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# **AC 2011-2505: THE TEAMWORK CONUNDRUM: WHAT SHOULD BE TAUGHT AND HOW CAN WE ASSESS TEAM LEARNING IN ENGINEERING TECHNOLOGY**

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# **The Teamwork Conundrum: What Should be Taught and How Can We Assess Team Learning in Engineering Technology?**

## **Abstract**

A reoccurring theme in national surveys of employers, including a 2005 survey sponsored by the Association of American Colleges and Universities, has been the need for higher education to place greater emphasis on helping graduates develop strong teamwork skills. Teamwork skills are particularly necessary for professionals in the engineering fields where diverse groups must work together to solve complex problems. But how and in what context can those skills be taught? Once taught, how can these skills be assessed and how can faculty provide objective feedback to students when teamwork is often conducted outside the classroom? Based on the work of Patrick Lencioni and other leading authorities on teaming and organizational psychology, University of Houston – Downtown has developed a curriculum designed to teach students to be both good team members and to provide the internal team leadership needed to resolve common behaviors within dysfunctional teams. While no new theoretical results on teamwork are presented, the authors have focused instead on applying their experience as managers of teams in major corporations and institutions of higher education to explore what an effective teaming curriculum might include and to develop related assessment tools. This paper outlines a strategy for integrating deliberate teaming instruction into senior-level engineering capstone or project courses. The curriculum focuses on building team leadership skills and techniques for addressing challenges such as planning and execution, social loafing, and procrastination. Models for assessing students' teaming skills and for providing both summative and formative feedback to students are included.

## **Introduction**

As evidenced by ABET-TAC Criterion 3e, an important soft skill for graduates to possess is the ability to function effectively and to lead in teams. Graduates are finding that they are required to work within a team environment and to make contributions to the “bottom” line through their teams as soon as they join the work force. In a 1997 survey of engineering graduates from a major state university, teaming skills were considered extremely valuable with at least two respondents indicating in their comments that it is not technical skills but soft skills such as the ability to work effectively in teams and to communicate that differentiate those individuals who are eventually groomed for management and leadership positions.

A 2006 nation-wide survey sponsored by the American Association of Colleges and Universities found that 76% of participating employers would like colleges to place more emphasis on teamwork skills.<sup>(1)</sup> Anecdotal evidence from the authors' experience as well as discussions with colleagues from other institutions indicates that despite the inclusion of team projects in the curriculum, students still struggle with the interpersonal dynamics of teamwork. The authors hypothesize that teaming skills are competencies that faculty often assume have been learned

elsewhere when in fact, students may be receiving very little deliberate instruction in teaming skills. In particular, students lack grounding in the areas of team leadership, resolving issues within dysfunctional teams and virtual teaming.

### **Limitations which Impacted Teaming Curriculum Structure and Assessment**

The opportunity to include a stand alone, narrowly focused course on teaming within the Engineering Technology curriculum may be severely limited due to either a state- or institutionally-imposed cap on the number of credit hours within the degree and/or the need to use available electives to expand students' technical or theoretical skills.

Teamwork should also be taught in an environment that simulates the work environment and allows students the opportunity for immediate application of teaming skills. Courses which encompass a major team engineering project are a natural point in the curriculum to include teaming instruction.

Because of these constraints, the curriculum which is described in this paper is designed to be interspersed within the existing coursework of a senior seminar or capstone course which includes a major team project as its focus. The tradeoff with this approach is that the teaming information presented must be limited to what is most salient and necessary for graduates on the cusp of entering the work force. Students are provided with targeted readings in an effort to provide an additional degree of depth.

The eight teaming lessons outlined in the curriculum in Appendix A are designed to be presented as short mini- lectures immediately before or after regular course lectures. The lessons are intended to be frontloaded into the first six to eight weeks of the semester, allowing students to practice those skills in the latter portion of the class in the context of a major team assignment. Assessment of the learning is embedded into the regular course activities using strategies such as evaluation of team-level discussions, faculty observation and interviews and teamwork discussions which are managed through a course management system like Blackboard.

