Perspective: **Guidelines for Reporting Team-Based Learning Activities in the Medical and Health Sciences Education Literature**

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Abstract

Medical and health sciences educators are increasingly employing team-based learning (TBL) in their teaching activities. TBL is a comprehensive strategy for developing and using self-managed learning teams that has created a fertile area for medical education scholarship. However, because this method can be implemented in a variety of ways, published reports about TBL may be difficult to understand, critique, replicate, or compare unless authors fully describe their interventions.

The authors of this article offer a conceptual model and propose a set of guidelines for standardizing the way that the results of TBL implementations are reported and critiqued. They identify and articulate the seven core design elements that underlie the TBL method and relate them to educational principles that maximize student engagement and learning within teams. The guidelines underscore important principles relevant to many forms of small-group learning. The authors suggest that following these guidelines when writing articles about TBL implementations should help standardize descriptive information in the medical and health sciences education literature about the essential aspects of TBL activities and allow authors and reviewers to successfully replicate TBL implementations and draw meaningful conclusions about observed outcomes.

An increasing number of medical and health sciences educators are exploring team-based learning (TBL, formerly known as *team learning*), a comprehensive strategy for developing and using self-managed learning teams. TBL was developed in the late 1970s as a means of maintaining a focus on problem solving and concept applications in business education, where rapidly rising enrollments resulted in more than 100 students per classroom. Since 1999, TBL has attracted interest in the health sciences because it is consistent with Liaison Committee on Medical Education accreditation standards that call for teaching strategies that "develop [learners'] ability to use principles and skills wisely in solving problems of health and disease"[1] and because it helps address a growing need to cultivate learners' leadership, communication, and teamwork skills.[2] In addition, given ongoing erosion of faculty time for teaching, curriculum leaders find TBL attractive because it requires fewer faculty than other small-group instructional methods.[3] For example, in a recent implementation, TBL enabled a single faculty member to manage and provide real-time content expertise in a classroom with 34 teams (200 learners) independently engaging in small-group learning and problem-solving tasks.[4]

A growing number of medical schools are adopting TBL in some fashion in their preclinical and clinical curricula.[5,6] As of November 2011, the MedEdPORTAL online curriculum resource offered more than 40 peer-reviewed TBL modules and materials spanning a variety of basic and clinical sciences.[7] Published reports about TBL have appeared across numerous disciplines,[8–24] and implementations target multiple levels of learners.[25–28] In addition, there is a growing literature describing educational research efforts focused on TBL[29–33] as well as efforts to disseminate the method.[34,35] Although TBL originated in North America, its use has spread in schools across Europe, Asia, and Australia.[13–17,26,30] Health sciences education seems to be reaching a "tipping point"[36] with respect to TBL.

Much remains to be learned, however, about the use and effects of TBL across the diversity of settings, learners, and content areas in health sciences education. TBL occurs in a variety of combinations and permutations; possible implementations range from single sessions[3,37] to entire courses.[38] Because of this variability, it may be difficult to understand, critique, replicate, or compare published reports about TBL and to have meaningful discussions about TBL's impact unless the authors of those reports "describe as thoroughly as possible their interventions so that readers can better understand which principles may be associated with observed learning outcomes and which may not."[39]

Further, as in the literature addressing other instructional strategies, the growing body of scholarship on TBL runs the risk of creating confusion because of variations in the definitions of and reporting about the method. An articulation of the essential elements of TBL and a conceptual framework for studies that relates those elements to learning outcomes would allow readers to make better sense of reports about TBL trials. The goal of this article,

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Acad Med. 2012;87:292–299.
First published online January 25, 2012
doi: 10.1097/ACM.0b013e318244759e

Supplemental digital content for this article is available at http://links.lww.com/ACADMED/A72.

therefore, is to propose a set of guidelines for reporting and critiquing results of TBL interventions. We begin by providing an overview of TBL's structure and describing the process by which we developed our recommendations. After outlining and providing the rationale for our proposed guidelines, we demonstrate how they can be applied to published TBL studies. We anticipate that these guidelines will help standardize future articles' descriptive information about key features of TBL implementations in a way that allows reviewers and readers to understand the details of, successfully replicate, and draw meaningful conclusions about the implementations in comparison with others in the literature.

