

## **Managing the Team Project Process: Helpful Hints and Tools to Ease the Workload without Sacrificing Learning Objectives**

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### **Abstract**

*The purpose of this paper is to provide examples for the use of teams in college courses and provides a team project process developed over five years of experience with students at a small, regional, commuter campus. Teamwork is important in management curriculum, but it should also be included across business disciplines. The effective use of teams can be tedious and time-consuming, but instructors can now reduce the burden of team formation and peer evaluation, and even get support to help students manage team experiences. This paper adds to the conversation surrounding team use in academic settings by combining the entire team project process, with examples of activities and technology, into one teaching note, which also discusses the pros and cons of this practice.*

**Key words:** *Team formation; peer evaluation; team project; technology.*

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## Introduction

Exposure to teamwork is vital for students entering today's job market, thus, ideas and tools that further their use in higher education are applicable to any discipline, major, or course. However, despite the value that such experiences afford students, instructors often find them resistant to group work due to logistical challenges such as setting up meeting times, delegating labor, and keeping track of progress. In order to efficiently use time, technology presents a variety of ways to help manage the process. This is even more important when considering the challenges presented at small commuter campuses. If we can make the teamwork process less frustrating for students and faculty, this will facilitate improved learning about the main course content.

The aim of this teaching note is to help other faculty consider team options by sharing a process and experiences, which can help others with their needs and objectives in the classroom. This paper offers another way to examine improving teamwork, measurement, and time management for busy instructors, particularly through technology. The overall goal for this paper is to share experiences using teams, as well as activities and tools to improve instructor and student satisfaction with the use of team projects, offering other instructors alternatives for creating project teams, developing peer evaluations, and managing all aspects of using teamwork.

Team projects are common in management education; in fact, many business school instructors assign students to teams and require team projects (Brutus & Donia, 2010). Speaking more broadly, group work plays a key role in higher education because small group learning benefits students both socially and professionally by helping students develop problem-solving skills (Channon et al., 2017) and encouraging meaningful interactions among students. That is why team project-based learning is increasingly used as a teaching and learning technique to improve knowledge through social interactions (Von Kotze & Cooper, 2000). Using teamwork is an instructional design that maximizes learning through active student participation. As a result, the majority of centers for teaching and learning on college campuses have dedicated resources to program development in order to improve these teaching methods (Lee & Lim, 2012).

When working in teams, students can gain competencies such as: communication, leadership, collaboration, interpersonal relations, critical reasoning, cooperative ability, responsibility, and creative thinking (Moursund, 2003) that they can only acquire during team-based social activities rather than lectures or individualized tasks (Lee & Lim, 2012). This is especially relevant in business education because more and more employers have been saying that business graduates lack critical thinking and creativity (White, 2013). Teamwork and collaboration are also increasingly critical skills, as a result of jobs that involve more complex tasks that require critical thinking and communication with others. That is why teamwork and problem solving are consistently identified as practical skills for success in today's workplace (Association of American Colleges and Universities, 2014).

Beyond graduation, students must learn to function in teams as it will be necessary in their professional lives. So beyond the above mentioned benefits that students gain through using teams in our classrooms, we must continue using teams simply because employers expect it. The world we live in today relies on an increasingly team-based workplace. One important goal in post-secondary education is to prepare students for their careers; as educators, we need to equip them with the skills necessary for career success.

However, the use of teamwork in the classroom is not without its problems. Instructors have to be careful of several potential negative consequences, such as: social loafing and the free-rider effect. If students don't contribute equally to teamwork, a common

grade unjustly rewards some and unfairly punishes others; as a result, some educators express a lack of confidence and/or willingness to implement and then grade teamwork within their courses. This hesitation can also stem from the difficulty of forming effective teams, and from the time-intensive nature of implementing group work: instructors are often overloaded with tasks and can't always provide prompt feedback for students because providing enough thoughtful feedback takes time. Throughout this paper the topics discussed include how to navigate the difficulties and opportunities that come with the team project process. The next section will cover a review of literature pertaining to team formation and peer evaluations.

## **Literature Review**

### ***Forming Teams***

Any instructor using group projects in a course knows the struggle of wrestling with concerns about how to form the student teams. The instructor can allow students to pick their own groups, assign students to teams alphabetically, go around the classroom and have students count off group numbers, or use some other creative way. However, these methods can result in teams that only consist of previously acquainted friends, in which case the team does not experience or learn from the group development process.