The final consideration in the development of the curriculum was that it had to encompass areas such team leadership, dysfunctional teams and virtual teaming. The curriculum had to be structured in such a way that students exited the course with an array of practical tools and strategies for leading and managing teams and resolving the interpersonal conflict that occurs in the teaming environment.

### **Curriculum Content:**

The curriculum outlined in this paper was based upon *The Successful Manager's Handbook* by Susan Gebelein et. al. <sup>(2)</sup> and *The Five Dysfunctions of a Team* by Patrick Lencioni. <sup>(3)</sup> These two resources were selected because both offered a straight-forward, business-based approach to team management and included concrete strategies and tools which can be used to manage the work and interpersonal relationships within teams. Finally the strategies outline in these two resources have been "field tested" and found effective by the authors in their work on university and corporate teams.

The curriculum is divided into five units beginning with the definition of a team which focuses on individuals laying aside self interest to contribute collaboratively to a course of action or to produce a product that is beneficial to the organization as a whole. The first unit also focuses on the pros and cons of teams and identifying situations in which teams as opposed to individual assignments are the most expedient strategy for accomplishing the task. Students are encouraged to think critically about whether or not a team is the best strategy and to base that decision on factors such as worker skills and expertise, available human resources, and the task at hand.

Key principles which the authors highlight during Unit 1 and then reinforce in subsequent units include:

- Teams work well and produce superior results when all team members and the team leader are on the “same page”, i.e. they have a focused purpose and direction stemming from a common set of values and a common vision/mission.
- Team efficiency increases when team members know what is expected of them.
- Strategies for establishing, communicating, and enforcing clear roles and responsibilities.
- Team performance increases when each team member thinks and acts as owner of the team results and shares responsibility for goals. This is the case when all team members are involved in the decision making process and participate in problem solving activities.
- Timely accomplishment of goals is greatly enhanced by having an agreed upon decision making process. Avoiding the “paralysis by analysis” problem is critical to the team’s success. In some cases, decisions must be made by consensus. Once a decision has been reached, even through consensus, all team members must accept, own and support it.
- Appreciation and celebration for team’s success is also important. Human beings want to be appreciated and valued for contributions. It is the leader’s responsibility, in many cases, to ensure that this need is met.
- Working in a team environment does not necessarily imply that people are or have to become friends. However, norms should exist on how people must behave towards one another.

It would seem reasonable to expect senior-level students to possess competent individual team skills. However anecdotal evidence gleaned from frustrated faculty and students as they try to manage and moderate non-constructive behaviors of individual team members within the context of classroom teamwork projects would indicate that is not the case. Based upon this observation Unit 2 was included to provide an overview of the types of attitudes and responsibilities which individual team members need to cultivate within themselves. Fundamental attributes such as reliability, respectfulness, a degree of comfort with ambiguity, flexibility, and patience as well as behaviors such as attending meetings on time and prepared, follow-through on assignments, and managing and resolving conflict are discussed. The unit serves to establish a standard of conduct throughout the course.

Unit 3 focuses on the roles and responsibilities of the team leader and includes practical tools for communicating, guiding teams and planning and managing the work. The fourth unit builds on the team leadership unit by focusing on how to resolve three of the most common forms of team dysfunction. Lack of trust, social loafing and paralysis by analysis are discussed in detail with

the group examining both the various organizational cultures which tend to foster these types of team dysfunctions and strategies for resolving and moderating individual behaviors which contribute to the three dysfunctions. A sample case study is provided from this unit.

### **Social Loafing Case Study**

You have been assigned to a team of eight engineers and charged with the development and implementation of a major project. There are many sub-components to the assignment and multiple mid-project due dates prior to the final due date. J.T., a senior-level engineer in the group, will often agree to take responsibility for specific tasks but once the design meetings end, he rarely follows up. At the next meeting he will offer some excuse as to why he has been unable to complete his assignment. J. T.'s lack of follow-through has placed the group seriously behind schedule on at least two sub-components.

In your analysis of this case, discuss the impact that J. T.'s behavior is having on the group. What factors may be impacting J. T.'s ability to complete his tasks? Below are several options for how the group might deal with J. T.'s behavior. Discuss the pros and cons of each. Describe what you feel might be the most effective approach and provide justification.

