Monitoring the Progress and Effectiveness of Student Teams

http://www.foundationcoalition.org/teams

Definition

A team is a small group of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable.[1] Although student teams may not satisfy all the requirements of the definition, the degree to which they do often determines their effectiveness.

Rationale

"Students do not come to school with all the social skills they need to collaborate effectively with others. Therefore, teachers need to teach the appropriate communication, leadership, trust, decision making, and conflict management skills to students and provide the motivation to use these skills in order for groups to function effectively."[2] Faculty must take responsibility to help students develop their skills to participate on and lead teams.

Introduction

One element of helping students develop the ability to learn and work in teams is monitoring their progress on team activities, exercises, or assignments and furnishing suitable feedback to them on their progress. To support faculty members who may be new to using students teams, this document addresses the following questions:

- Why is monitoring the progress of student teams important?
- What are possible strategies and tools for monitoring the progress of student teams?
- What are issues for instructors to consider as they monitor student teams?
- What are issues to consider if instructors ask teams to assess their progress (that is, self monitor)?
- How have specific instructors monitored team progress in their classes?

Addressing these questions is intended to help faculty members improve their ability to use student teams in their classes.

Why is monitoring the progress of student teams important?

When using teams for extended periods, monitoring their effectiveness occasionally is critical. Checking or monitoring, whether each team does it internally (self-monitoring) or the instructor does it externally (instructor monitoring), provides the following benefits:

- Positive reinforcement, encouragement for successful teams
- Correction and adjustments, diagnostic help for troubled teams
- Individual accountability
- Development of team skills through group processing

Positive Reinforcement Instructor monitoring and self-assessment can motivate teams to be more productive. People and teams work harder when they believe that they are on the right track. Positive evaluation (either by the instructor or by the team itself) can provide this validation.

Correction and Adjustments A negative evaluation that identifies specific problems can allow a team to redirect and reinvigorate its efforts. Karl Smith[3] notes that instructors need to systematically observe and collect data on each team as it works so that they can intervene to assist students in completing the task accurately and in working together effectually.

Individual Accountability External challenges are extremely effective for encouraging a team to work more productively. For example, Michaelsen et al.[4] point out that the single most powerful force for development of group cohesiveness is the perception of an outside threat to the well-being of the group.

Development of Team Skills in Group Processing One of the five elements of cooperative learning is "group processing," in which team members set goals, periodically assess what they are doing well as a team, and identify changes they will make to function more effectively.[5] Because the ability to perform self-assessment and to use it to improve performance is a critical characteristic of successful teams, students need experience with these activities.

What are possible strategies and tools?

Student teams can be used for an assortment of tasks, but these tasks generally can be categorized as in-class exercises, routine homework, or extended projects. Each of these requires different strategies for instructor monitoring and self-assessment.

In-class Exercises Teams may work on in-class exercises that involve answering or generating questions, explaining observations, working through derivations, solving problems, summarizing lecture material, troubleshooting, and brainstorming. For in-class exercises, instructors might assess effectiveness of these teams by observing them in action; asking them to self monitor by using a survey about the operation and performance of the team; by reviewing (or grading) some team product; or by a combination of these methods. Two examples of survey forms that faculty members have used are presented at the end of this document. Another example of a survey form is the Team Process Check (TPC), developed by faculty members at the University of Massachusetts Dartmouth. The TPC may be accessed at http://www.fcae.umassd.edu/fcteam/teamfacultyguide/frames_index.html. The site is password protected, but Ted Powers, tpowers@umassd.edu, may be contacted for the access information.

Routine Homework Instructors can assign routine homework for completion by teams instead of individuals. As with teams for in-class exercises, instructors need to occasionally check the effectiveness of these teams. Observing the teams in these out-of-class activities is difficult, but surveys about the operation and performance of the team can be used, and there is ample opportunity to evaluate products produced by the team. However, this evaluation may not indicate team effectiveness as well as observation of in-class exercises because the work may or may not be done in a cooperative manner.

Extended Projects Instructors may use extended assignments in which teams carry out experiments or research studies, complete problems sets or design projects, write reports, or prepare class presentations. If the duration of the assignment is more than a week or two, then some evaluation is appropriate, and surveys of team operation may be the most direct and informative approach.

What are issues when instructors monitor teams?

If instructors rely on effective teaming in the learning process or on an extended project, then they have the responsibility to monitor team effectiveness. Early "check-ins" let students know that progress will be monitored and allow suggestions and redirection. Monitoring takes many forms: reviewing self-assessment surveys, evaluating progress reports or intermediate deliverables, grading occasional assignments or exercises, and reading journal entries. The following are some specific suggestions that an instructor might use:

Milestones and Intermediate Goals With extended projects, establishing milestones is very important. Milestones are intermediate goals that are associated with one or more specific deliverables. Milestones may be defined either by the instructor or by each team. However they are defined, milestones set priorities and provide benchmarks for measuring progress.

