

Tools and techniques for enhancing the quality and effectiveness of student teams



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***Abstract:** Group learning is becoming increasingly common in higher education, yet many students are disappointed by their experiences with it. This is due in part to a lack of understanding, by both students and faculty, of the attributes of effective teams along with a lack of explicit focus on their achievement. This paper presents various tools and techniques by which faculty can identify and explore the attributes of successful teams with their students. They include in-class experience-based discussion; simple exercises, games, and ice-breakers; team attribute analysis; complex exercises and games; and the assessment of individual roles. Through these ideas, a contribution to quality conversations on the effectiveness of student teams is made.*

***Keywords:** Group learning, attributes of effective teams, tools and techniques*

Fuelled by the growing acceptance of active learning strategies, increased class sizes, and employer demands for students with well-developed interpersonal skills, group or team-based learning is becoming increasingly common in higher education. Despite its popularity, many faculty are ill prepared to provide the necessary support that effective group learning requires. According to the Center for Excellence in Learning and Teaching (1997, p. 3), many faculty simply assume that students already “know how to work effectively in groups.” Others lack the skills for adopting a facilitative approach; “group learning has never been as important as it is now. Yet we are still in a world where most teachers, educators and trainers are groomed in instruction rather than facilitation” Race (2000, p. viii). As a result, student experience with group work often falls sadly short of expectations.

The intention of this paper is to contribute to quality conversations on student learning by providing concrete suggestions for faculty who are interested in facilitating effective team development. It provides an overview of the attributes of effective teams, as well as selected tools and techniques for facilitating their identification and improvement. These include 1) in-class experience based discussion; 2) simple exercises, games and icebreakers; 3) team attribute analysis; 3) complex exercises and games; 4) and assessment of individual roles. Each of these is elaborated below. For the purposes of this paper, a student team is defined as a group of students that has been formally brought together to complete a graded course requirement of a substantial nature, with work typically occurring over several weeks or the entire semester.

In-class Experience-based Discussion

Student teams are not at all dissimilar to many other types of teams (e.g., sports teams, work teams, community teams). It can therefore be useful to have students reflect on their previous

experiences, good and bad, and to identify attributes that contributed to their team's (lack of) success. Attributes students typically identify include the importance of having clear goals; commitment by all members; clear and regular communication; individual accountability; and the tracking and celebration of success.

Having students identify these attributes helps validate their prior knowledge, creates buy-in to discussing team dynamics in the classroom, and can lead to the implementation of processes that will improve the effectiveness of student teams. For example, to support the attribute of "clear goals" students may begin a team project by discussing desired outcomes and coming up with a clearly worded goal or mission statement. In support of communication and accountability, they may discuss strategies for scheduling and managing meetings, as well as for dealing with team members who don't sufficiently contribute.

Simple Exercises and Games

Simple exercises, games, or "icebreakers" can create shared experiences which can then be analyzed for further insight. "It can be useful to use an icebreaker with the whole class, during which learners work for a short while in groups. They are then briefed to analyze exactly what went well and what didn't work in the group episode, and to identify reasons for good and bad processes" (Race, 2000, p. 28).

One such exercise by William Gellerman (1991) can powerfully illuminate challenges commonly experienced by student teams, including the need to behave cooperatively in a competitive environment, and the impact on team cohesion when trust is broken. In this exercise students are divided into groups of eight, within which there are four designated pairs, and are told that the object of the exercise is to "win as much as you can." It is up to each individual pair to determine what this means to them. Some interpret "you" to mean their pair, whereas others interpret "you" to mean their group of eight. The only decision each pair has to make is whether to submit an "X" or a "Y" for ten successive rounds (which range in time from 1 to 2 minutes). Scoring is calculated after each round, and depends on the combination of submissions. See Appendix 1 for the scoring and instruction sheet. The scoring of the game deliberately creates tension between the self-interest of individual pairs and their group. For example, if one pair submits an X every time and the other three pairs submit a Y every time, by the end of the game the "X" pair would have won \$75 and each "Y" pair would have lost \$25. The pair submitting the X may believe that they have "won" yet their team would have a combined score of 0 (i.e., a win-lose situation). If however, each pair submits a Y every time, each pair would win \$25. In this case, no individual pair "wins" over the others, but each does collect \$25 and the team has total winnings of \$100 (i.e., a win-win situation).