- a) Complain to the project manager about J. T.'s behavior and ask her to talk to J. T.
- b) Ask that the project manager replace J. T. on the team.
- c) Ignore J. T.'s behavior and reassign his work to another engineer in the group.
- d) At the next design meeting, focus the agenda on the impact of J. T.'s behavior on the success of the project and threaten to speak with the project manager if he does not "shape up."
- e) Have another senior-level engineer in the group have a private conversation with J. T. about his work.

The final unit looks at the nuances of teaming within a virtual environment in which fellow team members may be located in a distant country and may come from diverse backgrounds. Tools which can be used to support and enhance virtual collaboration are explored. Discussion boards and collaborative writing and editing within a course management program or via a document editing program like Google Docs are used to help students practice the nuances of working in the virtual world.

An outline of the curriculum can be found in appendix A.

### **Managing Classroom Teams to Simulate Teaming in the Workplace**

Team composition: In the workplace, team membership is primarily decided by a higher-level management such that the required expertise is present to meet the team goals, typically to execute a project. A team leader is also typically selected by the higher level management at the time the team is formed. Although not required, the team leader often has prior experience in the particular area of the team's focus to enhance the chances of success. But definitely, such a team leader should have the "soft" skills to keep the team energized, to motivate it towards common goals, to communicate effectively, to resolve any conflicts, to enforce roles and responsibilities, and to be the driver for team and team member recognition.

By contrast, when a course involves a major project, team assignments are often made in a less structured manner with either the instructor randomly grouping students or the students themselves identifying team membership. Furthermore, teams within the classroom tend to be more egalitarian with team members assuming equal responsibility for leading, planning, goal setting, and decision making. Whether the team leader is formally or informally selected, responsibilities may tend to be more administrative in nature (i.e. setting meeting dates, sending out meeting reminders or sharing information) rather than managerial (making assignments, setting formal goals and assignments, etc.).

For the purpose of teaching teaming, the authors suggest that the instructor decide on the number of members per team. Team size may be driven by a number of factors including the size and scope of the project or the need to meet certain budgetary requirements, especially for courses with projects requiring the purchasing of expensive equipment. Once team size has been decided, its membership should be left to the students to choose their partners. This approach definitely helps from a team interactions viewpoint and also from a logistics viewpoint, especially when students work and may have scheduling conflicts. Furthermore, even though there are good and better students, none of them has tackled a similar project before. If students cannot find a suitable team to join, then it should be the responsibility of the instructor to assign them to a team, perhaps based on a team interactions viewpoint.

The authors' approach is not to assign a team leader with all team members sharing equally in the work load. However someone must facilitate the team interactions. This is should the instructor. She/he should be the facilitator in each of the course teams. Although, the instructor will not do the project work, he/she should be there to facilitate the team and in the end be one of the owners of the success or failure of the team.

Establishing a common goal: Teams cannot succeed without a common goal. The authors view student teams as self directed teams whose goal is to produce exceptional work and to demonstrate mastering the required skills taught in a class or program. This is usually a combination of technical and "soft" skills. It is a goal set by the instructor or in some cases by the university program.

If this is the vision, then the mission of the team is to suitably flesh out the scope of the project so that the final product demonstrates competency in the targeted technical areas. The instructor provides guidance and general oversight and plays the role of management. By developing the project internally, each member of the team should feel ownership and responsibility for the project's quality and completion.

Roles and responsibilities: By viewing the student team as a self directed one, it is the instructor's responsibility to make sure that each team member understands that she/he carries the same weight in the decision making process, and thus bears the responsibility for the final project. It is also understood that not all students may perform at the same level, for various reasons. Thus, the structure of the team ought to allow for individual creativity. The authors suggest that as part of the project proposal process, the work be divided into sections with each member assuming leadership of that segment, thus bearing more responsibility for that section.

quality and completion. This does not mean that the remaining team members are not responsible for that piece of work or that they should not contribute towards its completion. This approach helps motivate students, enhances creativity, and equally important it discourages social loafing.

