate the ability to see

rationale for answers on this interface while in the presence of team members and academic faculty, allowing for immediate discussion and cuts the need to email regarding questions afterwards. Ultimately, the technology available in the classroom setting in conjunction with InteDashboard has immensely enhanced my learning experience by eliminating time barriers to communication with peers and faculty.

The robust teamwork skills I have honed through TBLs have facilitated camaraderie amongst my fellow peers, which is something that I am actively translating to my role as a medical student now in the clinical setting. Now that I have begun working on a team of residents and attending physicians on the internal medicine service in the hospital, I realized that many small conflicts and misunderstandings can be amended with prompt, respectful communication. TBLs have aided the development of my communication skills with others in a professional setting. I have

learned to confidently express myself despite the power dynamic, because ultimately, the goal is to provide the best patient care possible. During my didactic years in the classroom, I was initially more timid to raise my hand and express my thoughts and answer questions in the sea of my 120 classmates. However, with constant exposure to speaking up in the classroom setting, I am able to raise my hand—whether it be to ask a clarifying question or to respond to one from the facilitator—without hesitation or fear of being wrong. Repeatedly, my residents emphasized that now is the time to make mistakes, as that is how we learn and improve. I carry that sentiment and the toolbox of communication skills and teamwork I’ve collected through the TBL sessions throughout the past two years. At my previous shift, I noticed that a patient was on an “NPO” status, meaning that they were not to take anything by mouth. However, they had no future procedures scheduled, and the patient expressed to me that they were

hungry and thirsty. I promptly brought this up to the resident, to which I learned that they were NPO for aspiration risks, but since their mental status was rapidly improving, they could be transitioned to a regular diet. It is in speaking up and bringing pertinent information to the attention of the appropriate individuals that a team is able to function and act accordingly to carry out a common goal. Despite only being on this new team for a week, I already feel a solid sense of camaraderie amongst us, and we connect as individuals on our hobbies and experiences during downtime while also efficiently completing the tasks at hand. I owe a great amount of this successful team dynamic to the time I spent in TBLs. I hope to continue utilizing these communication and team skills in my future career as an OBGYN physician.

In the pursuit of a career in medicine, there is not a day that goes by that I am blessed and immensely grateful for the privilege to study and be in the

presence of professionals and talented peers, regardless of the arduous work and long hours of training. Namely, I am appreciative of the technological advancements available to me in the classroom to expedite the learning process while also cultivating a productive learning environment with others. TBLs have allowed me to think of the content I am learning on a deeper level and created opportunities to apply the knowledge I learn to tangible patient care. As an aspiring OBGYN, I recognize that every patient will have a team behind their care, and I can move forward enhancing my experience in team-based patient care given the skills I have developed through team-based learning.

# 10 TBL: How Education is Now Bridging the Gap to the Workforce

**Ayse Demir**

**Weill-Cornell Medicine - Qatar  
Medical program, Year 1**

The modern classroom can be likened to Michel Foucault's Panopticon. An environment of collective silence where the student is seated alone and under the observation of the teacher. While this early model may have sufficed in creating the hard-working laborers of the industrial age it falls short of the expectations set forth by the new era of technological innovation and global communication. Societies are no longer isolated bodies but instead strings woven interconnectedly to form the grand web—the world wide web. Thus, with the change of societal structures and interactions, we must expect a similar change in our education systems to adequately cater to the new

needs of the new world. The focus is no longer on the individual capacity of a single person to bring about a certain product but on the group, the team, and the department to do so. The emphasis has clearly shifted from "I" to "us", so why do educational systems and practices still order students to remain quietly in place when for the remainder of their lives they will constantly be moving in a bustling and evolving environment?

It is the recognition of this question that has brought about noticeable advancements in teaching practices, encouraging the adoption of research-proven approaches truly relevant to the needs of future workforces.

Among these advancements fueling this educational revolution is the development of Team-Based Learning (TBL) plans and strategies and their mass integration into an array of disciplines around the globe. As a first-year premedical student studying in Qatar, it was not until I attended my first Tuesday-TBL session for my Introduction to Biology I course that I finally understood the purpose of learning together. While my previous high school did integrate group projects and discussions, TBL was never a part of the active learning process and was often reserved for classroom activities. Although this approach was useful in boosting engagement it did not progress beyond the passive reiteration of ideas. Thus, in my first session everything came off as a bit overwhelming. Not only did I struggle to recall content I studied the day before but I found it incredibly difficult to express my disagreement towards wrong ideas shared by team members that were confident they were right. So TBL started off as a challenge—a

worthy one—that would soon end up drastically shaping not just me as a learner but an entire pre-medical class of 55 diverse individuals.

Many studies published over the years have boasted about the benefits of student-centered teaching methods on learning outcomes and academic success. From boosting performance in weaker students (Koles et al., 2010) to increasing knowledge retention over time (Faezi et al., 2018), TBL has managed to integrate itself into many forms of formal education—especially medical. The reason why it works almost flawlessly can be attributed to its careful execution and design: team-based learning is not simply ‘group work’ that occurs under the supervision of the lecturer. In our weekly TBL sessions at WCM-Q, students oftentimes are expected to read assigned pre-session papers (such as case studies) introducing the topic. This means that despite being a collaborative learning strategy, TBL incorporates self-study in its foundations. Once we step into

class, we immediately disperse into our pre-organized TBL Teams made up of around 5-6 people on average. The professor provides a quick overview of the reading material previously given and within a matter of minutes the discussions begin. Students answer questions revolving around the case study including its experimental design, supporting data and conclusions, and even theories related to its theoretical basis learned in lecture. Thus, these TBL sessions not only allow us to attain more knowledge but also enable us to apply the knowledge we already possess by drawing critical connections.

However, this discussion-stage is not as smooth as it sounds. Applying information and theories to scenarios we have only had minimal time to absorb can be difficult, especially if we have to then explain it to others! But that is just another strength of TBL. Often within a large course there are many students of varying levels. Some may find the content easy, while others not so much. So through its

naturally collaborative environment, TBL sessions are able to successfully bring together a diverse range of students and provide a comfortable space for problem-based peer learning to occur (Burgess et al., 2020). It provides an opportunity for students to identify areas in which they have conceptual 'blanks' and gain immediate feedback. For instance, as someone who has utilized InteDashboard's TBL platform, I can confidently say that the experience helped me in a multitude of ways. Not only did I refine my problem-solving skills by observing how my peers approached questions but I learned how to listen to every team member's solution with patience and the mindset to learn from their misconceptions along with them.

Yet, Team-Based Learning is not always used as a "lecture-aid" to reinforce what is already covered—it can also be a means of assessment. Every Sunday afternoon my classmates and I gather in front of classroom A105 to take our weekly biology



quiz. The first 18 minutes are in utter silence as everyone works through the 15 questions on their laptops individually.

Once the timer ends and the testing platform closes, that silence is broken. We sit in the same TBL Teams as our class TBL sessions and log into InteDashboard to start what is called the Group Quiz. As something that makes up a part of our final grade, the Group Quiz is like a second chance for students to work through the same questions with their fellow students and discuss what they found confusing. Personally, one of the biggest benefits of such an immediate group session following a formal assessment is that it allows us to address questions while they are still fresh instead of waiting to “one day” ask the professors or learning assistants.