No groups in my experience have had all four pairs exhibit cooperative behaviour throughout the entire exercise (i.e., submit Ys for all ten rounds). In some, pairs begin with a competitive model but switch to a collaborative one after the first bonus round (i.e., after they've had their first opportunity to openly discuss goals and assumptions). Others follow a mixed approach with some pairs being consistently collaborative, despite the competitive behaviour of one or two other pairs. Some competitive pairs deviously go along with the "Y" approach, lulling their collaborative colleagues into a false sense of security, until the bonus rounds, when the promise of greater rewards becomes too tempting and a rogue "X" is submitted. Several times I have seen "organized penalties" being given to competitive pairs by the more collaborative ones (e.g., they are told they must submit a "Y" on a bonus round to make up for past digressions). Almost all groups experience some degree of conflict.

In debriefing the game, I begin by asking each group of eight to provide me with their individual pair and total scores. With these recorded on the board, I then ask the groups with the highest and lowest total scores to analyze their processes and explain their results. Other groups are then welcome to add their own observations. As part of this discussion, I point out that should each pair have submitted a “Y” every time the total score would have been \$100. Issues that are raised in the ensuing discussion tend to include the importance of clear and commonly accepted goals; regular and effective communication; the need to have everyone working for the benefit of the team, as opposed to individual self-interest; the need to deal effectively with conflict; and the damage to team morale that can be caused by subversive sub-groups.

Issues associated with trust, such as intensified interpersonal problems and the initiation of enforcement techniques once trust has been broken, are also frequently raised. This is supported by the literature on employee teams (Kirkman, Jones and Shapiro, 2000) and social capital (Fukuyama, 1995). For example, Kirkman et al. (2000) observed that once trust is lost, it is very difficult to regain. Relatedly, in his work on social capital, Fukuyama distinguished between high trust and low trust societies, and suggested that in the absence of trust, cooperation can only be assured through considerable investment in formal control mechanisms such as “rules and regulations, which have to be negotiated, agreed to, litigated, and enforced” (Fukuyama, 1995, p. 27). In other words, once trust has been violated, there are significant personal and economic penalties to be paid. This issue has a lot of relevance for students who may have experienced the deterioration of trust within their student teams (e.g., students not honouring commitments made to each other).

Team Attribute Assessment Templates

Much has been written in the field of organizational behaviour on effective work teams and accessible summaries can be found in most introductory organizational behaviour textbooks such as *Organizational Behaviour*, by Hellriegel, Slocum and Woodman (1992) and *Developing Managerial Skills*, by Whetten and Cameron (2002). This literature can be used to help inform students about the attributes of effective teams and for developing templates which can be used for assessing in-class exercises and student projects. See Appendix 2 for the Team Effectiveness Inventory, adapted from Hellriegel, Slocum and Woodman (1992).

For student projects, such an assessment is ideally completed at the one-third to one-half mark, providing students with sufficient data to analyze as well as sufficient opportunity to make any necessary improvements. A report summarizing the group’s analysis and intended action plan should be submitted for grade. Submitting a formal report helps to emphasize the importance of the exercise and provides the faculty member with an “early warning system” for dysfunctional teams. In providing the students with graded feedback, the faculty member is also in a position to make any further suggestions she/he believes might be helpful. “Including such an evaluation...can cause all of the members of a group to reflect on the processes involved in their working together, and to deepen their learning about the processes involved in effective team working” (Race, 2000, p. 29).

Complex Exercises and Games

Group work is ideally suited to complex, uncertain, and creative tasks that require multiple skills and perspectives. Exercises and games that mirror this complexity can provide students with a safe environment in which to develop their skills and insights. One such exercise is called the “eggship” exercise (Wills, 1999). Critiquing her experience with this exercise,

Plank (1998, p.1) suggests “such activities, which may seem silly, are actually very useful, especially at the beginning of a long collaborative project, because they provide a fun and non-threatening way for students to learn about their team members and understand group dynamics.” Within this exercise participants are divided into teams of approximately five people, and are told that their objective is to design a transportation device that will safely transport an alien creature (with the size and attributes of a raw egg) to earth, from a height of about seven feet (without cracking the egg). I also select one person to observe each team’s process, often using the major categories contained in the team effectiveness inventory in Appendix 2.