Decision making: For the purpose of practicing teaming skills, all students serve as equal members of a self-directed team and encourage active dialog and debating of alternative solutions to problems which arise during the project. The authors expect students to show maturity and place the team first. In cases where there is not a clear cut solution, the students are encouraged to make a decision by consensus. Once such a decision is made, every team member is expected to demonstrate ownership of the solution.

Throughout the teaming activity students are expected to practice their teaming skills in both face-to-face interactions as well as in virtual environments such as Blackboard and via e-mail and document sharing applications. When difficulties do arise, students are encouraged to resolve issue within the context of the team as opposed to asking the faculty member to referee. So, for example, if one team member is failing to carry his portion of the work, the remaining team members are encouraged by the faculty to use the strategies they have learned for managing social loafing to resolve the issue.

Although students are the decision makers, the role of the instructor is not insignificant. Without imposing his/her decision, the instructor must facilitate the decision making process and help avoid situations where indecisions may lead to paralysis by analysis. In the end, the instructor bears responsibility for an effective capstone experience for the students.

### **Assessing Student Learning**

Assessment of students' mastery of teaming skills is conducted using four strategies, designed to give a 360 degree overview of student learning and changes in attitudes and confidence in teaming. Both direct and indirect data as well as qualitative data are collected.

A pre/post multiple choice test consisting of 20 questions is used to measure direct student learning. Given on the first day of class, the pretest provides a snapshot of where the students are prior to the beginning of the teaming instruction. Results of a post test administered at the end of the course in conjunction with finals are measured against the results from the pretest to determine the growth of students' understanding of teamwork.

Pre/post attitudinal surveys are also administered on the first day of class and again at the end of the course to determine how students' perceptions of their knowledge of teaming and their confidence in using teaming strategies have changed over time. As with the pre/post knowledge test, results of the pre/post survey are compared to determine how students' attitudes about teamwork and their confidence in their teaming skills have changed over the semester.

At the end of the semester, students will also be asked to complete a Peer Evaluation of Teamwork form which serves a two-fold purpose. Based upon the work of Carolyn R. Johnson at Arizona State University, the form is handed out to students at the initial meeting of the project teams and serves to reinforce expected team behaviors. The form includes a metric of five

critical teaming behaviors including meeting engagement, participation in discussions to explore ideas and solutions to project problems, listening skills, willingness to follow ground rules regarding appropriate behavior and conflict resolution within the team, support of team decisions and contribution to work and ability to meet deadlines and serve to remind students of appropriate teaming behavior. Second, the Peer Evaluation of Teamwork provides insight into how students are experiencing the teaming skills of the other members of their team. The authors have data from similar project-based courses and will be able to benchmark the teaming behaviors of the group receiving explicit instruction in teaming skills with other quasi-control groups which have not had exposure to teaming instruction.

The final mechanism for assign student learning is a post-project exit interview in which detailed qualitative data are collected to understand nuances of student learning. The instructor uses an analytical rubric to evaluate student responses from the exit interview.

Examples of assessment instruments as well as the exit interview rubric can be found in Attachment B.

## Next Steps

The curriculum, pedagogy and assessment strategies reflect several months of research on teaming as well as lessons that the authors have learned over many years of participating in and leading teams. The next step is to determine if the curriculum does, in fact improve students' knowledge of teaming and their performance within teams. Beginning in Spring 2011 the teaming curriculum will be integrated into a number of project-based Engineering Technology courses and piloted over several semesters. Assessment data collected from these pilot groups will then be compared to similar assessment data collected from other student groups who did not have the benefit of deliberate instruction in teaming. Based upon those findings as well as the authors' experience in delivering the instruction, the curriculum and assessment strategies will be further refined both in terms of content as well as how the information is integrated into existing courses. It is the authors' hope that significant improvement will be seen in how their students behave within teams, their knowledge of team dynamics and their abilities to apply strategies for dealing with dysfunctions within small groups thus making students more marketable upon graduation.