Instructors often agree that forming student project teams is among the “most significant operational problems” in higher education research methods (Cheng, 1993). Generally the literature surrounding group work presents two main approaches to team formation: student self-selection and faculty assignment. Within that range, ‘...most instructors allow students to self-select teams, randomly assign teams, or, at best, balance teams on a very limited number of criteria’ (Layton et al., 2010; 1).

So who should form the teams? If students select their own teams, that can lead to working with friends. This may give the students the impression that the work is more enjoyable, but it is likely only because the team gets along better at the beginning of the project ultimately, though, their self-selection can impact performance due to groupthink and lack of diversity. It is worth noting that previous research on teams formed via student self-selection finds higher student satisfaction (Mahenthiran & Rouse, 2000) and higher motivation in the classroom (Ciani et al., 2008). However, in addition the groupthink issues, other researchers have pointed out that instructors should assign groups because students tend to form groups with unequal skills (Oakly et al., 2004). These skills might include functional areas, experience, presentation, or research.

Moving beyond self-selection, prior research has found that random assignment does not have any clear advantages as it does not increase diversity of skills or personalities (Layton et al., 2010). Therefore, instructor-assigned groups provide more control of variables, resulting in best chance for fairness and improved performance; additionally, this style of group assignment is a more realistic comparison to work situations in which employees will usually work in assigned teams (Adams, 2003).

### ***Peer Evaluations***

But what makes a good team? Since instructors cannot always observe what occurs within each group, they usually focus on the final product. However, that final product might not always represent equal effort from all team members. In other words, a group's ability to achieve passing grades on projects does not necessarily indicate that they have better team working skills; thus instructors need to assess teamwork directly along with task output (Channon et al., 2017). It is important to have measures of teamwork processes to effectively measure teamwork success (Channon et al., 2017), and peer evaluation may be a good proxy for evaluating the team's collaborative process. As such, instructors can use this form of process assessment to supplement their own evaluation of the group's end product.

After completing the project, instructors seek peer input on individual performance. Peer evaluations are a necessary component to give team members a voice in the process and outcome of their project. Because an instructor will not be able to observe all interactions occurring within the student teams, the use of peer evaluations is a good strategy/substitute to monitor the dynamics within the team. A potential negative consequence of group work mentioned earlier was social loafing, and instructors can use peer evaluations to help reduce this potential issue (Falchikov & Goldfinch, 2000; Kelley, 2015).

Research has shown that peer evaluation is an effective, useful, reliable, and valid way of allowing every student to participate in team-based learning, while still allowing the instructor to monitor the team process, because peer evaluations encourage individual responsibility (Falchikov, 1995; Liu, Lin & Yuan, 2002), especially if instructors incorporate this dimension of assessment into the project grade. Peer evaluation 'emphasizes skills, encourages involvement, focuses on learning, establishes a reference, promotes excellence, provides increased feedback, fosters attendance, and teaches responsibility' (Weaver & Cotrell, 1986, 25). Team members who are being individually evaluated tend to exert more effort, and research shows that team effectiveness can improve when a peer evaluation is used (Kelley, 2015).

However, there are problems with peer evaluations. It has been noted that the quality of undergraduate peer assessment varies (Smith, Cooper & Lancaster, 2002); research has also demonstrated that there can be concerns regarding fairness, reliability, validity, and accuracy when using peer evaluation (Dochy, Segers & Sluijsmans, 1999; Wen & Tsai, 2006). A portion of the issue may stem from the fact that students don't always provide accurate appraisal because they may dislike criticizing their peers (Wen & Tsai, 2006). Also, peer evaluations may lead to students focusing on impression management instead of contributing more work (Jassawalla & Sashittal, 2017). Therefore, using an online system with a training or calibration tool can be more accurate for peer evaluation. Several technology options to assist with the team project process can be found in Appendix A.

## **Strategies for the Classroom**

Now an instructional approach is shared and some hints and tools are offered to ease the workload for instructors seeking to incorporate team work into their courses with the aid of technology. The main focus of this section is to discuss examples from teaching at a small regional college campus, and to address the challenges that this particular setting presents. As a professor at a regional campus, it is even more important to consider the students and their needs as they often differ from larger campuses or private universities: a mixture of traditional and non traditional age students, many first generation students, and students from different socioeconomic backgrounds, all of which present unique needs to take into consideration regarding issues like the price of textbooks, constraints on students' time, or varying job/career ambitions.