The Structure of TBL

Here, we provide a brief overview of the TBL method. (Detailed descriptions are available in the literature and in three books,[40–47] one of which focuses specifically on TBL in health sciences education.[41]) TBL is a teacher-directed method for incorporating multiple small groups (generally five to seven learners per group) into a single classroom setting, usually with a single instructor (e.g., undergraduate sessions, graduate conferences, continuing education activities). TBL moves beyond basic acquisition of facts to emphasize meaningful application of session or course content in real-world scenarios. This typically involves intra- and intergroup discussions of problems that are specifically prepared to foster complex reasoning, debate, and "constructive controversy."[48] TBL puts into operation instructional principles that maximize student preparation and participation and that foster high levels of team performance. When TBL is used as the organizing structure for an entire course, students master content through repeated iterations of a three-step process that consists of (1) preclass preparation, (2) assurance of readiness to apply learned concepts, and (3) application of content through group problem-solving activities.

Developing the Recommendations

In 2005, we convened a working group of educators from eight institutions (P.H., R.E.L., D.X.P., S.C., F.K., P.A.K., L.P., B.F.R.). Collectively, the members of our working group have more than 50 years of experience implementing TBL in medical and higher education environments. We followed a stepwise approach to formulate recommendations.

First, in 2005, we conducted searches of the medical education literature in databases including MEDLINE and ERIC to identify published studies that employed teaching methods described as "team learning," "team-based learning," or "TBL." We conducted additional searches in MedEdPORTAL,[7] and we contacted the Team-Based Learning Collaborative, a nonprofit organization that supports implementation of TBL,[49] to identify articles that had been submitted or were in-press in the health sciences education literature at the time. These searches identified a mixture of 12 primary reports, reviews, and in-press manuscripts.

Next, we held two 2-hour discussions in late 2005 and early 2006; these were augmented with ongoing e-mail correspondence throughout 2006. We focused our discussions on essential aspects of TBL that may vary across implementations and may affect the outcomes of a particular implementation. We used the results of our literature search and our own experiences with TBL to enrich these discussions by asking the following questions about each of the 12 articles:

- Can the teaching method described in the article accurately be called TBL?
- If not, which TBL elements are missing from the teaching method as described?
- If it can accurately be called TBL, which TBL elements as described are most instrumental in defining the teaching method as TBL?

Through our discussions and addressing these questions, we identified what we consider to be the seven core elements of TBL: team formation, readiness assurance (RA), immediate feedback, sequencing of in-class problem solving, the "four Ss," incentive structure, and peer review.

As we discussed these seven elements, we developed a conceptual model of the relationship between the TBL core elements and learning outcomes that were either described in the literature or that we had observed ourselves. This conceptual model (Figure 1) assumes that the characteristics of the employed core elements are indirectly linked to learning outcomes through the mediating factor of learner engagement. This model assumes two types of interrelated learner engagement: engagement with content (e.g., depth of exposure/thought/learning, application of the subject matter) and engagement with peers (e.g., effectiveness of interactions within teams).

Although all seven elements can be conceptually linked to engagement, specific elements may not be appropriate for every implementation of TBL. However, given the effects of engagement on learning outcomes, we believe that some information about the inclusion or exclusion of each of the seven core elements should be provided in all reports of TBL interventions because these details have meaning when one attempts to interpret results or make comparisons across interventions.