## References

1. National Leadership Council for Liberal Education & America's Promise. (2007). College Learning for the New Global Century: Executive Summary. Association of American Colleges and Universities. Washington, DC. [http://www.aacu.org/advocacy/leap/documents/GlobalCentury\\_ExecSum\\_final.pdf](http://www.aacu.org/advocacy/leap/documents/GlobalCentury_ExecSum_final.pdf) (accessed 10/1/2010).
2. Gebelein, S., Nelson-Neuhaus, K., Skube, C., Lee, D. Stevens, L., Hellervik, L. & Davis, P. (2004). *The Successful Manager's Handbook*. 7th Edition. ePredix. Minneapolis, MN.
3. Lencioni, P. (2005) *Overcoming the Five Dysfunctions of a Team: A Field Guide for Leaders, Managers, and Facilitators*. Jossey-Bass. San Francisco, CA.

## **Appendix A: Draft Curriculum**

### Lesson 1: Introduction to Teams

- The pros and the cons of using teams to complete projects
  - There is much written about the benefits of teams but because teams are often poorly constructed and/or team leaders lack necessary skills, teams do not always reach their full potential.
- Team personalities
- Team structures

### Lesson 2: Team Membership

- The attitudes and behaviors of team members who facilitate team performance.

### Lesson 3 & 4: Team Leadership

- The role of the leader in common team structures: self directed teams; externally-directed teams, etc.
- Strategies for planning and organizing team work.
- Facilitating trust and communication within the team
- Guiding teams
- Tools for managing team work:
  - -resolving conflict
  - -brainstorming
  - -reaching consensus
  - -facilitating performance
- Measuring team progress

### Lesson 5 & 6: Dysfunctional Teams

- -Typical types of team dysfunction
  - Lack of Trust
  - Paralysis by Analysis
  - Failure to Take Responsibility
    - -Social loafing
    - -Failure to reach consensus
- -Causes and impact of team dysfunction
- -Strategies for resolving team dysfunctions

### Lesson 7 & 8: Virtual Teams

- -How do virtual teams differ from located teams
- -Dysfunction in multi-location teams
- -Facilitating communication and trust within virtual teams
  - -Roles and responsibilities of team members and team leaders:
    - -Facilitating trust
    - -Observing confidentiality
    - -Avoiding needless conflict
    - -When to abandon e-mail and pick up the phone
    - -Confidentiality
- Tools for facilitating teamwork in the virtual environment (Google docs, Skype, Dropbox, Outlook, & Gotomeeting)

## **Appendix B: Sample Assessment Instruments**

Pre/post Test (Direct Measure-Sample Questions)

1. Which of the following SHOULD NOT be considered when measuring team effectiveness:

- a. Team productivity
  - b. Quality of team work product
  - c. Job satisfaction of team members**
  - d. Satisfaction of steak holders who use or purchase team products or services
  - e. Safety of team work process
2. Zaltman and Duncan define \_\_\_\_\_ as "any conduct that serves to maintain the status quo in the face of pressure to alter the status quo"
- a. Subversion
  - b. Resistance**
  - c. Lost cooperation
  - d. Affiliation
  - e. Affinity
3. The primary difference between quality circles and self-directed work groups is that:
- a. Quality circles are permanent in nature while self-directed work groups are temporary in nature.
  - b. Quality circles have been deemed more effective than self-directed work groups.
  - c. Self-directed work groups are typically more contentious than quality circles.
  - d. Quality circles typically focus on solving issues of quality where self-directed work groups are devoted to fulfilling their daily work task.**
  - e. Quality circles are temporary systems while self-directed work groups are permanent.
4. How do teams such as quality circles and self-directed work groups reduce the need for additional layers of supervision within the organization?
- a. Responsibility for supervisory tasks is held internally, within the collective authority of the team.**
  - b. Team members "police" one another.
  - c. Teams are more efficient than individuals.
  - d. Teams hold temporary responsibility for tasks which are then passed on to others over time.
  - e. Teams report regularly to upper management so intermediate supervision is not needed.
5. What is the primary strategy that team leaders should use to build a culture of trust within the group?
- a. Modeling of trust-building behaviors**
  - b. Withholding information that may undermine trust between members
  - c. Collaborative discussion
  - d. Use of activities such as "sharing/pairing", "full disclosure," and "one-minute summary" to build communication skills within the group
  - e. Holding each member responsible for full disclosure and participation.