These strategies are used in courses such as management, organizational behaviour, organizational change, human resource management, strategy, and experiential learning. It is important to teach students about teams and teamwork, as opposed to just using groups for an assignment (Harris & Bristow, 2016). The team project process described for undergraduate and MBA courses here involves the following steps: presenting a clear syllabus; introducing the concept of teams and their use; brainstorming with students about teams; forming the teams via online software; using an icebreaker on the first day teams are announced; clearly stating the project objectives/goals; offering several teambuilding opportunities in class; using Canvas (or another learning management system) to give teams a dedicated space to collaborate;

giving students time during class to conduct short team meetings; encouraging meetings outside of class; breaking up semester-long team assignments into smaller deliverables/opportunities to provide feedback; regularly checking in with teams regarding progress, issues, or questions; administering a peer evaluation and using the feedback for student development; and administering the peer evaluation a second time at the end of the project for grade adjustment.

### **Syllabus**

Student perception is important. In the syllabus instructors must manage expectations and communicate clearly about the project requirements, the formation and setup of the team, and any uses of the peer evaluation. Additionally, we must provide students with guidelines for any peer assessment (Wen & Tsai, 2006). For most of the courses described, the learning objectives include helping students improve their leadership, teamwork, interpersonal skills, decision making, and ability to interpret behaviour in organizations. While they aren't necessarily about group development, the objectives are for students to grow professionally and apply these knowledge, skills, and abilities in life. Since business students don't always see the advantages of working in teams (Harris & Bristow, 2016), it is vital to explain exactly why each component of the course is included. Table 1 provides a small sample of team related learning objectives.

**Table 1:**  
*Sample Learning Objectives*

As a result of course participation and successful completion of this course, the student should have developed:
Knowledge of the field of organizational behaviour such that understanding and prediction of individual and team behaviour become possible
Enhanced skills for analyzing and managing managerial and decision-making dilemmas in the workplace
Skills in presenting ideas to others, both orally and in writing
Management skills associated with thinking clearly, communicating effectively, and getting along with other people
Problem solving abilities and an understanding of human behaviour in organizations

### **Weight of Assignments**

The weight of the team project, relative to the overall course grade, will obviously depend on the amount of work required and how the project fits into the individual course structure. For most courses described here, a written paper assignment and a presentation at the conclusion of the project are included. In several cases, this project is worth 30% of the overall course grade; additionally, in a couple of the courses, another 15-20% of the overall grade comes from team case analysis and in-class assignments. It is important to be clear about expectations in the syllabus, and always be open to adjustment from semester to semester if students provide feedback on the course teaching evaluations.

### **Introduction to Teams**

During a class period early in the semester, group development and teamwork concepts are introduced. An introduction of the concept of teams can take many forms, including covering the stages of group development model from Tuckman (1965): forming, storming, norming, and performing. This group development model lays out the general steps a team goes through as they work through conflict, try to develop cohesion, and determine each member's role. The idea is that team members have to figure out the task/problem, properly deal with emotions, have open communication,

and find solutions in order to be effective. In some courses, the Tuckman model can be included in the syllabus so that students are exposed to it before the semester even begins. Since the student experience is affected by the amount and quality of faculty support (Lizzio & Wilson, 2005) and the clarity of instruction (Bacon, Stewart, & Silver, 1999), take this opportunity to explain the goals for each student as they prepare to work in teams. The goal is to educate students about team norms so they know what to expect (Volkov & Volkov, 2007).

### **Brainstorming**

One example of an exercise to facilitate the forming stage of group development is to lead a discussion regarding good and bad experiences students have had with leaders and teams in the past. This can be accomplished by using simple, straight-forward questions to get students thinking about what they want from their group experience in a course. The hope is that as they each share good and bad experiences, other students will realize they have had similar issues in the past and work to make this experience better for all involved. Table 2 includes a few of the possible questions to use in such discussions.

**Table 2:**  
*Sample Questions to Lead Discussion*

What makes a good leader? A bad leader?
What makes a good team? A bad team?
What experiences do you have with teams?
How do teams evolve?
What kind of culture have you observed in different teams?
Can you turn a bad team around? How?