Not to mention, since they are conducted under the same timed conditions, the Group Quizzes encourage efficient communication between team members and ensure that the

focus remains on the task at hand. The only differences between the TBL-based assessment and the independent one are in immediate feedback and design.

During the Group Quiz all members are able to view the quiz and team progress through their devices, ensuring that everyone has full access to the material and remains engaged and included. A single team member volunteers to adopt the Submitter role and is responsible for selecting the answers the group collectively agrees on. While independent quiz scores are not published until later, InteDashboard TBL quizzes let the group know when the answer they selected was right or wrong. Instead of contributing to passive learning by immediately revealing correct answers, the platform allows for second attempts, pushing teams to review their reasoning and think through the problem again, further identifying gaps in understanding.

The platform also keeps records

of these previously selected answers and presents data on the most missed questions for instructors to utilize in their future review and Q&A sessions. If any questions still remain unclear after the final activity they are voiced to the instructor for further clarification. This is an immensely advantageous aspect of the TBL model as it filters typical misconceptions and leaves behind enough time to extensively build on questions that would lead to a deeper understanding of course materials.

These helpful bonus skills and grade boosts are wonderful for medical students still working towards their M.D.; a good knowledge bank and question-solving approach can be great tools for those taking, for instance, the Medical College Admission Test (MCAT). However, that is not where TBL learning really stops. Within a span of a few years, the same students taking the MCAT will be taking patient histories and working on how to make diagnosis but not under the same

“test-taking conditions”. Instead, we will be sitting together as teams, brainstorming, often incredibly fast, to develop much needed solutions for unique problems bothering real people—not just for quiz questions! So, the skills we take with us in the process of taking our Group Quiz are not really specific to mini assessments like itself. Being capable of accepting our own errors, expressing confusion, seeking clarification, receiving feedback, pursuing understanding, and contributing to a mutual consensus are important to running a multitude of operations in an endless ocean of fields. And this is not just theoretical. The potential of Team-Based Learning is recognized for its ability to prepare students for the workforce. That is why TBL is considered a valuable addition to current medical education practices—such as through clinical problem-solving activities—as it accounts for the various skills students will have to develop before they enroll in their respective residency programs (Burgess et al., 2014).

This includes an array of skills vital for effective medical practice. For example, communication and leadership are essential in collaboration with fellow doctors as well as patients and their relatives. Critical thinking and problem-solving are key parts of developing adequate solutions to novel cases. And of course, adaptability, which provides individuals with the capacity to be flexible no matter the challenge.

Thus, through Team-Based Learning practices educational institutions can take a step further in preparing their students for their careers. Instead of focusing on the theory and academics that often make up our hard skills toolkit, using TBL can provide an added benefit of training future engineers, managers, and even doctors in their equally critical soft skills. The shift from Foucault's Panopticon model of isolated observation to collaborative engagement reflects the very transformation our society has undergone—from individual laborers to

interconnected teams navigating the complexities of our globalized world. My own journey from struggling to voice disagreement in those first TBL sessions to developing the patience to listen and learn from teammates demonstrates how digital TBL platforms like InteDashboard fundamentally reshape not just our academic understanding but our professional identities. So, as we progress deeper into an era of technological innovation and constant communication, it becomes increasingly clear that the skills fostered through TBL are not merely academic exercises but essential competencies for thriving in any professional environment. The ability to think critically under pressure, communicate effectively with diverse teammates, and adapt to novel challenges will determine success far beyond the classroom. Therefore, the integration of Team-Based Learning into formal education is not an enhancement to traditional educational practices but a bridge between academic preparation and

real-world application. Team-Based Learning is no longer just an activity but a step into an education reflective of workforce expectation.

# 11 How Team-Based Learning Shaped My Path to Becoming a Doctor

*Anonymous*

*Weill Cornell Medical College, Qatar*

I am an Iraqi student currently studying at Weill Cornell Medical College in Qatar. I have successfully completed a two year pre-medical program and am eagerly preparing to begin my third year in the upcoming fall semester. Throughout the past two years, Team-Based Learning (TBL) has been a crucial part in my development as a future medical student and doctor. This learning method has reshaped my approach to education and collaboration, making me better prepared to face challenges in my future career and equipping me with the tools necessary to thrive in a team environment.

For the past two years, TBLs on the Intedashboard platform have played a significant role in my learning, as TBL activities have

been scheduled at least bi-weekly, which I found extremely beneficial. The first TBL course I took was in my first year at university, it was a biology course led by Dr Kuei-Chiu Chen with a focus on evolution and inheritance. More recently, I finished a genetics course which was taught completely through TBLs, TRATs and IRATs through Intedashboard exclusively. This course was taught by Dr Diego Lorenzetti, who also delivers CPD-hosted workshops on Team-Based Learning (TBL) to promote lifelong learning for healthcare professionals. As an aspiring doctor, I wholeheartedly support this initiative as I have experienced first-hand the benefits of learning through TBLs.

Before being introduced to learning through TBLs, I predominantly relied on independent study, often unknowingly missing out on great collaborative opportunities. I used to believe that individual understanding was sufficient and was not convinced that the self-justification of answers that happens during team discussions was necessary; I even thought it might be a waste of time. However, after experiencing courses based entirely on team-based learning, I feel that my mindset towards teamwork has changed completely. My previously traditional approach to note-taking during lectures has evolved into a more engaged and proactive learning style, which I believe should either replace or at least coexist with straightforward lectures, allowing students to gain the maximum benefits in schools, universities and other educational settings.

The structured use of Intedashboard, specifically during our weekly Individual Readiness Assurance Tests (IRATs) and Team Readiness Assurance Tests

(TRATs), allowed me to keep up with the course steadily and effectively. I found that I would study for quizzes and exams differently, as I now realised that I had to understand the topic to a point where I could make others understand it too. This is because the inherent nature of TRATs and TBLs necessitated a deeper and more critical engagement with the course material, as we had to explain concepts to one another to arrive at the single best answer. Each question discussed within our team required me to articulate my thoughts clearly so that my peers could understand my logic and point of view, and at the same time, I also critically evaluated alternative perspectives. This shared learning experience helped me reach a profound understanding of complex topics.

Overall, the collaborative nature of TBLs not only significantly enriched my educational experience but also enhanced my interpersonal and teamwork skills. In the beginning, due to the unfamiliar style of learning, it was often difficult to reach a

consensus and unanimously agree on an answer, but over time, it became obvious that everyone on the team was learning to value the insights offered by all team members. In the beginning, it felt as if everyone was just waiting for their turn to speak rather than listening actively, but as the weeks went by, the whole team dynamic changed. TBL formats taught us how to reach mutual understanding efficiently, even under strict time constraints.

One of the first memories in university was during a TBL using Intedashboard, it was the first time I was exposed to this learning method, and I was not particularly thrilled about it. I remember doubting its effectiveness and wondering what the purpose of the activity was. That day, I learned a lesson I would never forget. I still remember the questions and the answer choices. I was the team reporter by default, and I remember reading the first question and thinking it was so easy and, therefore, in my head, there was no need for discussion.