Pre/post Student Perception Survey (Indirect Measure)

To what degree to you agree with each of the following statements		PRE/POST TEST QUESTIONS				
No.	QUESTION	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
1	I understand my responsibilities as a team member.					
2	I can discuss the disadvantages and advantages of working in teams.					
3	Teamwork is relevant in the business setting.					
4	Teamwork relevant in an academic environment.					
5	Teamwork is more important in the academic setting than in business.					
6	I enjoy working in teams.					
7	I prefer to work alone.					
8	I have experience working in teams.					
9	I have had positive experiences working in teams.					
10	I feel that I learn more when I work in a team than when I work alone.					
11	I understand what needs to be done to ensure the success of a team.					
12	Good communication (both written and oral) is important for a team's success.					
13	I know several strategies that I can use to resolve conflict within a team.					
14	I can discuss what factors contribute to social loafing and how to resolve social loafing issues in a team.					
15	I can discuss factors which contribute to analysis paralysis and how to resolve analysis paralysis issues in a team.					
16	Working in teams disadvantages good students.					
17	Working in teams encourages plagiarism.					

**Rubric for the Evaluation of Exit Interview Responses**

<b>Exit Interview Question</b>	<b>3</b>	<b>2</b>	<b>1</b>
1. What is teamwork?	Student can clearly articulate/define team work - citing multiple attributes/examples	Student lists some elements of team work but omits other important aspects.	Student is unable to define/discuss teamwork.
2/3. What are the benefits and disadvantages of teamwork?	Student is able to discuss at length the benefits and disadvantages of teamwork.	To a limited degree the student is able to discuss the benefits and disadvantages of working in teams but omitted others important benefits and/or disadvantages.	Student is not able to effectively discuss the advantages/disadvantages of teamwork.
4. Is teamwork relevant in a business setting, and if so, why?	Student is able to success at length the relevance of working in teams in the workplace. Displayed an understanding of why businesses actively seek employees with team skills.	To a limited degree, the student is able to discuss the relevance of team skills in business.	Student is not able to effectively discuss the relevance of teams in business.
5. Is teamwork relevant in an academic environment, and if so, why?	Student is able to success at length the relevance of working in teams in the academic setting. Displayed a solid understanding of why practicing team skills in the classroom will benefit him/her in the workplace.	To a limited degree, the student is able to discuss the relevance of team skills in the academic setting. Displayed some understanding of how practicing team skills in the classroom will benefit him/her in the workplace.	Student is not able to effectively discuss the relevance of teams in the academic setting.
6. Is teamwork more critical in a business or academic environment, why?	Student is able present a cogent argument, illustrated with relevant examples, for his/her position of the greater importance of teams in the workplace or in the academic setting.	To a limited degree the student is able to defend his position on whether teams are more important in the workplace or in the classroom. Minimal concrete examples were offered.	Student is not able to effectively argue his position on where teams are more relevant.

7. What makes a team successful?	Student is able to discuss in detail behaviors and strategies which promote team success.	Student is able to briefly list behaviors and strategies which promote team success. Failed to elaborate.	Student is unable to effectively list behaviors and strategies which promote team success.
8. How is communication (both oral and written) important to the success of a team?	Student is able to discuss in detail the role and value of written and oral communication in team success. Offers concrete examples to illustrate his points.	Student is able to briefly discuss the role of communication in team success. Is able to offer a limited number of examples which may not have fully illustrated his points.	Student is unable to effectively discuss the impact of written and/or oral communication on team success.
9. What do you know about team dynamics and conflict resolution strategies?	Student is able to discuss team dynamics and conflict resolution at length. Offers concrete examples to illustrate his points.	Student is able to briefly discuss team dynamics and conflict resolution. Is able to offer a limited number of examples which may not have fully illustrated his points.	Student is unable to effectively discuss key aspects of team dynamics and conflict resolution.
10. What do you know about "social loafing" in teams?	Student is able to discuss social loafing at length. Offers strategies to address social loafing and as well as concrete examples to illustrate his points.	Student is able to give a brief overview of social loafing but fails to offer or offers inadequate examples of addressing social loafing. May or may not be able offer concrete examples to illustrate his points.	Student is unable to effectively discuss social loafing and/or offer strategies for resolving the problem.
11. What do you know about "paralysis by analysis" in team?	Student is able to discuss analysis paralysis at length. Offers strategies to address analysis paralysis and as well as concrete examples to illustrate his points.	Student is able to give a brief overview of analysis paralysis but fails to offer or offers inadequate examples of how to address analysis paralysis. May or may not be able offer concrete examples to illustrate his points.	Student is unable to effectively discuss analysis paralysis and/or offer strategies to resolving the problem.