### **Forming Teams**

A significant concern starts to creep up at this stage for many instructors, one that may explain why many might be resistant to including numerous variables to balance teams: it is time-consuming. In a recent conversation, an instructor described the process of manually forming teams for one course and she commented that it took more than 4 hours outside of the classroom. She had surveyed the students and was trying to match them via an Excel grid. Over the years many formation ideas have included random assignment, numbering off around the room, assigning in alphabetical order, and student self-selection, but as was noted by Volkov and Volkov (2007) none of these methods result in ideal teams. One suggestion from previous research is to use a type of hybrid method and allow students to select one team member with whom they want to work, and then randomly assign the rest of the members (Lee, Smith, & Sergueeva, 2016). However, the process described here has been most successful with the online team formation tool available from CATME (see Appendix A for additional team technology options).

The CATME tool can be beneficial in different types of courses because it was developed and improved upon based on research, is award-winning, helps save resources (such as paper), addresses student success, and is convenient and easy to use (Loughry et al., 2007; 2014). New CATME users are more likely to seek technological assistance (Ohland et al., 2014), as we all are with any new technology, but the website provides frequently asked questions and technical support information, which can decrease the additional burden on instructors.

Everything is filled out online, and the data collected is confidential. The software can generate teams based on specified criteria, including: skills, interests, majors, schedule, etc. The instructor then can prioritize/weight variables, specify the team size, and move students manually if necessary. While creating teams, instructors who find themselves

unsatisfied with the teams proposed by the software may adjust weights on each variable/question and then run the algorithm again. Research has provided validity evidence for forming teams with CATME and shows that the software created teams that met instructor criteria better than manually assigned teams (Layton et al., 2010). Table 3 provides a look at the steps to use CATME for team formation.

**Table 3:**  
*Team Creation*

Team creation process on the CATME website includes:
1. Creating a class in the software;
2. Adding students/loading roster information from Canvas, Blackboard, etc.;
3. Using demographic information to assign students to teams via Team-Maker;
4. Developing a survey from existing questions available, including: a. Days and times available for meeting outside of class, and b. GPA, previous course grades, jobs, gender, race, etc.;
5. Opting whether to add customized questions to their online tool;
6. Distributing the survey to students via email invite;
7. Examining the responses and comments from students;
8. Creating teams based on the instructor's weighting of items (from 'ignore' to 'group similar')
9. Viewing results pertaining to teams, schedule overlap, weekend meetings, demographics, etc.; and
10. Releasing schedule information in student view as a grid/heat map for students to plan meetings.

Team composition can be any mix an instructor wants when using a tool like CATME to organize the questions. An added benefit is the ability to add your own questions because this allows an instructor to collect student information to get to know them, and this process can replace the index cards normally used on the first day of class to gather these details. Instructors can also add research variables/questions, if so inclined. One example of a question that can be added is regarding where a student lives and works (i.e., what city or town), to take that variable into consideration on a commuter campus. Additionally, the schedule compatibility questions (including when available/unavailable each day and weekend meetings) address an issue mentioned earlier in this paper: one difficulty for students is usually finding time to meet outside of class. This is a major concern for commuter students.

### **Icebreaker**

An icebreaker that can be useful on the first day teams are formed is using the TED Talk "Why Not Eat Insects?" (*TED Talks*). After viewing the video, teams can be given an assignment along the lines of "come up with a new business idea based on getting people to eat more insect protein". This is a good exercise because most team members will start from common ground, with limited knowledge of this material. Recent examples that students have suggested include business ideas related to: numerous versions of trail mix and granola bars sold at health food stores, protein shakes sold at gyms, pastries sold at a bakeries, and selling insect protein to school cafeterias to cook with it in order to introduce it to younger consumers. So, while the topic can be something outside the norm, instructors can still connect it to business content.

### **Project goals**

The objective of the project varies from course to course, but generally one can include assessment criteria in addition to specific course content in the project goals. This may include measures of team strength, understanding of teamwork and leadership, and

overall student success at working with others. Regardless of course content, it is useful to give guidelines but then allow students to select their specific team project topic within those parameters because if students aren't interested in the topic, they have a tendency to withdraw from the work. This information can be included on the syllabus, but also can be reviewed after teams are formed since the students will now place greater emphasis on understanding the requirements at this time. Different project formats might include: benchmarking, training, and creating company cases. Table 4 provides some details regarding these types of group assignments.