I did not consult my team thoroughly and submitted the answer I felt confident about. After getting the answer wrong, I finally understood why the professor chose to conduct the activity this way. Since that day, I take other perspectives more seriously and truly try to understand and evaluate them deeply, even when I feel I am 100% sure of something. This was one of the most valuable skills I learned from TBL that I have applied to my life in general, in and out of the classroom.

One feature which has made my experience with TBLs smooth and very easy to follow is the seamless technology provided by Intedashboard. After using this platform for two years, I recommend it to all universities, schools and training environments. The interface allowed us to have interactive sessions with no technical difficulties. Whether it was images, questions, answer choices or even the reporter settings, everything was so easy to use. Our professor would often pause the TBL activity



before moving on to the next question, which made our course very easy to follow. The Intedashboard technology played a significant role in shaping our TBL learning experience, particularly through the flexible reporting system and the professor's ability to pause the activity and initiate a group discussion, allowing us to view the answers from other teams and collaborate in an interactive and engaging way.

Another aspect of TBLs that I applied to other courses is the ability to work in a group with people I was not previously acquainted with. By assigning us to random teams or based on mixed abilities, our professor ensured that we would be working to build new connections and understand the points of view of others that we had not necessarily interacted with previously. The TBL environment definitely facilitated this interaction and allowed us to learn how to create a wonderful team dynamic even with people we may not have worked with before. This personally helped

me with other courses like biochemistry and psychology, where we were assigned random groups and asked to work on a presentation together. Through the collaborative skills I gained during TBLs, I was able to work with the teams I was assigned to and was more than happy to collaborate with any of my peers, regardless of previous acquaintance.

### **Relevance to Future Career**

As an aspiring physician, effective teamwork, a skill I developed through TBL, is integral to my future success in a healthcare setting. Doctors continuously collaborate with colleagues, nurses, pharmacists, patients and their families, therefore, they must possess great communication skills. Learning through TBL has prepared me to navigate diverse perspectives in order to deal with complex clinical situations in a manner that is both empathetic and professional. The negotiation, critical discussion and open yet respectful communication skills that I fostered during TBL will be

instrumental when it comes to patient advocacy.

One clinical scenario which TBLs have prepared me for is dealing with disagreements regarding patient care plans, which often arise in medical practice. There are often disputes between patients and their families over what the best course of treatment may be, and this may be different from what the doctor proposes. Learning how to discuss and correct misconceptions is one skill I have been developing during TBLs, specifically in TRATs. In such scenarios, it is imperative that the patient feels heard and is simultaneously provided with all the details necessary in a way that is comprehensible by someone outside the medical profession. During team quizzes, I often find myself explaining concepts in unconventional yet effective ways, sometimes using analogies. I feel this would come in handy in the future when explaining complex medical conditions to patients with different educational backgrounds.

Leadership is another skill that TBL has helped me hone, which is necessary for my future career. There were several times during TBL when my team asked me to take over as reporter and trusted me to make the final decision when there was a disagreement on what the correct answer was. During situations like these, there is a lot of pressure to answer correctly as getting the answer wrong would impact the entire team; however, similar to clinical settings, a final decision has to be made and in a short period. This experience during TBL has made me a more deliberate and decisive person. Previously, I would always second-guess and change my answer several times, but now I feel that once I have heard all points of view and evaluated them critically, I am able to come up with a final decision confidently and take responsibility if it is the wrong one. This skill is essential for medicine among many other careers, which is why I believe TBL should be implemented in diverse courses, not specific to a certain field or career path.

The past two years with team-based learning have helped me develop the skills I need to hopefully become a capable physician with good communication and leadership skills. I hope that when I become a doctor, I can push to implement more TBL courses for medical students, as I know it would benefit them immensely both in their work and personal lives, as communication, negotiation, and listening skills are important in all aspects of life.

# 12 Working and Learning Together as One Team: How TBL Prepares Students for the Workforce

*Richmond Thaddeus Sy Fandino*

*Touro University California College of Osteopathic Medicine*

*DO / MPH Class of 2028*

I am Richmond Thaddeus Sy Fandino, an incoming second year osteopathic medical student at Touro University California College of Osteopathic Medicine (TUCOM). I am a dual degree DO / MPH Candidate, and I am part of TUCOM's Class of 2028. I am a first-generation student, and I have grown up in the medically underserved area of National City, in San Diego, California. I am a non-traditional student, graduating as part of the Class of 2018 at UC Riverside with a Bachelor of Science in Cell, Molecular, and Developmental Biology and afterwards taking a few gap years. I am also a Class of 2022 graduate of the Master of Science in Medical Health

Sciences (MSMHS) at Touro University California. It was during my time in the MSMHS program that I was first introduced and exposed to the Team-Based Learning (TBL) format. TBL has been a truly valuable aspect of my learning, both during my time as an MSMHS student and currently as a medical student at Touro University California College of Osteopathic Medicine.

A specific experience where TBL has profoundly improved my problem-solving, teamwork, and communication skills was during the time spent in Anatomy, which at Touro University California is part of the broader

Fundamentals of Osteopathic Medicine (FOM) course taken during the Fall Semester of first year. As challenging and rigorous as Anatomy already is, the complexities of working in a team setting were also surrounding and impacting my learning. Over time, these complexities had become refined and have positively contributed to my success as a medical student.

One of the skills being challenged when working in a TBL setting is finding commonalities and compromises amidst a group of people who have a diverse array of personalities, beliefs, mindsets, and ways about doing things. It was not easy at first, and there were honestly frequent moments of frustration and discord among us TBL members, especially when it came to deciding who would be dissecting what on the cadaver itself in Anatomy lab. I felt that one or two of my TBL members were somewhat hogging the learning to themselves, and the rest of us in the TBL were merely observing

and watching, and unable to actively participate. This was the first hurdle to achieving harmony and consensus in our TBL group. Over time, as more and more struggles arose, we had asked for the assistance and intervention of one of the course coordinators, and his advice was to take time outside of class to bond and get to know each other better. Looking back in retrospect, this was the best piece of advice we could have ever received, and it was the spark that propelled us to achieve greater understanding with each other and better teamwork as a whole.

We as a complete TBL group went out to dinner one time, and it was a great opportunity to talk with one another, hear each other's concerns and thoughts – without the pressing need or influence of other classmates or faculty, just us. We got really candid with each other, and we became much more open-minded in listening and understanding where each one is coming from, where we feel there may be disconnect, and

how we can agree to move forward. This was indeed a valuable learning experience at the start of our time together as a TBL team, because it exposed us early on to the reality that we will have disagreements and misunderstandings. However, if we are willing to talk with one another and listen with an open mind, then we can achieve unity and harmony in our team.