12. Does working in teams disadvantage good students?	Student is able present a cogent argument, illustrated with relevant examples, for his/her position on whether or not team work disadvantages good students.	To a limited degree the student is able to defend his position on whether or not team work disadvantages good students. Minimal concrete examples were offered.	Student is not able to effectively argue his position.
13. Does teamwork encourage "plagiarism"?	Student is able present a cogent argument, illustrated with relevant examples, for his/her position on whether or not team work encourages plagiarism.	To a limited degree the student is able to defend his position on whether or not team work encourages plagiarism. Minimal concrete examples were offered.	Student is not able to effectively argue his position.
14. Have you benefitted by participating in this study?	Summary of Student Comments:		

**Peer Evaluation of Teamwork**  
ENGR \_\_\_\_\_

Name: \_\_\_\_\_  
Group #: \_\_\_\_\_

Date: \_\_\_\_\_  
Semester: \_\_\_\_\_

**Instructions:** Please rate each of your team members by responding to the following statements. Indicate the extent to which you agree or disagree that the statement matches the team member's behavior. Use the following scale:

5-Strongly Agree 4-Agree 3-Neither Agree or Disagree 2-Disagree 1-Strongly Disagree

**Note:** Assignment #2 is worth 100 points, 30 points of which are based on your team members' evaluation of your contributions. Completing and turning in the form is required to compute individual final grades for the assignment. If you do not turn in an evaluation form, you and each of your team members will be assigned a score of '3' for each item. Forms are due with the assignment. **All ratings are aggregated, individual ratings are confidential, and ratings will not be changed by the instructor.**

| Team Member's Name (first/last)  |
|--|--|--|--|
| _____  | _____  | _____  | _____  |
| Arrived for meetings on time, stayed the entire meeting, and was prepared for meetings. _____<br>Contributed ideas and solutions to discussions and team work processes. _____<br>Listened to and allowed others to contribute ideas and solutions. _____<br>Followed team's ground rules and established conflict resolution process. _____<br>Respected and supported team's decisions. _____<br>Contributed agreed-upon share of team's responsibility and met deadlines. _____ | Arrived for meetings on time, stayed the entire meeting, and was prepared for meetings. _____<br>Contributed ideas and solutions to discussions and team work processes. _____<br>Listened to and allowed others to contribute ideas and solutions. _____<br>Followed team's ground rules and established conflict resolution process. _____<br>Respected and supported team's decisions. _____<br>Contributed agreed-upon share of team's responsibility and met deadlines. _____ | Arrived for meetings on time, stayed the entire meeting, and was prepared for meetings. _____<br>Contributed ideas and solutions to discussions and team work processes. _____<br>Listened to and allowed others to contribute ideas and solutions. _____<br>Followed team's ground rules and established conflict resolution process. _____<br>Respected and supported team's decisions. _____<br>Contributed agreed-upon share of team's responsibility and met deadlines. _____ | Arrived for meetings on time, stayed the entire meeting, and was prepared for meetings. _____<br>Contributed ideas and solutions to discussions and team work processes. _____<br>Listened to and allowed others to contribute ideas and solutions. _____<br>Followed team's ground rules and established conflict resolution process. _____<br>Respected and supported team's decisions. _____<br>Contributed agreed-upon share of team's responsibility and met deadlines. _____ |
| TOTAL POINTS _____<br>Score: (Total PT/6 ) _____   |

*Adopted from materials created by Carolyn R. Johnson, MLS/MBA, Arizona State University West (<http://www.west.asu.edu/johnso/WOMTC/peer.html>) F2009.*