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Student Accountability in Team-based Learning Classes

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Abstract

Team-based learning (TBL) is a form of small-group learning that assumes stable teams promote accountability. Teamwork promotes communication among members; application exercises promote active learning. Students must prepare for each class; failure to do so harms their team's performance. Therefore, TBL promotes accountability. As part of the course grade, students assess the performance of their teammates. The evaluation forces students to rank their teammates and to provide rationale for the highest and lowest rankings. These evaluations provide rich data on small-group dynamics. In this paper, we analyze 211 student teammate assessments. We find evidence that teams consistently give the lowest evaluations to their least involved members, suggesting that the team component increases accountability, which can promote learning. From these findings we draw implications about small-group dynamics in general and the pedagogy of TBL in particular.

Keywords

team-based learning, small-group learning, accountability

In the past few decades, pedagogical researchers have explored the effectiveness of small-group learning in the classroom. Such research emphasizes the role of small groups in fostering active learning and argues that active learning is the most effective strategy for students to grasp and retain information in the classroom (Caulfield and Persell 2006; Lightner, Bober, and Willi 2007; Longmore, Dunn, and Jarboe 1996; McDuff 2012; McKinney and Graham-Buxton 1993; Rau and Hayl 1990; Rinehart 1999). Students who work together to solve complex problems engage with the course material in a way that is different from how the instructor might present the same concepts. Not only do students learn from other students, they also benefit from teaching others about the material: when students explain the ideas to their peers, they put the concepts into their own words, making the material more accessible (McKeachie 2002).

There are several strategies for utilizing small groups in the classroom, such as cooperative or collaborative learning (Fink 2003). Team-based learning (TBL) is a unique form of small-group learning guided by four main principles. These include properly formed and managed groups, accountability for the quality of students' work, frequent and timely feedback, and group assignments to promote learning and team development (Michaelsen 2004; Michaelsen and Sweet 2008). Distinct from other types of small-group learning, TBL is an instructional strategy. Instead of occasional group work activities implemented across the semester, the course itself is restructured around group activities (Fink 2004). The sequence of the learning activities is central to the success of the TBL model. The emphasis on small-group learning is also evident in the grading scheme; peer assessments are used to differentiate grades across team members, based on the varied contributions of each student (Fink 2004). TBL courses focus on group and class discussions so that students spend the

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majority of their time learning how to use information in a collaborative setting to reach a common goal (Fink 2003).

TBL OVERVIEW

The TBL structure breaks the course down into units; units typically span two to three weeks. The three main components of each unit include preclass preparation, the readiness assessment process (RAP), and the application of course concepts. Students are expected to read assigned course material on their own, outside of class before each unit begins. The RAP takes place in class and consists of an individual test, a team test, written appeals, and instructor feedback. About 45 to 75 minutes of class time is allotted for the RAP. During the individual readiness assessment test (iRAT), students take a test on the main concepts from the course readings. Students then take the same test as a team (tRAT). Students receive immediate feedback on their performance on the team test and can keep track of their individual scores during the team test as well. After the teams complete the RAP, they are able to appeal a question. The purpose of the appeal is that students are able to go back to the readings and, as a team, work through concepts they found confusing or difficult to understand on the test. Immediately following the RAP is a brief lecture to clarify any points that remain unclear (Fink 2004; Michaelsen and Sweet 2008).

The third component of TBL is the application of course concepts. This phase usually takes between one and four hours of class time, depending on what material is covered in the unit. Students are given activities that require them to use or apply the course content. The application exercises present teams with problems to solve and requires team members to work together to find a solution. The first group work activity presents a simple application activity; the activities become increasingly complex as the unit progresses. As students become more comfortable and confidant with the material, there are higher expectations for solving problems (Fink 2004; Michaelsen and Sweet 2008). The application exercises incorporate a full-class discussion after teams have had an opportunity to complete the task. Students receive feedback on the quality and correctness of their answers during the class discussion.