Learning from one another and teaching one another are skills with lifelong value and importance, especially in the field of medicine. A career in medicine calls for one to be a lifelong learner, with a growth mindset that is constantly adapting and adjusting as various situations and circumstances arise. In working together as a TBL team, utilizing and valuing each other's unique skillsets and firsthand experiences, we are able to think outside the box, and break down otherwise complex ideas and concepts into much more understandable and palatable pieces of valuable information. Especially in the context of Anatomy, we each have our own

strengths and weaknesses, and in working as a TBL team, rather than being ashamed or embarrassed of our weaknesses, we celebrate them and make them known, so as to elevate and encourage one another. Owing from our gained confidence and comfort with one another, especially in seeking help and support from one another, we began to spend time in library together as a TBL team, working on and through challenging anatomical radiographic and illustrated images, as part of practice for our group quizzes and bigger stakes exams which took place almost every other week. We would be meeting on Sundays and weekdays after class hours, talking with one another and working through challenging and difficult anatomical images, sharing our thoughts and knowledge and learning and bouncing ideas off one another. Communication is key to ensuring that we have addressed whatever difficulties, misunderstandings, and confusions that we may have both among ourselves and with the concepts we are learning, so

as to mitigate any other potentially harmful or detrimental consequences down the road.

Critical thinking, conflict resolution, and leadership skills are aspects as well of working in a TBL that have been further honed and developed over time. These skills have allowed me to achieve greater personal, academic, and professional development, both in the classroom and outside the classroom. Our critical thinking skills and abilities are put to the test in the TBL setting, as we are pressured by the time limits we face, especially when working in the Anatomy lab together wherein we only have a few hours to achieve our goals.

We also complete TBL group quizzes and activities together as a team on InteDashboard, and time remains an ever-important factor. Technology such as InteDashboard has supported and enhanced our TBL experience, because we are able to get instant gratification and verification of our current levels

of understanding, especially when we are taking the group quizzes (which are considered lower stakes) in preparation for the bigger stakes unit exams. Our unit exams consist of an individual and group portion, and I can attest that having had similar exercises before taking the unit exams, with the group quizzes, has prepared me well and has allowed me to achieve optimal exam scores, as well as achieve longer-term retention of related knowledge and concepts. In working together as a TBL team, identification of needed areas of improvement early on is able to take place organically. This provides for ample opportunities to ask for help and assistance, from instructors and fellow peers, thus allowing for solid and reliable memory formation and the learning process to take place naturally.

Conflict resolution is another invaluable skill and contribution that working together as a TBL team brings about. Conflict resolution is one of the real-world applications where TBL prepared skills are valuable and



of timely importance. For example, in the emergency department, where decisions are made often around life and death situations, working together as a team in an interdepartmental, multi-disciplinary capacity is critical, in order to advance what is best for the patient. Often, there will be disagreements and multiple perspectives on the best care plans and methods for patients. By having experiences dealing with conflict resolution early on, such as in the capacity prepared by the TBL setting, these disagreements, which would otherwise be prolonged, can be mitigated instead, and common ground can be attained by all involved. Similarly, in a less urgent but nonetheless important setting in an outpatient clinic, being able to navigate the different options for a patient's care plan and considering all relevant information and backgrounds is essential. Part of this consideration of all relevant information is seeking opinions and expertise of others who are part of the patient's care team, whether they are fellow

providers or other members of the allied health care team. Being able to work collaboratively and open-mindedly in the clinical setting is a succinct example of TBL-prepared skills in action.

The skills that I have utilized and have gained in working in a TBL team setting – centered around collaboration, active engagement, open communication, honesty, respect, learning from one another with an open mind, adapting as the situation calls for – these and much more are of vital importance to a career in medicine in the near future that I am striving for. It is in celebrating differences and individualities amidst being united with common goals that we can gain strength, encouragement, and inspiration to continue on. In leaning to each other for help, we are fostering interdependence while also building independence, allowing us to soon be able to practice and think on our own feet, especially when we are serving and caring for our patients. Being able to effectively and efficiently practice independently does not

negate or invalidate the necessity and importance of working together in a team – rather it only much further propels the value and essence of team work, especially in the field of medicine, wherein we must all work together for the greater good of the patients we care for and serve. I could not imagine my time and learning at TUCOM without TBL being the primary group learning mechanism in place. I have experienced and achieved immense growth through the TBL format in my pre-clinical years thus far and I am eager about all that is ahead in this dynamic and everchanging field of medicine. By working together with a diverse set of colleagues, I have become more empowered and equipped to tackle and face heads on the difficulties and challenges that lie ahead, all the while remaining attentive and focused in our mission as lifelong learners committed to serving and caring for our patients.

# 13 Classmate. Groupmate. Teammate. Friend.

*Anonymous*

*UC San Diego Division of Extended Studies*

Standing at my desk with only a few seconds left on the TRAT, I exclaimed to my group members over Zoom, “Guys! I really think we’re overthinking this. We should just go with our gut and choose A!” Our first TBL over the summer as Group 1 was something to remember. Rebecca, Joey, CJ, Christian, and I were in the fight of our lives once the timer appeared, and a wave of relief washed over us when we finally submitted the TRAT. It turned out that the answer wasn’t A, and we wrongly interpreted the ionic driving force equation. Even though we got the answer wrong, the group was in high spirits as if we successfully sailed away from the Cyclops infested island of Sicily. It wasn’t the first time we ran low on time and rushed a question. Admittedly it took a

while for us to manage our time more efficiently. But over the next 12 months, we learned to leverage each other's strengths, avoid going down rabbit holes, and get better at spotting where a friend made an error.

The University of California San Diego’s Pre-Med Program is designed to strengthen students’ academic and professional profiles in preparation for medical school. While we received MCAT tutoring and application assistance, the program is largely forward thinking and designed to prepare us for the first two years of medical school. We are taught a curriculum similar to that of UCSD’s first and second-year medical students by Mr. Steve Schneid, an outstanding instructor who also teaches at

the UCSD School of Medicine. From the moment I interviewed for the program, I remember Steve's enthusiasm and commitment to team-based learning. At the time, I had only a flimsy understanding of what TBL was or how it would help me. As a fresh graduate from UCSD, the only "teamwork" I experienced in a classroom environment was when I had a lab partner who wouldn't know what experiment we were doing. I often felt the best option to receive support or guidance was to scale a mountain in hopes of finding a stone inscribed with the proper redox reactions. I was wary about working in a group as whenever I heard the term "groupwork" I knew it entailed everyone being unprepared and doing the work last minute. My degree in neurobiology taught me plenty about how to correctly round significant figures and how not to miss the bus after 2 p.m. lecture, but it didn't teach me how to effectively work in a high stress academic team environment.