In 2007, two of us (P.H., B.F.R.) retrospectively applied the guidelines to three published studies by members of our working group to verify the goodness of fit (i.e., how closely these authors intuitively anticipated the

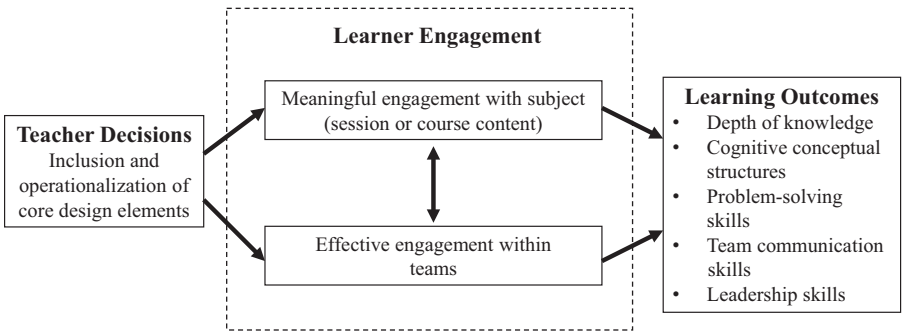

Figure 1 A conceptual model to describe the effects of team-based learning (TBL) design decisions on learning outcomes.

guidelines) and to try using the guidelines as a framework for review. We chose these three articles because they were published before we formed the working group and, therefore, were not influenced by our deliberations. After updating our literature search in 2011 (described below), we applied the guidelines to a randomly selected, recently published fourth article whose authors had not interacted with any of us. We briefly report the outcome of this step later in this article, after we present and justify the guidelines.

In 2008, we vetted the results of our work with Larry Michaelsen, one of the original proponents of TBL, to take advantage of his extensive experience using TBL and acting as a consultant to others using TBL across multiple disciplines.

Although guideline development primarily took place between 2005 and 2008, we elected to delay circulation of these guidelines as we initially identified only a small number of TBL articles in the medical education literature. In July 2011, the lead author (P.H.) conducted a new search of the MEDLINE, CINAHL, and ERIC databases using the key words "team-based learning," "team learning," and "education, medical" to search for relevant English-language articles published from January 1999 through July 2011. (To our knowledge, 1999 is the date TBL was first used in health sciences education.[37])

This updated search identified 543 articles. P.H. reviewed titles and abstracts to exclude 485 articles not pertaining to classroom education (e.g., focused on clinical teaching), those not related to teaching methods, and those devoted to teaching team processes (e.g., TeamSTEPPS) as opposed to using teams to teach health sciences content. All nine authors reviewed the final list of 58 articles to evaluate whether the new articles raised issues that would necessitate a change in the guidelines. (For the final list of articles, see Supplemental Digital Appendix 1, http://links.lww.com/ACADMED/A72.) In response to this review, all authors agreed that the guidelines remained appropriate for the health sciences education literature and did not require revision.

Guidelines for Reporting TBL Implementations in the Medical and Health Sciences Education Literature

We have organized our proposed guidelines into two overall sections related to describing (1) the general context and scope of the TBL implementation and (2) the design decisions related to the seven core TBL elements. We anticipate that authors could use these guidelines to shape "method" or "curriculum development"[50] sections of articles reporting results of TBL implementations. Although authors may choose to include additional curricular details beyond those outlined here, we suggest that these guidelines specify the *minimum* information that is necessary to allow comparison of a given TBL implementation's results with the results of others in the medical and educational literature.

Describe the general context and scope of the TBL implementation

Describing the general context and scope of the implementation is important because TBL efforts in medical and health sciences education may range from a single session to an entire course, and these variations influence design choices related to the core elements. For example, some core elements may not be relevant in limited-scope implementations—single-session TBL implementations often do not include a grading or incentive structure and may have cursory RA procedures. Descriptions of a TBL implementation's context and scope should contain information about the following items:

- Overall class size and number of learners per team
- Number and background (e.g., prior experience with TBL) of faculty involved
- Subject (either of the overall course or of the sessions that used TBL)
- Context of the implementation (e.g., single session, series of sessions in a course, entire course)
- Estimate of learners' familiarity with TBL prior to the implementation

Describe the design decisions specific to the seven core elements of TBL

Table 1 presents an overview of the seven core elements, the TBL principle associated with each element, and each element's effect on learners' engagement with content and with peers. Descriptions of the seven core elements will be most informative when they focus on the what, when, who, how, and why of the design decisions related to the implementation. Below, we make specific recommendations and offer rationales for each core element.