TBL is designed to promote the emergence of strong teams over the course of the semester. Students' assets and liabilities, as well as the potential formation of subgroups within teams, should be taken into account in the initial formation of teams (Michaelsen 2004). Unlike other forms of group learning, students in TBL groups are not assigned specific roles, such as leader, recorder, or time keeper. In addition, students work in the same groups for the entirety of the course, the majority of class time is spent on group work, and the progression of activities is designed to build effective communication and trust across teammates. In fact, TBL is the only form of small-group learning that emphasizes the transition from "groups" to "teams" as students build trust over the course of the semester (Fink 2003). Students in teams with high levels of trust are likely to voice their opinion and offer solutions during the problem-solving phase of a project (Jarvenpaa, Knoll, and Leidner 1998; McKeachie 2002). Even when team members disagree with one another, the conversation likely remains respectful and critical. The complex interactions among team members help teams become more effective problem solvers (Michaelsen 2004; Simons and Peterson 2000).

Effective teamwork requires the contributions of individual members and suggests the importance of holding individual students accountable for their contributions. Indeed, student accountability is one of the guiding principles of the TBL model, and the literature on TBL suggests it plays a central role (Michaelsen 2004; Michaelsen and Sweet 2008). Michaelsen and Sweet (2008) identify three specific areas of accountability in TBL: (1) individual preclass preparation, (2) contributing to the team, and (3) high-quality team performance. If students do indeed hold one another accountable, this should be evident in the peer assessments. Few scholars, however, have explored what such accountability looks like in practice (Sweet and Pelton-Sweet 2008). Here we correct this gap by examining the first two areas of accountability: individual preparation and contribution to the team. These elements are assessed, in part, through the peer review process in which team members can rate one another's performance. The goal of the current study is to examine the comments students provide to their teammates for evidence that students hold one another accountable in the ways suggested by the TBL model.

Accountability and Group Structure

The provision of group grades gives group members an incentive to cooperate on a common goal and build an effective learning team. But group

grades are a classic public good in that no group members can be excluded from receiving a desirable team grade even if they personally contributed nothing to it. As Olson (1965) argues, collective action in pursuit of a public good is unlikely to occur without selective incentives that bring special rewards to contributors or special sanctions against free-riders. Thus, collective action typically requires the ability to monitor and sanction those who receive the collective good (Olson 1965).

The small-group structure in TBL facilitates the monitoring process. Within the TBL model, groups composed of five to seven members offer the optimal number of students for the most efficient team performance (Michaelsen 2004). Small, stable groups can also employ a wider variety of sanctions, including relatively subtle forms of social pressure that promote accountability (Olson 1965:60–62). Sweet and Pelton-Sweet (2008) suggest the small-group structure in a classroom is successful in holding students accountable because all individuals have an inherent need to belong. The teams provide an arena in which students seek acceptance (Fink 2003). There is a social incentive to contribute, as students who hinder the group's goals isolate themselves from the team or otherwise face social rejection (Sweet and Pelton-Sweet 2008). Team members are likely to treat failure to contribute to the team as a serious form of deviance.

The moral order of a group—the virtues it demands and the vices it condemns—varies with its social structure (Black 1976, 1998, 2011). In structural terms, what makes a group a team is its degree of social closeness and interdependence. Frequent interaction and cooperation increase solidarity and reduce the social distance between members, and this produces certain shared virtues and vices. As Black (2011) argues, the more a behavior violates an existing relationship structure, the more deviant it will be—for example, breaking off contact with an intimate is more offensive than breaking off contact with a distant acquaintance (Black 2011:138–41). Extending this principle, we might expect that the greatest kind of deviance in a solidary and interdependent team is failure to contribute. Furthermore, because social control is generally harsher across long social distance and toward marginal members of group (Black 1976:48–59; Black 1998:144), those with a high degree of nonparticipation—such as those who rarely show up to class and take part in team discussions—will be evaluated more harshly than those whose are more central within the group's circle of participation, even if the latter are not particularly competent. These convergent principles suggest that properly formed student teams will produce a moral order that holds out participation, cooperation, and helpfulness as virtue while treating nonparticipation as the most severe vice. The structure of group morality may thus promote the accountability necessary for team success.