Team-Based Learning has

strengthened my ability to work in a team to accomplish a common goal. The approach of taking the IRAT and then the TRAT mirrors how most real world problems are. For example, if you run into an issue in the cell culture room, it's best if you try and resolve it yourself first. Because if all you did was forget to turn on the vacuum for suction, your ears will burn red when the lab manager had to rush over for nothing. But if there's a flaw in your experimental design, you should probably prepare some possible solutions before announcing at the lab meeting that your data looks wonky. Coming to a problem with a foundation of understanding, giving that problem your best try, and then presenting the problem/your lapse in understanding to a larger audience is a skill that we often use but are rarely trained to do. My baby brother Diego handing me the cookie jar after a frustrating few seconds of trying to open it is no different from me with the wonky data. The only difference is that I am trained on how to communicate my

problem so others can understand and help, while my brother throws a fit when I don't immediately get what's wrong. TBL facilitates that kind of training through InteDashboard. After we tackle a set of IRAT problems from Mr. Schneid, each group member will have a unique angle or point of confusion, mostly on the same problems while other times not. This unique dynamic is shown during the TRAT, a question that may have stumped me may have been clear to everyone else or we might be split between two choices. The most fun questions are the ones where it's a 3:2 divide or a 1:4 split with one determined person. The clock drives efficient discourse between the group, the points drive focus and determination, and the want to not let your teammates down drives respectful collaboration. TBL is like a piece of equipment in the gym, it trains your ability to work as part of a team.

"Dang, that assignment took me all night. How did it go for you?" Sebastian asked on our way to

physics. I turned to him, horrified, and exclaimed, "Bro!" I thought the problem set was due that night at 11:59 p.m. and not the night before. Staying on top of life is something that we all have to face, some are rockstars at handling it while others aren't. Being prepared for an experiment or a quiz was one thing when only my grade was at stake. But being prepared for an IRAT/TRAT was another, since my groupmates' grades were also dependent on my readiness. Beyond wanting to do well for myself, I also wanted to understand more so I could help my teammates. There's something about knowing your understanding will be tested in front of others that adds a deeper sense of responsibility to study and time manage. You don't want to let your team down. Coming from a family of athletes, I've seen how much harder people are willing to work when they know their team is counting on them. Teammates push each other in training and create a strong sense of responsibility to their role on the team. I've felt the same push in

TBL. I'm driven to prepare not just for myself, but also for the group. Working in a team makes me more accountable, deepens my understanding through discussion, and ultimately improves all aspects of how I study independently and show up in the classroom.

Learning to use other people's strengths and recognizing the type of team member you need to be is often attributed to personality. But adapting to what a team needs is a skill that anyone can develop. Whether it's someone that starts the conversation, manages time, umpires the discussion, or pushes the group to move forward, each role is essential to a successful TBL group. Knowing how to use your strengths and how to rely on others is critical in any team setting and is arguably the most important part of working well in a group. In real-world situations, like responding to a cardiac arrest, there are many moving parts. Nurses are administering drugs, physicians are giving orders, pharmacists are ensuring

proper dosage and avoiding harmful drug-drug interactions, EMTs are performing chest compressions and ventilation, and volunteers are consoling the family. Much like Group 1 coming across one of Mr. Schneid's problems; a medical team must work efficiently, with each member contributing their expertise. The success of any team depends on each role being leveraged effectively, not just based on personality, but on the needs of the moment. In healthcare, a pharmacist must step in if a physician orders a harmful dosage, just as Rebecca might correct my mistake about the spinothalamic-spinal lemniscus pathway during a TRAT. A team is made of checks and balances where one part is no larger than the other and the whole is greater than the sum of its parts. A nurse pushing medication is just as essential as the physician creating the care plan, removing either and the whole system falls apart. TBL trains us to identify what the team needs and how best to contribute. For example, Rebecca

is great at explaining why certain options are wrong, while Joey focuses on explaining why the correct answer is right. Christian keeps the group on pace, and CJ often finds holes in our reasoning. I'm best at starting and facilitating discussions, though I also love to explain the mechanisms behind the correct answer. The exercised skills of collaboration and adaptation during TBL will directly translate to any professional environment, especially those that are rooted in multidisciplinary teamwork like medicine.

As a student who has learned through TBL I've developed qualities that will benefit me in both daily life and in my career as a medical professional. The skills of collaboration, problem solving, and communication that were strengthened during TBL will help me work effectively with researchers, healthcare professionals, and even my roommates. I've become a more thoughtful team player and a stronger student thanks to the many weeks of discussion and critical thinking I've shared with

Group 1. Starting in June 2024 and continuing through June 2025, Group 1 began as classmates in Mr. Schneid's Medical Physiology course. We then became groupmates when we found out that we were all assigned to Group 1 for TBL. We functioned as teammates like players on a soccer team, and now as the program comes to a close, we've become lifelong friends.



# 14 How TBL Prepares Medical Students for the Workforce

*Anonymous*

*Oakland University William Beaumont School of Medicine*

I am a second-year medical student at Oakland University William Beaumont School of Medicine in Rochester, MI. As part of our medical curriculum, we have completed many Team-Based Learning (TBL) activities. In fact, I was first introduced to TBL at my "first look" event for medical school several months before I even began my studies. TBL activities are such an integral part of our learning process that they taught us how they worked even before we became students. Unlike our regular TBL, which is graded, this was a much more relaxed and fun experience to get used to understanding the process. It helped show, right from the beginning, how important it is to collaborate and work together in the field of medicine, and TBL activities are one way to do this in our

preclinical studies. TBL has had a significant impact on my learning experiences. They play a role in almost every course I have taken for the past two years of medical school, including anatomy, biochemistry, cardiology, neurology, psychology, evidence-based medicine, and more. They greatly increased engagement by encouraging us to be actively involved in class discussions and learning. I was no longer just answering questions; I was discussing what my thoughts were and what my classmates' thoughts were. This elaboration enabled me to grow my understanding of topics and consider ideas I did not think of on my own. This allowed for a deeper understanding of particularly difficult topics, which was enhanced by the presence of physicians during these sessions

to discuss not only the correct answer but also the incorrect answer and the reasoning behind each. The team aspect made it so that there was not only collaboration in answering questions, but it also made for better accountability. Knowing that my teammates were relying on me helped motivate me to study and prepare well for the TBL activities. Collaborating is a major part of medicine, so the TBL provided a great way to work with my fellow peers as well as the staff and physicians who came to support the TBL.

Through TBL, I have developed many skills. One of the biggest ones has been communication. It is easy to answer a question on your own and understand why you picked that; however, it is not as easy to explain your thought process. When selecting different answers and discussing them with my team, it became imperative to have well-developed communication skills to not only explain myself but also to be respectful of others. When arguing over a question and what the right answer is

when two people disagree, it can be very easy to slip into anger or frustration. It is key for my academic success and my strength as a doctor to not slip into bad habits such as these emotions. Developing these communication skills in a more low-stakes environment than in the hospital is imperative for our work as future physicians, where we will undoubtedly be questioned and judged for our thoughts and plans. In addition to communication, we have the ability to improve our critical thinking and problem-solving skills. Especially for the case-based portions in the applications, we were faced with many challenging clinical scenarios that required in-depth research, discussion, and problem-solving. Again, this ability to think critically and thoroughly in more low-stakes situations than for a real-life patient enhanced our learning and understanding of the concepts and allowed us to build confidence in our knowledge. Another skill that was especially important to me was leadership. I am particularly afraid to speak

up in class and share my thoughts, so the small groups that we had for TBL were a great way to make me more comfortable speaking up and building confidence. I felt somewhat good about my ability to speak my own thoughts about topics when I felt I understood the content, but it was also good to get encouragement from other students when I was not as confident. I took on that same leadership role of encouraging others to participate when I felt I needed to take a step back and allow others to share. This made the TBL another way to build confidence in myself and build up confidence in others. A final skill that was built with TBL was that of adaptability. With the application exercises, especially, where we could have been wrong and then had to answer something on the same case, it was important to switch our thought process and pivot. This simulates what will happen in real life when a presumed diagnosis is wrong, and we need to develop a new plan. All of these skills are especially

important for a future physician, and it is great that we have gotten so much experience through the TBLs in our preclinical years.