Submitted Work Have teams submit something: a homework assignment, in-class exercise result, self-assessment statement, progress report, or intermediate product. This not only provides a tangible item for evaluation but also makes the teams take the evaluation more seriously. Requiring them to submit a single product provides a better indication of the team's effectiveness than individual products, and it reduces the grading effort for the instructor.

Team Training Although teambuilding is not directly related to monitoring progress, remember that students are still learning to work and learn in teams. Therefore, they need additional knowledge about effective teamwork, as well as opportunities to improve their skills. Therefore, instructors might periodically use a small amount of class time for some team training or evaluation to show that progress and team training are important.

Identifying "Hitchhikers" By monitoring teams early, instructors can identify hitchhikers and try to engage these students by letting them know that their grades will suffer unless they become participants. Carrying hitchhikers can demoralize teams, but knowing that the instructor is aware of the problem and will not give full credit to students who contribute little to the effort circumvents the problem.

Randomize Reporter Selection If a team activity leads to oral reports, then use random selection to choose responders at the last minute. Random selection can be done using a calculator, dice, cards, or by asking who was the last to eat at McDonald's, go swimming, ride an airplane, or some such common experience.

What are issues for self-monitoring?

Instructors play a critical role in monitoring the progress of student teams. However, student teams must develop the ability to monitor and improve their progress, because team members will need self-monitoring skills when they function on teams after graduation. Since self-monitoring is important for effective team operation, students should have some experience in this task. To provide experience, they will need training and opportunities to develop these skills, just like other team skills. The following are points for instructors to consider as they help students develop self-monitoring skills:

Code of Cooperation Felder and Brent[6] suggest that instructors ask teams to prepare and agree to a "contract" on team behavior at the beginning of the semester. Then, teams may periodically evaluate themselves against this contract. Alternatively, they can use a standard code of cooperation[7] that each team would prepare at the beginning of the term.

Approaches Instructors might provide self-monitoring surveys with specific inquiries and preselected responses (e.g., "Our team is working effectively. Strongly agree, Agree, Neutral, Disagree, Strongly disagree"). Alternatively, instructors might prepare a monitoring tool consisting of open-ended questions in which students are asked to identify any difficulties, specific strategies that are working or not working, and approaches for improving their effort. Finally, they can use a guided evaluation of some team product (e.g., a homework assignment or a preliminary report for an extended project). Whether an instructor uses a structured self-monitoring tool, a tool with open-ended questions, or guided evaluation of a team product, the instructor should ask student teams to monitor their progress at specific times during an extended project. Self-monitoring events might coincide with selected milestones.

Reporting Assessment Results With all self-monitoring tools, students need to turn in something so that they take the evaluations seriously and the instructor has material to evaluate. The submitted material may just be the form used in working through their guided evaluation, or it may be a brief, but more formal, report of the highlights of their self-evaluation.

Motivation Getting students to take self-monitoring seriously may be difficult. Faculty members can increase the value that students attach to self-monitoring processes in two ways. First, they can reinforce the value of learning to work and learn in teams as a set of skills required after graduation. Then, they might point out the value of self-monitoring as an important team skill. Faculty members can also demonstrate the value that they attach to self-monitoring by connecting assessment of self-monitoring activities to the course structure, grading policy, etc. Also, refer to the previous paragraph on the importance of having students submit some record of their self-monitoring activities.

Providing Adequate Tools/Knowledge Faculty members need to provide enough information/knowledge about teams for the students to be able to accurately self monitor. Faculty can provide information and tools at the beginning of the course, as they help students get their teams off to a good start. They can also provide information and tools during the brief, periodic team-training activities, as well as opportunities to practice self-monitoring and group processing during class. Specific examples of effective and ineffective team behaviors are some of the most important information that a faculty member might provide. To generate an initial list of specific behaviors, faculty members can often ask teams to offer examples of both effective and ineffective team behaviors.[9]

Foundation Coalition Examples

Many faculty members throughout the Foundation Coalition have been using student teams in their classes for years. Each has developed his approach to monitoring progress, partly based on published research and partly based on individual experience. Actual examples of how some faculty members have assigned teams may help others.

Example No. 1: Russ Pimmel, Electrical Engineering, University of Alabama

Russ teaches a senior electrical engineering design course. He uses the first form shown on the next page to monitor team progress and effectiveness in a four-week design project. Weekly, each student completes the form confidentially. Completing the form takes only a few minutes of class time, and reviewing them takes 10–15 minutes of the instructor's time. This review enables the instructor to identify teams with problems and to intervene early in the project.