Team formation. The TBL method calls for resources to be distributed equally across teams. Such equal distribution does not typically occur when learners are allowed to form their own teams, so a detailed description of the team formation process is critical for contextualizing observed outcomes related to intrateam communication and decision-making processes as well as those related to interteam engagement. Articles about TBL implementations should describe the processes and factors used to assign learners to teams, including the following details:

Processes

- Whether teams were self-formed or formed by the instructor
- Whether the sorting process was transparent to learners

Factors

- Learners' background with and prior knowledge of course or session content
- Learners' overall experience level (e.g., third-year medical students, residents)
- Rationales for these or other factors used in the team formation process
- Estimate of the success with which the selected factors were equally distributed among teams

Readiness assurance. The quality and appropriateness of the RA process can have an important effect on students' advance preparation, and on the level of conceptual depth that they achieve during subsequent application-oriented activities. Adequate description of RA processes and materials will therefore help the reader evaluate observed changes in learners' acquisition,

Table 1

Core Design Elements of Team-Based Learning (TBL), Associated TBL Principles, and Effects on Engagement With Content and Peers

Core design element	TBL principle	Effect of core design element on	
		Engagement with content	Engagement with peers
Team formation	Equal allocation of resources is critical to the learning process. Unfortunately, equal allocation usually does not occur when learners are allowed to form their own teams or when teams are formed by convenience (e.g., where learners sit in the classroom).	Teams with too few (i.e., less than 5) learners often lack sufficient "assets" (e.g., knowledge) to tackle complex problems; too many learners (i.e., more than 8) on a team permits "social loafing."	Team motivation to work together increases when learners believe their assets match those of other teams. Heterogeneous teams promote communication skills development as learners work out differences in their perspectives.
Readiness assurance (RA)	RA is a process that allows the teacher and team members to verify that all learners are prepared to apply course concepts to solve real-world, complex tasks. RA begins with individual RA tests (RATs); these are followed by group RATs (which include the same questions as the individual tests), and then debriefing among the whole class.	Individual and team accountability motivates learners to prepare by acquiring background knowledge before coming to class sessions.	During group RA discussions, learners teach each other, often using language that is more accessible than that of the (expert) teacher.
Immediate feedback	Immediate feedback enhances both individual learning and team communication processes.	Obtaining answers to questions following completion of the group RAT (immediately after the individual RAT) allows individual misunderstandings to be clarified before they become entrenched.	Immediate outcomes-based feedback about team performance on the group RAT (provided through immediate scoring techniques[41]) continually reinforces the expectation that students will work together effectively and provides a disincentive for poor team communication behaviors (e.g., poor listening, overassertiveness).
Sequencing of in-class problem solving	Proper sequencing of activities—intrateam followed by interteam activities—enables learners to deepen their level of thinking and can affect the team development process.	Multiple opportunities to discuss and apply knowledge to solve a problem foster greater depth of engagement with course concepts.	Interteam discussions solidify group identity and cohesiveness. Teams want to use their *intra*team discussion time effectively to avoid embarrassment during *inter*team discussions.
Four Ss	Attention to the four S structure—significant problem, same problem, specific choice, simultaneous reporting—fosters individual and team motivation, a common frame of reference, critical thinking and conceptual depth, and energy during whole-class discussions.	Assigning a significant problem with real-world relevance increases interest during intrateam discussions. Assigning the same problem to all teams increases interest during interteam discussions. Tasks constructed at a "specific-choice" level foster conceptual depth in intra- and interteam discussions.	Simultaneous reporting of specific choices enhances recognition of controversy across teams. Constructive controversy across teams motivates collaboration within teams to defend points of view.
Incentive structure	As in any teaching endeavor, the incentive structure has powerful effects on the achievement of course goals.	Grading individual performance motivates out-of-class preparation.	Grading team performance provides a clear incentive to maximize collaboration.
Peer review	Feedback from peers may have effects that other forms of feedback may not, because peers have a unique and important relationship with one another as learners.	The possibility of a negative review from peers motivates learners to prepare for and participate in class. Peer feedback also shapes specific learning behaviors, such as assertiveness and collaboration.	Peer review promotes individual learners' accountability to the team. It also reinforces the importance of every individual's preparation and participation as these affect overall team performance.