As previously mentioned, TBL played a role in almost every class I have taken throughout my time in medical school. A specific example is from our Behavioral Medicine and Psychopathology course. Our TBL activity then was focused on drugs of abuse, which included opioids, marijuana, GHB, LSD, nicotine, ethanol, PCP, inhalants, cocaine, methamphetamine, and ecstasy. All of these are highly relevant in today's society and are a crucial part of acting as a physician in today's society. This is also an exceptionally complex topic, as we are required to understand the mechanism of action of these drugs, when and by whom they are used, and the side effects or symptoms of withdrawal and overdose of each. In the application exercises, because this is a part of a psychology course, we were presented with patient cases that blurred the

lines between psychiatric illnesses and substance-induced symptoms, which is a common occurrence in real life. We needed to analyze the clinical presentation with our knowledge in order to distinguish between, for example, a primary anxiety disorder or stimulant-induced anxiety. This practice allowed for the deepening of our diagnostic reasoning skills both internally and in collaboration.

InteDashboard has supported the TBL experience in many ways. When we learned about TBL at orientation, we used scratch-off cards, which worked, but once we were actual students, we always used InteDashboard. Having this software on the computer made it much easier for us to do the individual and team readiness assurance tests (iRAT and tRAT, respectively). Having us be able to work on our own devices made it easy to all read the questions and any associated images without having to all look over one piece of paper. In addition to making it easy to

read, InteDashboard made the overall flow of the process easy. We were able to get immediate feedback on results and easily move on to new parts. I am also a proponent of saving paper in our digital age, so it is nice that InteDashboard provides that, too.

As previously stated, I am in medical school, but more specifically, I am hoping to go into the field of orthopedic surgery. For this specific career, TBL helps with leadership and confidence. With such intense surgeries, someone needs to be strong and confident in their decision-making, which is something I have struggled with in the past. It is also a very intense specialty that requires intense dedication and time, which TBL has prepared me for by ensuring I am prepared to assist and lead my team each and every time we have met. Lastly, TBL has helped prepare me for more uncertainty. We like things to have one correct answer and be black and white, but this is never really the case in real life, and in our TBL activities, they

have also made that the case with multiple correct answers for multiple choice or with fill-in responses that can have multiple correct answers. Orthopedic cases aren't always clear-cut, with things such as implant choices, surgical approach, and rehab plans varying between patients, and even sometimes within one patient. Having the ability to think through and understand different possibilities and recognize that there isn't always one right answer, and often, especially in medicine, things lie in the gray zone.

Real-world applications were used in every single TBL activity we had. For example, when we had TBL sessions for an organ system course, after doing the iRAT and tRAT, the application questions would often be cases. These cases would require us to think through differential diagnoses based on a case presentation or the next steps for treatment. While I have not yet begun my rotations, I have shadowed several times, and the ability to think through potential problems and how to solve them

has served me well. In addition to helping me think through and provide solutions to presented medical problems, TBL has also helped me in my confidence and leadership, as previously mentioned. In one of my times volunteering, I was asked to present a patient history to an attending physician, and the ability to support my reasoning that I developed from explaining my answers in TBL assessments helped me feel like I could accurately present the case.

TBL has been a big part of my academic career in medical school, and it has had a very beneficial impact on me. Becoming a doctor is a significant undertaking and requires a lot from a person academically, as well as learning how to be a professional that people look up to. TBL has enabled me to grow into my knowledge of medical content in a low-stakes yet effective way. I have learned to collaborate with almost every person in my entire 125-person class through the rotation of groups every semester and the 5-10 TBL activities that occurred

each semester. TBL has allowed me to move beyond the idea that I have to pick the correct answer to being able to support my reasoning and make sure others understand that reasoning, too. Overall, TBL has empowered me to become more confident in my professional abilities, particularly in areas such as leadership, communication, and complex problem-solving. TBL has helped me connect my preclinical education to real-world applications for what will shape me as a physician.

# 15 How TBL Prepares Pharmacy Students for the Workforce

*Anonymous  
University of Bradford*

I am studying pharmacy and am in my second year. I was introduced to TBL through my interview applicant open day. For the TBL learning experience I was introduced to other students applying for the same course and we were worked in groups of 6, helping each other understand the concepts, collaborating, demonstrating teamwork and this is a fun way of learning the information and working effectively with others. This taster exercise demonstrated how TBL is performed here at Bradford university. It was an enjoyable and wonderful experience working with others from diverse backgrounds. Once I got accepted to study at Bradford, it was an incredible feeling, and I decided to study

here. Now, I am in year 2 and using TBL in the pharmacy course. It has been helpful, effective and interesting. After every unit we learn via TBL process, we are then given peer assessments to do for our teammates, and this helps us to present integrity and provide feedback to help our colleagues improve their weaknesses. We also use TBL, inteDashboard for readiness assurance processes (RAPs) and individual and team readiness assurance tests (iRATs, tRATs) to test our knowledge individually and in our teams before being taught the unit as well. Currently, the use of TBL in our sessions for the units we are being assessed on is useful and enables positive engagement.



Currently, using TBL for my course is beneficial and has benefits such as stronger active knowledge retention on the units taught and being studied on, developed communication and teamwork skills and peer support. Peer support being available is another benefit as it helps us to do and understand the learning materials more easily. Through TBL, communication is developed, allowing for a more extensive understanding of the concepts being taught and assessed in the units. Skills that I have developed are problem solving, collaboration, teamwork, leadership, confidence, and communication. I developed collaboration and teamwork through TBL as I worked with others on tasks and scenarios given in the application exercises (AEs). I developed leadership through TBL too as I volunteered on behalf of my team to speak up, which enabled me to gain confidence and explain my understanding of the concepts to the staff, allowing me to receive feedback and any uncovered missed points. Use of TBL has

enabled me to develop problem solving, this is important in pharmacy because it helps me to make an decision on what I think the answer or lettered option is and how I would justify it, through a statement or rationale as we currently do within our AEs in our TBL teams in my course. Currently, as I have been able to develop these skills and from my perspective TBL is a useful beneficial resource as it allows students like me to develop skills that can help and positively impact them in the workplace in the future (Jabbar et al., 2017).

One incidence is through my past work experience and WBL placements is that I managed to gain experience working with the team in pharmacies, this enabled me to develop my communication and confidence as I would ask questions, introduce myself and talk to customers as for advice or for over the counter medicine recommendations. I also developed problem solving by helping provide recommendations of medicines

the customer could buy over the counter (OTC). I developed collaboration with colleagues while working in a team. One more skill I was able to develop through these placements is multitasking as I was serving customers, giving away prescriptions, sorting out dosette boxes for patients, and dispensing as well. I can develop these skills due to the use of TBL via AEs, peer evaluation, iRATs and tRATs and work-based learning placements (WBL).