**Table 4:**  
*Group Assignment Examples*

<p>Research current trends in an organizational behaviour area and teach the class what you've learned. The instructor has a list of topic areas. Any given topic can only be selected once by the class. While the text may be used as a resource, students are expected to be creative and obtain materials on their chosen topic from a variety of sources. Whatever the topic chosen, students should address theory, research, and practice related to the topic.</p>
<p>Your team will essentially be writing your own organizational change case study on a company of your choice. Address the following: Which company have you chosen? Give a brief overview of its company history. What change did it experience? What internal or external conditions necessitated the change? How was it accomplished? Who was/were the change agent(s) (if you can identify them)? Was the entire company involved? Was it successful? What does the future hold? In your team's opinion, what should have been done differently and what should the next steps be? (Be careful to use fact to back up your opinion. This is a good place to apply what you are learning with the terms and concepts.) Has there been more than one major change you can discuss within the contents of this assignment? If so, what were those changes?</p>
<p>Benchmarking is the process of researching industry or a specific company's best practices, usually to compare these practices with one's own company. As such, this assignment is about researching what the 'best practices', or common practices, are within a topic area (e.g., selection, training) across industries. Topic areas will be assigned to each team, but individuals within that group can then select specific aspects of that topic to research.</p>
<p>Training program: Select a particular topic (e.g., working in virtual teams, diversity management, managing change), review the literature on it, and develop a training program for hypothetical employees. Your program should include training materials suitable for your topic. For example, you might do a training manual and a video.</p>

### **Teambuilding**

Not all students benefit equally in team projects. In fact, low-achieving students profit more, and high-achieving students receive little benefit (Carini, Kuh, & Klein, 2006). As many people have experienced, not all student teams work well together. Dysfunctional groups (with free riders, and the like) can impact student enjoyment and learning (Bacon, 2005). These are the issues instructors try to solve, or at the very least improve. Additionally, instructors could focus on the early stages of group development (Lee et al., 2016). Groups should complete teambuilding assignments early in the process, as these activities help students bond and can be lower risk at the forming stage as they get to know each other. The goal as a management instructor is to further develop students' managerial/leadership skills because being a manager involves getting work done with others. So, once the project is introduced and the groups have selected their topics, instructors can help them get a jump start on the team development process with in-class discussions and assignments.

### ***Learning Management System and Collaborative Tools***

Once it is time to let students start their major project work, it can be helpful to create groups in the course's learning management system (such as Canvas or Blackboard), giving students a common option for dedicated discussion space if they would prefer not to rely on group text messages or social media platforms. Regardless of which platform they choose, encourage students to exchange phone numbers and decide if they will collaborate via a file sharing website, such as Google Drive or Box. Many students need a little nudge most of the time. But from then on instructors should encourage students to take ownership of group processes and communication (Harris & Bristow, 2016).

### ***Class Time***

Once teams are up and running, class sessions typically include a check-in with teams and a short amount of project work time (maybe 10-15 minutes a week). With smaller class sizes, the instructor can circulate around the room and discuss any potential concerns students may have regarding their topic, resources, and perhaps members who have been absent from class and unresponsive to email or text. Having these informal discussions in class has greatly reduced the complaints received via email or during office hours. Also, it is helpful to have more group work time and meetings in class (for approximately 30-45 minutes per week) during the early stages of the project/semester to smooth out the early bumps.

### ***Meetings Outside of Class***

One additional challenge for students in teams throughout the semester is the difficulty of scheduling meetings outside of class. No matter what other characteristics or challenges are involved, team members must interact. Educational recommendations exist for forming teams that have common time in their schedule to meet, but there is little research in this area, apart from one study that found that up to 90% of students have difficulty finding a common time to meet (Jaffe & Nebenzahl, 1990). This is a huge concern for students in a commuter campus setup, and is a common complaint among students. At a small regional campus, students must work around the time constraints of their classes, family obligations, full- or part-time jobs, travel/commute time, and various other activities and obligations. Thus, gathering schedule information in order to find common meeting times is an important factor in forming teams.

### ***Smaller Chunks***

If you are concerned about students waiting to start project work until the last minute, consider breaking the assignment up into smaller chunks. In lower-level courses, instructors can break up a larger team project into smaller deliverables due throughout the semester in an effort to monitor progress and increase the number of feedback opportunities, forcing students and instructors to be in more frequent contact regarding the project. Table 5 includes an example from an organizational behaviour course.