retention, and transfer of knowledge. Articles about TBL implementations should include the following details about the structure and content of the RA process employed:

Structure

- Description of the general RA process employed
- Involvement of individual learners and/or teams (e.g., individual RA tests [RATs], group RATs)
- Whether and how use of books, notes, or other materials was permitted during the RA process
- Whether teams could appeal grading decisions, and the process for doing so

Content

- The amount and level of content covered during the RA process
- Examples of content, where possible

Immediate feedback. One of the main differences between RATs and typical quizzes is the presence of a process to ensure that immediate feedback about

performance is provided both to individuals and to teams. Immediate feedback fosters good norms of team communication by allowing teams to constantly assess the effectiveness of their problem-solving and communication strategies, and it reinforces to team members the value of working together. The following details about immediate feedback are therefore important to provide context for outcomes that deal with team formation and problem-solving processes:

- Whether immediate feedback was provided
- The portions of the RA process (i.e., individual, group) for which immediate feedback was given
- The procedures used to provide immediate feedback

Sequencing of in-class problem solving. Problem-solving, or "application," activities represent the heart of the TBL method. During application activities, learners have the opportunity to try out their knowledge of course content by working in teams to solve ambiguous or complex problems that simulate real-world conditions. The sequencing of application activities is important because it can affect learner engagement with both course content and their peers. Descriptions of in-class problem-solving activities should include details about

- The presence and sequence of intrateam and interteam discussions
- The relative proportion of time devoted to each type of discussion
- The number of application activities performed

The four Ss. The "four Ss" principle guides the content (*s*ignificant problem), structure (*s*ame problem and *s*pecific choice), and process (*s*imultaneous reporting) of TBL application activities. The four Ss are at the heart of creating conceptual depth in both intrateam and interteam discussions and are therefore critically related to student understanding, knowledge retention, and engagement. Articles on TBL implementations should provide a level of detail about whether and how the four Ss were achieved that is sufficient to enable readers to successfully replicate the procedures in their own teaching. TBL articles should therefore include the following details in their descriptions of application activities:

- How the four Ss were implemented
- The location(s) where learners worked on application activities
- How team solutions were reported to the entire class
- Details of the application tasks' content (where possible, make representative application tasks available)

Incentive structure. In TBL, as with other pedagogical methods involving group- or teamwork, many teaching decisions affect the developmental processes of individuals as well as teams. Learners require incentives to develop normative behaviors such as individual preparation, open team communication, respectful disagreement, and high-quality problem solving. The incentive structure is therefore a critical component of the learning process. Articles about TBL implementations should describe the following:

- The grading procedures of the course (or, if grades are not relevant, any alternate incentive structures)
- The nature and timing of the incentives
- To whom the incentives were directed (individuals or teams)
- The weighting of incentives, if multiple incentives were used
- Whether learners had any influence in determining the incentive structure (e.g., class input solicited on grade weights)

Peer review. In a longitudinal TBL curriculum, including peer review as part of the grading scheme can provide learners with an additional incentive to develop behaviors that contribute positively to individual learning as well as to team communication and problem solving. A number of methods have been devised to manage logistics and provide learners with a safe environment in which they can provide meaningful and honest feedback to their peers. Including information on the peer-review methods used and their outcomes can inform readers' choices among various quantitative and qualitative approaches in their own teaching. TBL articles should include:

- Whether peer-review methods were used
- Description of the structure of peer-review procedures
- Evaluation data regarding peer-review-process outcomes (e.g., levels of learner self-reflection, behavior changes, satisfaction)

The Guidelines in Practice

As an example, we used our proposed guidelines to critique three early reports[3,38,51] and one recent report[52] about TBL. The results of our critique appear in Table 2. Although these articles include details consistent with the core elements, our critique suggests that significant variability exists across them in terms of the core elements that appear and the depth with which they are discussed. For example, we noted that Haidet and colleagues'[3] article, which describes a single TBL session based mainly on application activities, does not include details about certain design elements (team formation, immediate feedback, incentive structure, peer review) because these elements were not germane to the limited-scope implementation. The modest nature of the outcomes observed by that study's authors may in part be explained by the absence of these design elements; however, without explicit documentation of the absence of these elements, it is difficult to draw conclusions about what was and was not done, and how this may have affected the outcomes.

Strengths of all four articles include detailed descriptions of scope and the four Ss. In addition, Haidet and colleagues',[3] Hunt and colleagues',[38] and Thomas and Bowen's[52] articles include either print or supplemental online-only examples of RA and application activities. Of particular note, the Thomas and Bowen article's relatively compact and succinct method section conveys most of the information we recommend in the guidelines.

In our 2011 review of the literature, we noticed that many articles could be improved by including more detail regarding the team formation process and by providing the rationale behind decisions to include or forgo a peer-review process.

Table 2

Critique of Four Published Team-Based Learning (TBL) Articles Using the Guidelines for Reporting TBL Implementations in the Medical and Health Sciences Education Literature

Guideline element	Haidet et al., 2002[3]	Hunt et al., 2003[38]	Levine et al., 2004[51]	Thomas and Bowen, 2011[52]
Description of scope	• Contains a section describing class size, subject, levels of learners, program area, context of session • Does not describe learners' familiarity with TBL	• Details about scope are scattered throughout the article's initial sections and include class size, subject (individual session topics and objectives), level of learners, and the curriculum context in which the TBL course exists • Does not describe learners' familiarity with TBL	• Contains a specific section that describes class size, general subject (details of individual sessions not described), context of TBL sessions • Level of learners is implied by context, but not explicitly stated • Does not describe learners' familiarity with TBL	• Contains a specific "design" section in the methods that describes details of subject content, context of TBL sessions, and levels of learners • Class size is not explicitly stated, but can be inferred from table • Does not describe learners' familiarity with TBL
Team formation	Does not describe team formation process	• States that instructors assigned learners to teams • Does not provide details on parameters used to assign teams • Does not evaluate the success of the team formation process	• States that teams were assigned by instructors • Provides a nonspecific description of the parameter used to assign teams ("expertise") • Does not estimate the success of the team formation process	• States that teams were assigned by instructors • Provides a detailed description of the team assignment process • Specifies that team assignments remained fixed throughout the sequence
Readiness assurance (RA)	• Includes the content of a "readiness handout" given to individual learners at the beginning of the session • Does not describe how the learners used this handout	• Includes detailed information on the dates and structure of individual and team readiness assurance tests (RATs), and specifies that these were open-book • Includes example RAT question • Does not discuss whether an appeals process was employed	• Describes individual and team closed-book RATs • Does not include RAT example questions • Does not discuss whether an appeals process was employed	• Includes a detailed description of the individual and team RAT process • Does not specify whether RATs were open- or closed-book • Does not discuss level of content
Immediate feedback	Not applicable due to format of RA	Describes an original intent to use immediate scoring techniques and subsequent difficulties in solving logistics (immediate feedback ultimately was not employed)	Describes a faculty-led process for immediate feedback about performance on team RATs	Describes feedback process for teams using immediate feedback-assessment technique (IF-AT) forms
Sequencing of in-class problem solving	Includes a time line describing sequencing of problem-solving activities, number of iterations, and length of each activity	• Describes sequencing of intra- and interteam discussions • Does not provide details regarding number or length of problems	• Describes sequencing of intra- and interteam discussion • Does not provide details regarding number or length of problems	• Describes sequencing and length of intra- and interteam discussion • Does not provide details about number or length of problems
Four Ss	• States that all teams worked on the same problem • Provides examples showing problems were significant and of a "specific choice" level • Describes reporting as simultaneous	• States that all teams worked on same problem • Provides example problem that is significant and of "specific choice" level • Specifies that problems were multiple-choice • Provides details of simultaneous reporting structure	• States that all teams worked on same problem • Describes problems as multiple-choice questions with simultaneous reporting • Describes problems as "challenging, clinically oriented" • Does not provide examples of problems	• States that all teams worked on the same problem • Describes problems as multiple-choice questions with simultaneous reporting • Provides example via online appendix
Incentive structure	Does not indicate whether an incentive structure was used	• Describes in detail the incentive structure regarding RAT grades • Details the course grade weights for individual and team grades	• Does not provide details regarding incentive system • Reader can infer from text that RATs and application activities were graded	• Describes in detail the incentive structure regarding RAT grades • Describes in detail course grade weights for individual and team grades
Peer review	Does not indicate whether a peer-review process was used	• Provides details of a peer-review process • Does not provide outcome data specifically related to peer review	Does not indicate whether a peer-review process was used	• Provides details of a peer-review process • Does not provide outcome data specifically related to peer review