Accountability in TBL Activities

The TBL model is designed to promote student accountability through the activities embedded in the course structure. To succeed in the TBL class, students need to prepare for each class and contribute to group discussions. Accountability for preclass preparation is evident through the readiness assurance process, which is designed to hold students accountable for completing the readings and to ensure students can explain the core concepts to their peers (Michaelsen 2004; Michaelsen and Sweet 2008). The two parts of the RAP contribute to student preparedness. Specifically, the iRAT provides each student with grade-based incentives to do the assigned readings, and the tRAT provides social incentives to be prepared.

The RAP presents an arena in which all students are given a legitimate reason for wanting to talk about the test (Sweet and Pelton-Sweet 2008). Students who have completed the assigned readings can contribute to the team discussion during the tRAT. Those who have not read the material can be clearly identified by their team members, as they will have little to contribute to the discussion (Michaelsen 2004). Students are held accountable to their team members for reading the material and preparing for the test (Cestone, Levine, and Lane 2008; Michaelsen and Sweet 2008). In a study of accountability based on the conversations between team members during the tRAT process, Sweet and Pelton-Sweet (2008) find students who are well prepared for the test build a trust among team members that strengthens the team overall. The accountability structure in the tRAT also heightens the risk of being wrong. Sweet and Pelton-Sweet (2008) find evidence that students regularly try to avoid accountability in the tRAT discussions. These students often use hedging statements, such as "I'm not sure" or "I guessed on this one," before they volunteer an answer to a test question. The social pressure of students' peers is greater than that of the instructor (Searby and Ewers 1997). When students are held accountable to their peers, they are motivated to produce high-quality work.

In addition to the preclass preparation necessary to succeed on the RAP, students are expected to

contribute to the team discussions for each of the remaining activities in the TBL unit. After the RAP in each unit, students are tasked with applying the course concepts in application exercises. The applications are designed for students to make simple decisions based on complex data (Michaelsen and Sweet 2008). The goal is to generate meaningful discussions among students that are grounded in the context of course material. Like the tRAT, application exercises are designed to have all students in a team working together toward a common goal (Michaelsen 2004; Michaelsen and Knight 2004). Students tend to unite over the goal of success when they are given difficult problems to solve with their team members (Fink 2003; Watson, Kumar, and Michaelsen 1993).

Students who are familiar with the course material can contribute more readily to the team discussion for application exercises. These students assert their value to the team, as they help the team successfully complete the assignment (Fink 2003; Sweet and Pelton-Sweet 2008). Students are held accountable not only to their teammates in these learning applications but also to the other students in the class. After the teams have been given an opportunity to solve the problem, all teams are required to report the results of their work to the entire class. Essentially, teams must publically commit to their group decision (Michaelsen and Knight 2004). When all teams have reported their results, a full-class discussion provides an arena for teams to explain their decisions.

The Peer Review Process in TBL

In addition to the RAP, application exercises, and direct social pressure, another mechanism of accountability in TBL is the peer review process. Students are given the opportunity to evaluate their team members at least once during the semester. Michaelsen (2004) notes students' peers can give an accurate assessment of the students' performance in the team, as team members have regular interaction with one another throughout the semester. Students who are aware their team members will evaluate them are likely to come to class prepared and produce high-quality work during the team activities (Brindley and Scoffield 1998; Lane 2012; Michaelsen 1992). As Bales (1950) argues, any small, task-oriented group tends to spontaneously develop a hierarchy of participation in which some individuals take on roles of informal leadership—these include task leadership focused on achieving the goal, socioemotional leadership focused on maintaining solidarity, or some combination of the two. The peer evaluations provide a way of rewarding members who take on these leadership roles and contribute to the overall functioning of the group.

Students who are expected to critically evaluate the performance of others become more conscious of their own performance in the team (Brindley and Scoffield 1998; Searby and Ewers 1997). Through this practice, students learn that their own behaviors and contributions have a great impact on team productivity (Lane 2012). Michaelsen and Sweet (2008) indicate that team members feel morally obligated to provide honest feedback to their peers. The strong interpersonal relationships that develop among students in teams often motivate individuals to help one another (Cestone et al. 2008). In some instances, students are made aware of their unacceptable behaviors through the team member evaluations. This measure of accountability provides a catalyst for students to change unproductive or disruptive behaviors (Lane 2012; Michaelsen 2004).