Another incidence by TBL that led to an improvement in skill development is interprofessional learning (IPL) because this involved us pharmacy students working with students from other professions such as biomedical and physiotherapy allowing us to develop skills further. From interprofessional learning workshops, communication, collaboration, and problem solving are developed. The use of TBL by working in teams in my course allowed me to communicate with others more effectively.

Another incidence would be OSCEs (now known as clinical assessment briefing). Through the OSCEs I have managed to apply and develop the skills I gained in TBL, which allowed me to excel further leading to positive engagement with teaching staff and examiners. In the mock and real OSCE exams I applied the TBL transferable skills to perform the activities as I developed the skills, enabling me to perform well and effectively in the OSCE exam allowing me to gain confidence when asking questions or explaining instructions even visually to a simulated patient. The mock OSCE allowed me to gain immediate feedback and enabled me to recognize the skills I should improve, and this helped me in the real OSCE allowing me to work more effectively providing better recommendations, improving communication, improved use of BNF electronically and a greater confidence level.

Technology is helpful, particularly inteDashboard as it

helps to make TBL more effective and efficient. InteDashboard contains iRATs, tRATs, peer evaluations and AEs performed in our assigned TBL teams. iRATs performed individually and then for the tRATs the same set of questions are answered in our teams with one of us being the team reporter, inputting the team's answers. Technology is a wonderful use for TBL as for iRATs and tRATs, immediate feedback is provided at the end. This is good because I can then learn and understand the concepts in further detail that were marked as incorrect in the iRATs and tRATs (Verma, 2023). InteDashboard is a helpful, interactive, and effective technology that is used for my TBL experience. Through use of intedashboard I developed skills being communication by working with others, comparing answers, and understanding concepts of the learning materials given in the tRATs, teamwork by working with others in our teams and problem solving as we worked together to narrow the options down as to what the answer

could be. Problem solving has been developed through AEs, iRATs, tRATs, peer evaluations, and workshops. A benefit of intedashboard usage as mentioned previously is immediate feedback. This is repeated because it is an effective benefit as feedback is received automatically which makes it easier for the staff by reducing 'grading time' and time effective too as more time can be spent explaining concepts to students who struggle or achieved incorrect answers (Verma, 2023). Using technology has supported my TBL experience as it enables me to focus more on sessions because it is more interactive than sitting in a lecture hall passively making notes, therefore that is another benefit which has helped me to actively engage in applications, workshops and tRATs.

Through TBL, as mentioned above, skills developed also include empathy, organization, and multitasking. The other skills previously mentioned are problem solving, leadership, team

work, and collaboration, communication, and confidence building. All these skills mentioned are important when working in a pharmacy as you are responsible for the patients and customers care, therefore empathy and leadership are great skills to develop. Multitasking and organisation are performed in pharmacies, whether hospital or community work settings, making them necessary to develop. The skills have been developed through TBL, and developing skills is important as it will help me in my future career. One example that relates to career development is through TBL and the WBL placements I have had allocated by university have allowed me to improve and develop the skills further allowing me to gain knowledge and learn from mistakes in work settings. I believe gaining knowledge is an important thing to do because it allows me to gain a better understanding of the workforce and how operations in the pharmacy work, in my instance, and what to expect and what to know. From past work experience, I noticed

the pharmacy staff presenting the skills I have continued to develop. As mentioned, this shows these skills are necessary and that improving them is beneficial because it enables you to become well rounded, gaining knowledge often.

Through TBL, confidence is developed by acting as a team reporter speaking on behalf of the team for AEs. The other skills have been developed through TBL too by working with teammates, sharing answers and resources, helping each other to achieve problem solving, collaboration, and communication.

Real world application examples that present TBL prepared skills that are valuable are medical students, they use TBL, and a study shows that the use of TBL methodology in their teaching strategy is useful and effective because it is stated 'improved retention and better understanding of the materials taught in TBL rather than traditional lectures' are achieved as a result of TBL education

(foundation, 2024), (Koles et al., 2010). Other examples of real-world applications include the school of pharmacy as students work together to problem solving and think critically about the case scenarios and how to respond to them. Healthcare is another real-world application that values TBL prepared skills as TBL trained nursing and medical students work together in teams to diagnose and figure out treatment plans for the patient presenting collaborative patient care. Therefore 3 examples of real-world application that value TBL prepared skills are medical schools, pharmacy school and nursing relating to healthcare these all value TBL skills therefore the use of TBL strategy to learn as a student helps the students to then thrive further in their future careers whether a doctor, nurse, pharmacy assistant, pharmacist etc.

From my 2 years of studying pharmacy so far via TBL methodology, this strategy has been highly effective and helpful for me as I have been able to develop skills that are necessary

in my future career involving confidence, communication and collaboration. The use of TBL has allowed me to grow mentally and improve my mindset, allowing me to step out of my comfort zone and be independent. To summarise TBL is a good, effective education strategy that should be used as it enables students like me to develop skills that can help them thrive later in life. TBL allows for improved knowledge retention, better understanding of the material, improved communication with peers and effective overall.

# 16 How TBL Prepares Law Students for the Workforce

*Anonymous*

*University of North Dakota School of Law*

I am a first-year law student at the University of North Dakota School of Law. This summer, I will be a rising second-year student. I was first introduced to Team-Based Learning (TBL) through my Lawyering Skills course sequence, taught by Professor Kimberly Dasse, during my first year of law school. Professor Dasse structured both Lawyering Skills I and II around the TBL model, which emphasized preparation, collaboration, and in-class application. Although I had previously worked in professional legal settings, it was this classroom experience that first revealed how structured team-based environments could mirror the dynamics of legal practice. Professor Dasse's approach made it clear from day one that we would not simply be learning legal doctrine, but we

would also be learning how to think, reason, and communicate like lawyers.

TBL has had a profound impact on my learning experience. Rather than passively absorbing content, I was actively engaged from the outset. In Lawyering Skills I, each unit began with an individual Readiness Assurance Quiz (iRAQ) completed on InteDashboard. This ensured that I arrived in class prepared and accountable for the assigned materials. What made the process transformative was what followed. We retook the quiz as a group (gRAQ), followed by an inclass debrief and collaborative exercises. This approach transformed the classroom into a collaborative laboratory, where knowledge was constructed through dialogue, disagreement, and synthesis. I became more

invested in the content, more curious, and more willing to challenge ideas, not merely to earn a grade, but to reach collective understanding.

One of the clearest areas where TBL impacted me was in developing collaboration and teamwork. For instance, in the first unit of Lawyering Skills I, our team tackled the hierarchy of legal authority through a Socratic-based exercise. We disagreed about whether a state appellate court decision outweighed a federal district court ruling, prompting an impromptu mini-debate. We reviewed primary sources, applied jurisdictional logic, and ultimately reached consensus. That process mirrored real-world legal problem-solving, where collaboration, legal reasoning, and respect for differing viewpoints are essential. I learned to listen more attentively, articulate my reasoning with clarity, and even let go of my position when a teammate's interpretation proved stronger.