Conclusion

Compared with other graduate and professional schools, medical and health sciences education settings have a high level of variability along a number of dimensions. Examples of these dimensions include the number and background of faculty involved in a course, the length of a course, whether the course is graded, whether there are multiple levels of learners or of expertise relative to the course content, and whether learners have multiple competing responsibilities at the same time that the course is delivered (e.g., resident physicians' patient care responsibilities). In addition, medical and health sciences educators are increasingly incorporating into courses content that goes beyond basic factual knowledge, such as leadership, communication, and teamwork. This environment provides opportunities to innovate by adapting methods of instruction that traditionally have been used in nonhealth settings. However, adaptations of novel methods, such as TBL, may differ across implementations, making it difficult to draw general conclusions about the effect and outcomes of a particular teaching method. For example, in the case of problem-based learning (PBL), incomplete descriptions of implementations and variability in the way that faculty interpreted the term "PBL" created a degree of ambiguity in the medical education literature that may have slowed the dissemination of what ultimately proved to be a successful active-learning mode of instruction.[53]

Our purpose in formulating guidelines for reporting TBL in the health sciences and medical education literature was to facilitate educators' ability to understand the details of TBL implementations, to replicate implementations successfully, and to draw meaningful conclusions about TBL across implementations. By creating a common framework for discussion and evaluation, articles that follow these guidelines should contribute to an enhanced understanding of the usefulness of TBL in medical education. Although many educators may design TBL implementations that incorporate only some of the core elements, including consistent details regarding what was done and how it was done will allow the medical education community to begin to evaluate the relative merits of particular elements of TBL. In addition, we note that the conceptual model and core elements of TBL articulated here describe a set of principles underlying effective use of teams in medical education, regardless of whether the educator is following a TBL strategy or another team- or small-group-oriented method.[54] Given the expanding interest in team-oriented learning in general, and TBL in particular, our hope is that the growing literature will contain a uniformity of reporting that will further the field's understanding about how students and trainees learn in teams.

Funding/Support: This study was supported by a grant from the U.S. Department of Education Fund for the Improvement of Post Secondary Education (FIPSE).

Other disclosures: None.

Ethical approval: Not applicable.

Disclaimer: The opinions contained herein are those of the authors and do not necessarily represent the views of the U.S. Department of Education or the authors' affiliated institutions.

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