DATA AND METHODS

We analyze data from 211 student peer evaluations across three classes at West Virginia University (WVU): an introductory-level criminology course (92 students divided into 16 teams), a general social research methods class required of all sociology and criminology majors (59 students divided into 9 teams), and an intermediate-level topical criminology class (60 students divided into 10 teams). Two different instructors taught the classes: one instructor taught the introductory course and the intermediate course; the second instructor taught the required methods course. The peer evaluations in the intermediate course and the required methods course were given at the end of the semester; the evaluations in the introductory course were given at the midpoint of the semester. The use of the peer evaluation data is considered research on instructional strategies and, therefore, was ruled exempt under WVU's institutional review board standards.

When students enroll in these courses, they are not necessarily aware that the classes are designed using TBL. The exception is the students who learn of the TBL structure informally through their peer networks, as the instructors who teach these courses regularly use TBL in all of their classes. In addition, many of the students who were enrolled in the intermediate-level course had previously taken an introductory-level course with the same instructor. These students were aware the class would be taught using TBL. In each course, the

instructor provides an overview of TBL during the first day or two days of class. This is done, in part, through the syllabus review. The time spent alleviating student concerns about a shift from the traditional lecture, ideally, helps students become more comfortable with the alternative teaching method. Students are also informed at the beginning of the semester that while attendance is not required, they must be in class to earn the points for the RAPs and application exercises.

The teams in all courses were formed on the first day of class. Randomly assigning students to groups is the top priority of the instructors; this limits the potential of subgroups forming in the teams. To accomplish this, students either remained in their seats or lined up around the perimeter of the room and counted off by the total number of groups. All students who were number ones become Group 1, students who were number twos become Group 2, and so on. Each team is composed of an average of five to seven students. Students are tasked with creating a team name on the first day of class; this is the first step toward meeting teammates and working together to accomplish a simple goal.

Peer Evaluation Instrument

The peer evaluations used in the current study are based on the Michaelsen method of peer assessment (Michaelsen and Fink 2004). The peer evaluation scores in the Michaelsen method are an independent component of the course grade. The overall grade consists of students' scores in three areas: individual performance, team performance, and team maintenance. Individual and team performance are assessed through the RAP and application exercises; team maintenance is assessed through the peer evaluation scores. The Michaelsen method requires students to rank their team members quantitatively and to provide qualitative feedback for the highest- and lowest-ranked team members.

For each peer evaluation, students complete a ranking form outside of class to encourage honest ratings and feedback of peers. Prior to receiving the forms, students identify traits characteristic of a good teammate in group discussion. This allows them to create a list of qualities useful for evaluating peers. After distributing the forms, instructors remind students that peer evaluation provides an opportunity to reward teammates who worked hard on class activities. The evaluation form offers the following instruction:

> In the space below please rate each of the other members of your team. Each member's peer evaluation score will be the average of the points they receive from the other members of the team. To complete the evaluation you should: 1) List the name of each member of your team in the alphabetical order of their last names and, 2) assign an average of ten points to the other members of your team (Thus, for example, you should assign a total of 50 points in a six-member team; 60 points in a seven-member team, etc.) and, 3) differentiate some in your ratings; for example, you must give at least one score of 11 or higher (maximum=15) and one score of 9 or lower. (Michaelsen and Fink 2004:230)

The differentiation in ratings is important, as not all students in the group contribute equally throughout the semester (Michaelsen 2004; Michaelsen and Sweet 2008). This rating method forces students to distinguish between strong and weak performers. Moreover, it prompts the students to cultivate a rationale for their assessment. Students are given their average score and teammate feedback shortly after all evaluation forms have been submitted. The peer comments are compiled and typed before returning to students to ensure anonymity.