**Table 5:**  
*Smaller Deliverables*

Project Topic Proposal. Your team will need to submit a statement describing your project topic. This statement should be no more than two paragraphs. It should state the topic of your project and the format (training or research), provide a preliminary plan for accomplishing the project, and include 2 potential references (beyond your textbook).
Project Outline. Your team will also be required to submit an outline of the project content. Your outline will consist of the major section headings and brief descriptions of the content of each section. The format of the project will determine the content of your outline.
Reference List. Your team will be required to submit a draft of your sources you will be using. A minimum of 10 sources beyond your textbook should be submitted.
PowerPoint Slides. Your team will submit a copy of the slides (and other materials used) for your presentation.

Even if you don't break the project up into smaller chunks, such as in an MBA course, it is still important to have regular checkpoints with each team. Encourage students to communicate with you through the learning management system (e.g., Canvas or Blackboard) in both formal and informal ways. Also, software can distribute and calculate data from multiple administrations of the peer evaluation.

### ***Peer Evaluation to Assess Team Dynamics***

The peer evaluation instrument can serve both formative (midterm) and summative (end of term) purposes (Fete et al., 2017); in other words, it would be beneficial to have students complete peer evaluations more than once during the semester, with earlier administrations used to give students an opportunity to fix any performance issues. This feedback helps students become better team members in the future. If it is for a semester-long project, which makes up a large portion of the course grade, consider giving two early peer evaluations. In a 15-week semester, this would be roughly at the 5-week mark and 10-week mark. While that might sound like more work at first glance, the goals should be to promote professional growth among students and to make it easier for faculty to manage the teamwork process and provide feedback to students (e.g., Ohland et al., 2012). CATME has been used in this process for years to handle peer evaluations. The specific tool available is the behaviourally anchored rating scales (BARS) available in the software (Loughry et al., 2014). Table 6 provides a look at the steps to use CATME for peer evaluation.

**Table 6:**  
*Behaviourally Anchored Peer Evaluation and Team Member Effectiveness*

Team evaluation process on the CATME website includes:	
1.	Creating a peer evaluation in the software
2.	<ul style="list-style-type: none"> <li>Selecting measurement options               <ul style="list-style-type: none"> <li>a. Contribution to the team's work</li> <li>b. Interaction with team</li> <li>c. Expectations of quality</li> <li>d. KSAs</li> <li>e. Task conflict</li> <li>f. Relationship conflict</li> <li>g. Process conflict</li> <li>h. Team satisfaction</li> </ul> </li> </ul>
3.	Distributing to students via email invite
4.	<ul style="list-style-type: none"> <li>Releasing feedback to students to help them develop and grow               <ul style="list-style-type: none"> <li>a. This includes individual ratings from team, in comparison to self-rating and average for the team in each category</li> </ul> </li> </ul>

The peer evaluation needs to be well organized and worth the time it takes for student to complete. Additionally, try to be careful to limit the amount of work that students are assessing: only seek student input as it relates to the group project, presentation, and group case work in class. Ultimately, peer evaluation provides an opportunity for comparison of student work; thus, peer evaluation scores should be a portion of the course grade (Wen & Tsai, 2006). The first administration can be used for feedback, and a later peer evaluation at the end of the project can assess the overall interactions of the team and have an impact on students' overall project grades (Volkov & Volkov, 2007).

At the time the final project is due, instructors need to know how the team interacted, who contributed what work, and how each student assesses conflict and satisfaction. The final peer evaluation can also include a section for any comments the students want to make directly to the instructor—to capture any and all feedback at this point.

Students can also experience anxiety when they have to rate and review each other, but the hope is that they could get more comfortable with any software and process an instructor decides to use through repetition, increasing the value of administering peer evaluations more than once over the course of a project. Also, students need to improve their ability to differentiate superior work from inferior work; another reason to use CATME is because the software has a calibration tool to train raters, which should improve fairness and consistency. At the end of the semester, instructors can include checks for social loafing and individual efforts to make the group outcomes equitable, and in many cases adjust individual grades accordingly.

### **Grade Adjustment**

The data collected via CATME can be used to adjust individual grades at the end of each course. Even with the calibration available in their software, it is still important to examine the raw data to determine if students used the full 1-5 scale consistently. Based on that appraisal, you can make adjustments when student scores are above or below the team mean. However, instructors should try to avoid adjusting grades based on outliers where only one team member negatively assessed a peer in order to avoid issues that may not have been related to the quality of work, but rather personality conflicts.