Each team is provided with a variety of raw materials, which are assigned a manufacturing cost (e.g., \$15/paper cup, \$10/plastic bag, \$5/straw, \$4/paper towel, \$3/elastic band). Manufacturing costs cannot exceed \$75 and a financial statement must be submitted upon product completion. Dollar amounts selected should be sufficient to force scrutiny of production materials, but not be sufficiently high so as to stifle creativity. The team must also come up with a product name and marketing slogan. They are typically given 30 minutes to complete all tasks. Once the slogans are presented and the eggships tested, the teams reflect upon their processes and experiences (i.e., what contributed to/detracted from their success). The observers also offer their reflections, which can add important additional insights. For example, if one person dominated the group, the facilitator can tactfully point out that not all members contributed equally, leaving the group to provide reasons why that might have been the case. Another issue this exercise typically raises is the need for an effective structure for coordinating multiple roles.

If the teams have experienced a fair degree of conflict, I specifically ask them about the nature of the conflict and strategies they may have used for resolving it. The literature suggests that groups primarily experience three types of conflict: relationship conflict (e.g., interpersonal incompatibility); task conflict (e.g., differences in perceptions of the nature of the task); and process conflict (e.g., differences of opinion as to what needs to be done and by whom) (Jehn and Mannix, 2001). Recent research by Jehn and Mannix (2001) suggests that effective groups tend to experience consistently low levels of conflict in all three areas, with the exception of task conflict, which tends to peak in high performing groups at about the mid-point of the project (in this case, the 15 – 20 minute mark). This allows team members to clarify the group’s goals, assess what has been accomplished, and make any necessary adjustments to aid in successful task completion. In contrast, low-performing groups tend to experience relatively high levels of conflict throughout, with task and interpersonal conflict peaking just prior to the project deadline.

Understanding and Assessing Individual Roles

Team members can play a variety of roles, some helpful and others not. To help illuminate these roles, students can be asked to participate in a complex group activity (such as the eggship exercise described above or an actual group assignment) and then complete an inventory of the various roles they played. Once again, instruments can be found in introductory organizational behaviour textbooks and educational workbooks. For example, Whetten and Cameron (2002) and Hellriegel et al. (1992), both identify three categories of behaviour including: “task-oriented” (e.g., initiating ideas, facilitating the introduction of facts and information); “relationship-oriented” (e.g., support and encouraging others, reducing tensions); and “self-oriented” or “blocking” behaviours (e.g., expressing hostility, seeking recognition). Within the educational domain, Race (2000) identified common dysfunctional student behaviours as including: being late for meetings; lack of attendance; being ill

prepared; chatting inappropriately; procrastinating; being disruptive; dominating; and not listening. Gibbs (1994, p. 11) similarly identified lack of listening; getting stuck in non-productive arguments; interrupting others; incessantly pushing one's own view (as opposed to helping develop and encourage others'); allowing dominant members to dominate; failing to compromise; putting others down; and being insensitive to other's feelings.

An inventory for identifying individual student roles is included in Appendix 3. Students can be asked to reflect on a particular group experience and identify which roles they used most and least often, and what role changes they should make in future team experiences in order to strengthen their contribution.

Conclusion

In conclusion, group or team-based learning has become a dominant pedagogical approach in higher education, yet has received little attention in terms of the support that faculty and students need to be successful in such a learning environment. This paper has provided practical examples that the author has personally found to be very effective in helping teach students about the attributes of effective teams and developing their skills in team environments. These included in-class experience-based student discussions; simple exercises, games and ice-breakers; team attribute analysis templates; complex exercises and games; and the assessment of individual roles. While others will hopefully find these suggestions useful, they are limited by the lack of empirical data demonstrating their impact. Further research that tests the extent of the impact of various interventions of this type would be very useful in helping direct classroom interventions and improving the quality of group-based learning.

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Appendix 1 - Win as Much as You Can (Gellerman, 1991, pp. 257-261)

The object of this exercise is to win as much as you can. It is played in groups of eight (four pairs). For ten successive rounds, you and your partner are to choose an x or a y. You can earn points depending on the pattern of choices made in your group of four pairs. Points are awarded as follows:

| | |
|-------|---------------------|
| 2 x's | Each pair wins \$2 |
| 2 y's | Each pair loses \$2 |
| 1 x | Each pair wins \$3 |
| 3 y's | Each pair loses \$1 |
| 4 y's | Each pair wins \$1 |
| 4 x's | Each pair loses \$1 |
| 3 x's | Each pair wins \$1 |
| 1 y | Each pair loses \$3 |

There are six rules:

1. Each pair will produce two equal sized pieces of paper – one marked “x”, the other “y”.
2. You may confer only with your partner when making a decision except for rounds 5, 8 and 10 (note, these are bonus rounds).
3. Once a pair has made their decision, one member should place their selection face down in the middle of the table (still holding on to it). You must not share your decision with the other pairs until instructed to do so.
4. All pairs must turn over their choice (x or y) at the same time. Once a choice is shown it cannot be changed.
5. If a pair fails to show a choice for a given round, their choice for the previous round stands.
6. You should keep a running total of your pair's score on the following chart (note the bonus round multipliers).