While students find it difficult to quantitatively rank their teammates, Cestone et al. (2008) finds students are much more comfortable providing qualitative feedback. Requiring students to write something about their teammates can provide a stimulus to individual learning and can promote a sense of belonging within the group. We believe such qualitative feedback provides a treasure trove of information to evaluate the effectiveness of team-based pedagogy. What kind of comments do students make? Are their assessments congruent with pedagogical concerns? Or do they focus on interpersonal characteristics irrelevant to the course's curricular agenda? Are active members punished for being "know-it-alls"? Or does the moral order of the team produce patterns of evaluation consistent with the aims of TBL? Qualitative analysis of student assessment data offers answers to these questions.

Data Analysis

Peer assessments were filled out by a total of 211 students split into 35 teams. To analyze the data, we ranked students within their teams according to

average student assessment scores. The majority of the teams consistently identified one member as the strongest participant and one student as the weakest member. Then we examined the open-ended comments for all students ranked first (top performers) within their team and last (weak performers) within their teams. Where there were ties for the top or bottom average score, we included both students in the analysis set.

The comments were coded analytically (Miles, Huberman, and Saldana 2014) for concept indicators (Blumer 1969). In examining the data for top performers, several core themes readily emerged in the peer commentary. Similarly, a different set of core themes emerged when we examined feedback offered to weak performers. Using the dimensional analysis of the constant comparative method (see Charmaz 2014; Corbin and Strauss 2014; Glaser and Strauss 1967; Strauss 1987), we identify and elaborate on the dimensions of these concepts below.

FINDINGS

Top Performers

Across the three classes, top performers stood out in regard to their work ethic, initiative, reliability, and intelligence. Coming to class appeared to be the key criterion used by peer raters. The most common comment attributed to top performers across the three classes was "he or she didn't miss any classes." Involvement in the team at the most basic level consists of being physically present in class; however, to be considered a highly involved team member, students must demonstrate they have spent time preparing for class. Students rewarded their peers who prepared for class. This includes understanding the material to such a degree that students prove an asset to the team in the tRATs and the appeal process. For example, note the following comments on top-rated students:

> Ryan was consistently the most informed and helpful of the other members of my group. He had always done the readings and provided feedback, answers, and/or arguments for group quizzes and assignments. (Team A09)

> Jessica is always prepared for class. She always reads before RATs. When using theories and concepts she can often go back and reference the textbook. She is always in class. She participates in group discussions and always has good opinions. | I gave Jessica a 12 because she always knows the answer and really helps out the group as much as possible. (Team C04)

> The reason for my high score of 14 was that he showed up regularly and was always prepared. He seemed to read all of the material thoroughly, and he was able to help our group reach an answer based on facts instead of merely guessing. (Team A02)

Most of the top performers were recognized as someone the team could depend upon. They were reliable. "He is always prepared for class, having read the chapters and he understands the material. He does well on the iRAT and helps us with the tRAT. He is always involved in group discussions" (Team B05). Reliability is marked by equal parts preparation and competence. Teammates listen when this member speaks; he or she helps the team perform.

In addition to coming to class prepared to discuss the course material, several other traits that signal high levels of involvement were identified in the student comments. Confidence and initiative were viewed positively by peers: "She is often the first person to know which question we should appeal and why as well as being the person to write it" (Team C10). Students appreciate peers who are both competent and dependable. They value teammates who are willing to jump into activities and collaborate:

> Sarah and Mark are always prepared and always participate in the group assignments and when we go over the RATs. They always provide an explanation for their answers even if they disagree with the group. Also, when we write our appeals, they are the first two to grab a book and write or look for arguments. (Team B03)

> Issac came prepared to every class. He usually knew the answers to all of the questions either for group activities or group quizzes. He also tried to get everyone involved. (Team A04)

Confidence, competence, and collegial collaboration all contribute to the overall functioning of the group. Students contributing on these dimensions were recognized as valuable team members and were rewarded in the peer ratings.