Example No. 2: Terry Kohutek and Jim Morgan, Civil Engineering, Texas A&M University

Terry and Jim regularly team the first-year engineering course that is common for all engineering majors. They use the second form shown on the next page to allow students to evaluate their teammates on ten behavior patterns. Again, instructors can analyze these reports and identify possibly dysfunctional teams and individuals who might be causing problems. He or she can intervene or, alternatively, provide a summary of the results and let the team deal with any problems.

Example No. 3: Russ Pimmel, Electrical Engineering, University of Alabama

In another electrical engineering course Russ routinely uses team-based in-class cooperative learning activities. For each in-class exercise, Russ requires each team to submit a single written response to questions posed in the cooperative learning activity. These responses are then graded and can be used by the instructor to identify poorly performing teams and to intervene. To minimize the time required to grade each assignment, Russ uses a simple criterion. One answer in each submission is evaluated and assigned either ten points for the correct answer or eight points for incorrect ones.

References for Further Information

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3. Smith, K.A. Cooperative learning: effective teamwork for engineering classrooms. Available from the World Wide Web: <http://fairway.ecn.purdue.edu/FrE/asee/fie95/2b5/2b54/2b54.htm>.
4. Michaelsen, L.K., Fink, A.D., and Knight, A., 1997. Designing effective group activities. *In* DeZure, D. (Ed.), *To Improve the Academy*: Stillwater OK (New Forms Press), 16:373–398. Available from the World Wide Web: <http://www.ou.edu/idp/ideasgroupact.html>.
5. Felder, R.M., and Brent, R.. 1994. Cooperative learning in technical courses. ERIC Document Reproduction Service Report ED 377038. Available from the World Wide Web: <http://www2.ncsu.edu/unity/lockers/users/f/felder/public/Papers/Coopreort.html>.
6. Felder, R.M., and Brent, R., 1996. Navigating the bumpy road to student-centered instruction. *In College Teaching*, 44:43–47. Available from the World Wide Web: <http://www2.ncsu.edu/unity/lockers/users/f/felder/public/Papers/Resist.html>.
7. Foundation Coalition, 2002. Constructing a code of cooperation. Available from the World Wide Web: <http://foundationcoalition.org/home/keycomponents/teams/startingteams_construct_code.html>.
8. Smith, K.A., 2000. *Project Management and Teamwork:* New York (McGraw-Hill BEST series).
9. Foundation Coalition, 2002. Getting student engineering teams off to a good start. Available from the World Wide Web: <http://foundationcoalition.org/home/keycomponents/teams/startingteams.html>.

Whether you're just getting started or looking for some additional ideas, the Foundation Coalition staff would like to help you incorporate student teams into your engineering classes through workshops, Web sites, lesson plans, and reading materials. For suggestions on how to start, see our Web site at

<http://www.foundationcoalition.org> or contact Jeffrey Froyd at froyd@ee.tamu.edu or at 979-845-7574.

TEAM PROGRESS AND EFFECTIVENESS REPORT FORM

TEAM NO. _____ YOUR NAME _____ DATE _____

1. Our team ___ worked very little this week _____ worked some but not enough this week _____ worked enough this week.

2. Our team _____ fell very short of this week's goal _____ almost met this week's goal _____ met this week's goal.

3. Our team _____ is not functioning _____ is functioning but needs improvement _____ is functioning effectively.

4. Indicate the name of any team member who is not participating

(i.e., a member whose contributions are well below the expected level)_____

5. Comments _____

_____

YOUR NAME _____ **TEAM #** _____

Please rate all members of your TEAM, including yourself, on the following questions **(maximum points = 10 for each)**

MEMBER NAMES→				
1. Attended all team meetings and contributed to the activities				
2. Met deadlines by the team				
3. Quality of ideas in the team activities				
4. Quality of work in the team activities throughout the semester				
5. Quantity of work in the team activities throughout the semester				
6. Helped keep the team organized, cohesive, and progressing				
7. Showed concern for the feelings of other team members				
8. Demonstrated a positive attitude toward the team				
9. Listened to the ideas of other team members				
10. Encouraged other team members to contribute to discussions				

How satisfied are you with your group's performance? ❍ Very satisfied ❍ Satisfied ❍ Slightly dissatisfied ❍ Very dissatisfied ❍ Other

Who is the leader of your group? _____

Is there anyone on your team whom you feel is either doing an exceptional job or is holding your group back, i.e., you could not have done it without her/him, you would never want to serve on a team with her/him again, or …? If so, use the back of this form to detail who it is and what the situation is.