TBL also sharpened my critical thinking and problem-solving skills. Unit 3 introduced us to the CREAC paradigm (Conclusion, Rule, Explanation, Application, Conclusion) and challenged us to synthesize rules from multiple cases. In one instance, we analyzed three opinions to extract a rule about when a partnership exists under North Dakota law. As a group, we wrestled with conflicting dicta and narrow holdings. By debating distinctions and analogizing facts, we identified the core rule and supported it with explanatory parentheticals. That skill proved essential when I drafted a closed-universe memo on partnership formation later in the semester. I credit the TBL approach for preparing me to handle legal ambiguity, a daily reality in practice. Communication was another skill I developed significantly. In Lawyering Skills II, we advanced to persuasive legal writing. Unit 2 required us to develop a persuasive theme for a trial motion. We individually read the problem and drafted potential themes, then brought



our ideas to the group. One teammate's theme emphasized procedural unfairness; mine focused on the unreliability of the opposing party's evidence. Through discussion, we fused both ideas into a stronger, unified theme. This collaborative communication process mirrored real-world case strategy meetings and reinforced the importance of negotiation, precision, and framing in professional advocacy.

In addition, TBL cultivated my leadership and adaptability. Lawyering Skills II placed greater emphasis on real-world simulations. During Unit 6, we worked on editing a persuasive brief. I informally took the lead in our group, coordinating review rounds, assigning sections, and facilitating peer feedback. One teammate initially resisted changes to her section. Instead of pressing, I explained how clarity and tone could impact judicial perception and offered to swap feedback. By the end of the session, we had co-edited each other's work and improved the overall quality. This taught me

how to lead with empathy, adapt to team dynamics, and value emotional intelligence in group settings, skills that are indispensable in law firms, courtrooms, and corporate legal departments.

TBL also reinforced how essential time management is to legal collaboration. Our teams operated under strict in-class time limits for problem-solving, often mirroring real-world conditions. Learning how to delegate tasks, prioritize essential points, and synthesize information efficiently trained me to think and act with urgency, without sacrificing precision. This was especially evident during peer review exercises, where I learned to provide timely yet constructive feedback. In practice, where judges, clients, and colleagues rely on dependable deadlines, these habits are vital.

Technology, particularly InteDashboard, played a central role in enhancing the TBL experience. It provided immediate feedback on quizzes,

allowing us to pinpoint weaknesses and revisit key concepts before moving into application. InteDashboard also fostered accountability; knowing that both my individual and team performance would be visible motivated me to prepare thoroughly. The visual analytics, answer justifications, and time tracking made our group discussions more focused and data-driven, a welcome contrast to vague post-test reviews in traditional formats. In many ways, InteDashboard functioned like a performance tool, similar to project management software or legal analytics platforms used in practice. This integration of digital tools aligns with the pedagogical framework described by Michaelsen, Knight, and Fink, who emphasize that TBL succeeds when it combines structured team interactions with mechanisms for accountability and immediate feedback (Michaelsen, Larry K., Arletta B. Knight, and L. Dee Fink. *Team-Based Learning: A Transformative Use of Small Groups in College Teaching*. Stylus Publishing, 2004).

TBL's integration with technology like InteDashboard also helped reinforce a growth mindset. Seeing immediate feedback on quizzes allowed our team to revisit answers, revise our thinking, and, most importantly, discuss why we answered incorrectly. Over time, these debriefs built confidence in confronting complex material rather than avoiding it. For example, during Unit 4 on organizing arguments, our group initially struggled with distinguishing rule-based from analogical reasoning. We used InteDashboard's missed questions to guide a productive team conversation, resulting in clearer mental models and sharper outlines when writing application sections. That experience made me realize how reflective error analysis, rarely emphasized in traditional lecture models, could become a powerful learning tool when paired with TBL methods and technology. This approach mirrors real-life legal practice, where attorneys often conduct post-mortem reviews on briefs, motions, and hearings to refine

strategies and improve future outcomes.

The skills I have gained through TBL are not just academic; they are directly transferable to my legal career. For example, I recently observed a courtroom hearing while shadowing a public defender. The attorney had to rapidly adjust his strategy based on new facts, collaborate with a co-counsel, and make a persuasive argument under pressure. Each of those skills, adaptability, teamwork, persuasive framing, and clarity in communication, mirrored what I practiced in Lawyering Skills I and II. Additionally, in applying for legal internships, I have spoken about TBL in interviews, noting how it prepared me to work effectively in teams, solve problems quickly, and communicate ideas under time constraints.

TBL also sharpened my awareness of professional accountability. In legal work, deadlines are tight, stakes are high, and people depend on one another to deliver. The team

model simulated that dynamic. There were times when a teammate arrived unprepared, and our collective score suffered. Rather than blame, we adapted by building in extra preparation check-ins. Other times, I was the one who needed support, and my group offered reminders or quick recaps. This shared responsibility strengthened my sense of ownership, not only for my work, but also for the team's performance. In the legal field, where documents are often co-authored and courtroom success relies on team strategy, accountability is not optional; it is essential.

Beyond the legal field, TBL-prepared skills are valuable in a wide range of professional environments. In healthcare, for example, treatment plans often emerge from team consultations where different specialists must align on a unified approach. In engineering and software development, teams must debug, prototype, and iterate through collaborative sprints. In nonprofit management, strategic decisions must balance policy goals, legal

compliance, and community needs, often requiring input from diverse team members. In each of these fields, effective teamwork and shared leadership are prerequisites for success. TBL mirrors this reality by ensuring that everyone at the table is engaged, contributing, and collectively responsible for outcomes.

Reflecting on my academic journey, I now see how TBL has shaped both my mindset and my methods. I no longer see learning as a solo endeavor or grades as endpoints. Instead, I see challenges as collaborative opportunities, disagreements as gateways to deeper understanding, and preparation as a sign of respect for my team and my profession. TBL has given me the tools to thrive not only in school, but also in any professional setting where communication, clarity, and collaboration matter. It has taught me that leadership is not about controlling outcomes; it is about guiding a group toward the best one.

In summary, TBL has been essential in preparing me for the workforce. Through structured collaboration, critical thinking, and tools like InteDashboard, I have gained not only legal knowledge but also the soft skills that make it valuable. Whether in a courtroom, boardroom, or team meeting, I now carry greater confidence in my ability to contribute, lead, and adapt. TBL did not simply make me a better student; it shaped me into a better professional. I feel prepared to succeed in law school, legal practice, and any professional community. Whether drafting a motion, collaborating on policy, or advising a client, the skills honed through TBL, preparation, communication, flexibility, and leadership, remain central to how I work. More than a teaching method, TBL is a mindset rooted in collaboration, reflection, and shared excellence.





# Thank You for Reading the Student Voices in TBL Essay Collection!

*These stories are a powerful reminder of how Team-Based Learning transforms education and prepares students for the workforce.*

**Want to share your TBL journey or involve your students in the future competitions?**

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