We note that some of the top-performing students also received some critical feedback from their teammates. While teammates value peers who assume leadership and take initiative, they get frustrated with those who dominate the group and its activity. That is, seizing initiative does not necessarily translate to leadership within the group. A leader mobilizes and engages others within the group. A student who simply does the majority of the work for the team, or a student who unilaterally makes decisions affecting the team, is not recognized by his or her peers as a leader. In fact, raters complained when the top performer carried too much of the load: "My only complaint is that he doesn't try to make everyone help with group assignment" (Team B05). Arrogance or elitism was similarly noted as a negative characteristic. One top performer was criticized for being a "smarty-pants": "Once again, everyone contributes pretty fairly in the group, this person is just snappy sometimes and tries to act smarter" (Team B06).

These data suggest that strong performers are those who contribute to the collective good of the team. Not only do they contribute by being smart, prepared, and dependable, but they do so in a way that draws other teammates into the collective activity. These findings are consistent with Black's (1976, 1998, 2011) theory of social closeness and interdependence. Strong performers facilitated solidarity within their groups, allowing everyone to benefit.

Weak Performers

Consistent with the findings of the top performers, the most common critique of the students universally rated poorly by teammates concerned their absence in the classroom. This finding is clearly evident in the student comments across all three classes. Teammates who did not come to class could not be involved in the team activities and discussions and were therefore rated the lowest.

> He literally never showed up for class; I do not even remember who Andrew is or what he looks like. I did not even know we had six people in our group. | Literally never showed up for class except for maybe exam days and the first day of classes, and as such deserves nothing but an F in this course. (Team A01)

> Ben received a 2 from me because he is NEVER in class except on quiz days. He only speaks to the group when asked what letter he put for the tRAT. | Ben has been to 3 classes in total this semester, all of which were RAT days. | I gave Ben the lowest because he is never in class to help with team activities. | Ben's score reflects the amount of times he has been in class. (Team B04)

In many cases, students with spotty attendance records did not pull their weight in team activities: "He has already been absent 5 times and it is only halfway through the semester. When he is absent, it is hard to keep the work split evenly" (Team C10). Raters similarly had little patience for inactive members who attended class regularly: "Kyle and Lauren are lackadaisical when it comes to group activities. Their contribution is minimal. I've never even talked to Katie" (Team C16).

In addition to showing up for class, students expect their teammates to be prepared to contribute to the success of the team. Unprepared students were criticized: "I'm pretty sure he doesn't even own the book. He really does not contribute anything to the group. When we have discussions and talk about the application exercises, we ask him what he thinks he just says, 'Yeah, what you guys said'" (Team C04). Parroting was frowned upon: "Michael also rarely ever talks or has any input. When he does he seems to just repeat what Tyler or I say or it's wrong" (Team A05). Such students were a liability and not an asset to the team:

> Ethan and Emily don't really do the readings. When they participate in the RATs their answers are usually, "I guessed on that one." They rarely help us when we make our appeals and in the group assignments. They usually sit back and wait for everyone else to answer before they say anything. (Team B03)

Whereas strong performers are both prepared and engaged, weak performers are neither. Strong performers are dependable; weak performers are not. Taken as a whole, the feedback given to weak performers is in line with Olson's (1965) theory of collective action. Teammates resent free-riders. Those who do not contribute in any meaningful way should not reap collective benefits. Several students invoked the language of fairness to explain how they distributed their rating points, for instance, "Robin [ranked lowest] was absent more often than anyone in the group, so she couldn't contribute as much. Lexi did the majority of the writing and she, Zach, Chris, and Leon all did their fair share/same amount of discussion" (Team A08).

In this assessment, the rater differentiates a free-rider (Robin) from the other members of her team (Lexi, Zach, Chris, and Leon). The distinction rests on each teammate's contribution to the collective whole.

While students tend to give honest feedback to low-performing teammates, we find evidence that students are sometimes reticent to give low ratings. For instance, one wrote, "I would give him 0 but I'd feel kind of bad doing that, so he gets a 1" (Team B04). Accordingly, they often provided justification to explain why they had rated a particular student poorly. "I gave Ben a 3 because he's only been to about 3 classes and when he is here he doesn't contribute as much as he could" (Team B04). Students were quick to point out the selfishness and unfairness of such behavior. "Not only does he hardly ever attend class but when he does he leaves directly after his own individual quiz and leaves the rest of us to get the grade on the team quiz" (Team A05).