Throughout the grade adjustment process, always try to be open with students. Communicate from the beginning what the learning objectives are, what is expect from them, and how you will be grading their process and final products. Use rubrics to grade components of the project if at all possible. Rubrics can be used to grade team presentations, and they should be posted on the learning management system several weeks in advance so it's not a secret or a surprise when the students get their grades.

As far as the actual adjustments are concerned, an example is that team assignment grades could be adjusted up or down by up to two letter grades. This is a general rule of thumb from experience because 10% (one letter grade) wasn't always enough to ensure equity. Just be sure to have this listed on the syllabus and discuss it at the beginning of the semester and remind students about the specific details when the project starts. This will help decrease the number of student complaints after grades are calculated.

### **Conclusion**

When considering new ideas for course improvement, it can be useful for instructors to ask themselves, "Why am I doing this? Does it improve satisfaction, performance/assessment, teaching evaluations, or something along those lines? What is the return on investment for my time?" Being more efficient with your time,

accurately assessing learning objectives, and effectively preparing students for the job market are all important in the university setting nowadays.

The process described helped one instructor overcome the challenges at a regional, commuter campus with targeted efforts and technological tools to ease the burdens that team projects often present in the collegiate classroom. Technology speeds up the process and makes the decision to include teamwork easier by facilitating team formation and peer evaluation and using available tools can also lead to more reliable and valid results.

If you already use teams, continue to do so, but make sure to overtly teach students about teams and group development. If you don't use teams yet, it is important to start implementing these kinds of projects because employers are looking for our students to develop the related skills. Either way, seek to assess team dynamics and processes, not just the final product. Team work in a course offers an entire process in which students continuously have opportunities for learning and growth.

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## **Appendix A: Team Project Technology Examples**

### ***OptAssign***

One option for team formation is OptAssign, a web-based tool that collects data and creates groups. The idea is to use it to save time in class, and to increase student perceptions of fairness (Meyer, 2009). Students in Meyer's sample agreed that the computer tool would create fairer assignments, and the lecturers who took part in this study supported the tool, especially in light of its time-saving benefits. It was noted that the manual group formation process without this tool could take up to 2 hours, compared to mere minutes with the help of technology (Meyer, 2009).

### ***Team-Q***

One rubric for assessing individual teamwork skills is TeamUp (Hastie, Fahy & Parratt, 2014). This rubric includes items such as team climate, project planning, facilitating teams, managing conflict, and individual contribution. Based on that rubric, Britton and colleagues (2017) developed a tool called Team-Q to try to improve teamwork measurement in undergraduate education. Britton and colleagues noted that while other tools were developed for specialized contexts, they sought to create a more generalized tool. The goal is to foster teamwork as a learning outcome. Britton and colleagues found evidence that teamwork skills could indeed improve over time when taught and assessed with their tool.

### ***MAPS***

Another tool for self and peer assessment is the Mobile Assessment Participation System (MAPS) (Chen, 2010). This tool is based around the idea that assessment should be ongoing. Mobile assessment can be more flexible, save time, and give students more opportunities to reflect. Chen expressed that it is important to find strengths and weaknesses in student knowledge throughout the learning process. Most students had a positive attitude toward MAPS (Chen, 2010).

### ***CATME***

The Comprehensive Assessment of Team Member Effectiveness (CATME) is a set of online tools that can offer help with team formation and peer evaluation. As noted earlier, there can be fairness and accuracy issues with peer evaluation (Dochy, et al., 1999). Therefore, it is vital to note that CATME has training options to help students improve accuracy, and it includes peer and self-assessment in the online evaluation tool. Using a tool like CATME looks and feels professional, and it also has face validity that is, the assessment appears relevant to the students using it. Additionally, CATME was developed and supported by numerous research studies (e.g., Ohland, et al., 2012).

CATME has incorporated training materials, video clips, and more literature to improve the team process, as of the 2014 updates (Ohland, et al., 2014). CATME is a comprehensive set of tools to manage several steps in the team project, but it has received some criticism: users have said that some of the items are ambiguous and that the tool is not completely customizable because it is housed on the program's website (Hastie, et al., 2014).