Disruptive and Distracting Behaviors

Some members proved to be disruptive to their team. Consider the ratings given to Jason, whose average peer rating was 4.6 (compared to average ratings of 9.8, 10.8, 11.2, 11.6, and 12 for the other members of his team):

> Jason rarely showed up and when he did he was pretty quiet | Jason only showed up when there was a team assignment or a quiz. At times didn't pay attention or was on his phone. He showed signs of stubbornness and disgust at times as well | Jason received the lowest score because he rarely came to class when needed to, missing a few group assignments, plus his attitude wasn't always pleasant. (Team A07)

Students like Jason undermine team performance. Not only was he not pulling his own weight; when he did come to class, he actively undermined the team's work by complaining and expressing "disgust" for the activities. Other weak performers were similarly criticized for their divisiveness and unpleasantness: "Sara shows up late/doesn't show up/complains" (Team C13). Negative attitudes are recognized by teammates as a hindrance to team solidarity.

Peers often criticized weak performers for being distracted from their collective tasks. Students who are less committed to the team's agenda tend to be less disciplined in allocating their attention to the task. The ubiquity of smartphones in the classroom presents students with unending temptation for distractions. Weak performers were prone to giving into these distractions, signaling a disconnect between personal and collective priorities. Consider the feedback given for James:

> James made virtually no effort to participate, even when prompted. He rarely seemed prepared, and was often on his phone during group assignments | James just didn't really care. We would be doing a group quiz and he would just sit on his phone the whole time. Although it was hard to get everyone involved the way the seating was he still made no attempt to try and help the group | Most of the time James would be on his cell phone or doing other homework. We would always ask him what he thought but he never really had anything to contribute. (Team A04)

Nearly every student in the lowest peer-rated category was criticized for inappropriate cell phone use. "She texts the entire class and does not engage in group discussion. Usually during group discussions/activities she will leave the room for long periods of time" (Team B09). "She is not active in class discussions and uses her phone from beginning to end of class" (Team C09).

The distractions also include sources from beyond the classroom. For instance, many students attempt to juggle schoolwork with the demands of a part-time or full-time job. When students underprepare for class, or miss classes entirely due to work conflicts, they cannot contribute to the functioning of their team. Our data suggest that peers are rather intolerant of such distractions: "Nick has been to class twice, I know now because of work, but still I work 2 jobs and still have time for class" (Team B04).

Barriers to Accountability

We find support for accountability in TBL as suggested by the TBL pedagogical literature. Students embedded in stable teams do indeed view nonparticipation as a serious form of deviance, and they are willing to punish both free-riders and disrupters with low scores. This suggests that social pressure can be harnessed to impel greater overall participation. However, the student comments on peer evaluations also highlight barriers to accountability that are either not at all considered or only briefly mentioned in the TBL literature (Sibley and Ostafichuk 2014).

The first of these hurdles includes the structure of the classroom, which provides a structural impediment to accountability. The physical layout of the room and flexibility of seating arrangements play an enormous role in how teams interact. Inflexible seating arrangements are a barrier to effective interaction. "The reason for my low ratings is because Jennifer missed two classes, like myself, and the others are just more difficult for me to interact with because they are in a different row" (Team C09). In the same classroom, "Tom and Courtney sit in my row so it is easier for me to interact with them. The reason I gave them 10s is because Courtney almost always writes for the group assignments and Tom handles the folder" (Team C08).

Students also identify interpersonal barriers, specifically, shyness, which leads to problems establishing effective communication in the team. While the small-group structure of TBL promotes more intimate interactions among classmates, shy or introverted students can still find it difficult to contribute to team conversations. TBL requires students to vigorously engage each other to successfully complete course activities. Those with a quiet or shy temperament are at a disadvantage. Sometimes their teammates took this into consideration when assigning ratings. When they thought their teammate was actively avoiding the teamwork, they would criticize. "Amanda usually is quiet and keeps to herself mostly. Not a lot of group help" (Team C12). But those whose limited contributions were sound were recognized for their contributions:

> Luke works well in our group. He is just more quiet than the rest of us. His input is good when he adds it he just needs to tell us more. | Luke has good input when he uses it, but sometimes is very quiet and doesn't have much to say. (Team B07)

Students do not wish to punish teammates who do not participate because they are shy. These students are essentially in a different category than those students who are simply unengaged or distracted. The shy students are recognized as making an effort to the team success. When this is evident, teammates have a hard time justifying a low rating. The comments given to shy students are built around the motivation of students' desire to help one another. Students seem to be willing to accommodate some shyness. Note the implicit comparison between two low-performing members in the same team:

> Luis and Hannah can be great team assets when they choose to be. Their downfall is that they can be very shy at times of group work, but they have been getting over their shyness as the semester progresses. | Both lower two are very quiet, however Luis is easier to get responses or ideas out of. Hannah just seems to agree with whatever is being said and doesn't put in her own thoughts. (Team C06)

CONCLUSIONS

The TBL literature suggests the structure of the teams and the types of activities in the TBL classroom will lead to student accountability. We find clear evidence of this accountability in the comments given to the top performers and the weakest performers in the teams across three TBL classes. Students consistently reward highly involved members and punish teammates who are not engaged, are distracted, or are disruptive to the teams' success. At the most basic level, students are primarily concerned about attendance for both the top performers and the weak performers. Attendance, however, is not the whole story. Students expect their teammates to show up prepared to contribute; those who come to class but do not contribute to the team discussions are identified as weak members.

Students tend to be specific about why their teammates received low ratings. The lack of preparation for class and lack of contribution to team success is highlighted for weak team members. These comments address problem behaviors that can bring awareness to weak performers and provide guidelines to help students improve. Even the top-rated performers received critical feedback when their behaviors did not fit into the expectations of team members. Specifically, students expect top performers to embody leadership qualities. This finding was somewhat unexpected, as the TBL literature does not address the manifestation of leadership in the functioning of successful teams. Leadership captures the idea that a person steps up and improves the overall functioning of the team. Leadership qualities are an example of accountability behavior, as leaders are those who try to get all team members involved rather than letting some students be inactive. Students are clear that a leader is not someone who just does the work for the team or embraces a know-it-all attitude. While these types of students receive high rankings for their input to group success, they also receive criticism for leaving the rest of the team behind.

The TBL model considers peer evaluations as a mode of accountability; however, the current study does not account for how peer feedback might impact behaviors. Future research should evaluate team member assessments over the course of the semester to explore the impact of peer evaluations on student behavior. Even though peer evaluations are a part of the course structure and represent a percentage of the final grade, students may not adjust their behavior until they receive qualitative feedback from their peers. Students often have difficulty making the transformation from passive to active learners, especially if they are experiencing TBL for the first time.

We find clear support for the expected modes of accountability in the TBL classroom, but we also find several unexpected barriers to accountability. The TBL literature addresses structural barriers, such as classroom layout, only in passing (Sibley and Ostafichuk 2014). Several students across the three classes in the current analysis identify the structure of the classroom as problematic. If students are unable to easily move to talk to their teammates, the communication in their team is restricted. Team accountability is compromised in classes with rigid physical structure. This is particularly problematic as many instructors who use TBL are severely limited by these structural concerns in their classes. Structural barriers might be especially problematic at large universities, which are likely characterized by fixed classroom structures designed to accommodate large numbers of students for traditional lecture classes.

We also found evidence of student shyness as a barrier to accountability in teams. The impact of student shyness on building successful teams is not addressed in the TBL literature. This finding raises the question of how TBL instructors can help these students succeed in a classroom centered on communication. The students who struggle with interacting with others often face extreme difficulty in the TBL class. While teammates tend to be understanding in their peer evaluations, the risk of leaving the introverted students on the periphery needs to be considered. Future exploration into TBL methods should consider what types of resources can be implemented to help shy students succeed and how these resources might be provided to the students who struggle with communication.

EDITOR'S NOTE

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