| Round | Time | Confer with: | Choice (x or y) | Won | Lost | Balance |
|-------|---------|--------------|-----------------|-------|-------|---------|
| 1 | 1 _ min | Partner | | | | |
| 2 | 1 min | Partner | | | | |
| 3 | 1 min | Partner | | | | |
| 4 | 1 min | Partner | | | | |
| 5 | 1 _ min | Group | | (x3) | (x3) | |
| 6 | 1 min | Partner | | | | |
| 7 | 1 min | Partner | | | | |
| 8 | 1 _ min | Group | | (x5) | (x5) | |
| 9 | 1 min | Partner | | | | |
| 10 | 2 mins | Group | | (x10) | (x10) | |

Appendix 2 – Team Effectiveness Inventory (Adapted from Hellriegel, Slocum and Woodman, 1992, pp. 344 – 345)

Instructions: Assess the effectiveness of your team. Please respond on the basis of your degree of agreement or disagreement with each statement. Use the following scale: strongly disagree (SD), disagree (D), undecided/neutral (U), agree (A), strongly agree (SA). Add your total score for each dimension. Then, add your total score for the entire survey.

| Statements | SD | D | U | A | SA |
|---|----|---|---|---|----|
| Sense of Purpose and Commitment (total score _____) | | | | | |
| 1. We have a clear sense of our collective goals and priorities. | 1 | 2 | 3 | 4 | 5 |
| 2. Our goals are challenging yet achievable. | 1 | 2 | 3 | 4 | 5 |
| 3. Team members are highly committed to our collective goals, subordinating their own individual goals or interests when necessary. | 1 | 2 | 3 | 4 | 5 |
| Team Processes (total score _____) | | | | | |
| 4. We have effective processes for sharing information. | 1 | 2 | 3 | 4 | 5 |
| 5. We have effective processes for solving problems, making decisions, and running meetings. | 1 | 2 | 3 | 4 | 5 |
| 6. We have effective processes for ensuring individual accountability and coordinating individual efforts. | 1 | 2 | 3 | 4 | 5 |
| Focus on Performance (total score _____) | | | | | |
| 7. We have effective processes for tracking and analyzing team performance. | 1 | 2 | 3 | 4 | 5 |
| 8. We regularly achieve our goals. | 1 | 2 | 3 | 4 | 5 |
| 9. We celebrate and are fairly rewarded/graded for our achievements. | 1 | 2 | 3 | 4 | 5 |
| Member Influence (total score _____) | | | | | |
| 10. Team members listen to, respect, and understand each other. | 1 | 2 | 3 | 4 | 5 |
| 11. Members are active in influencing the goals and processes of the team. | 1 | 2 | 3 | 4 | 5 |
| 12. Members deal with conflict constructively. | 1 | 2 | 3 | 4 | 5 |

| Statements | SD | D | U | A | SA |
|------------|----|---|---|---|----|
|------------|----|---|---|---|----|

Satisfaction (total score _____)

| | | | | | |
|---|---|---|---|---|---|
| 13. I enjoy working with my team members. | 1 | 2 | 3 | 4 | 5 |
| 14. I am able to make good use of my skills and abilities on this team. | 1 | 2 | 3 | 4 | 5 |
| 15. Considering everything, it is a pleasure to be on this team. | 1 | 2 | 3 | 4 | 5 |

Interpersonal Relationships (total score _____)

| | | | | | |
|--|---|---|---|---|---|
| 16. I trust the members of my team. | 1 | 2 | 3 | 4 | 5 |
| 17. Team members contribute equally. | 1 | 2 | 3 | 4 | 5 |
| 18. We are a supportive, cooperative and cohesive group. | 1 | 2 | 3 | 4 | 5 |

Creativity (total score _____)

| | | | | | |
|---|---|---|---|---|---|
| 19. Divergent ideas are encouraged. | 1 | 2 | 3 | 4 | 5 |
| 20. Our norms encourage the open exploration of problems, as well as new ideas and approaches for solving them. | 1 | 2 | 3 | 4 | 5 |
| 21. The creative talents of team members are well used. | 1 | 2 | 3 | 4 | 5 |

| Score Summary | 3-8 (weak) | 9-11 (ok) | 12-15 (strong) |
|---------------|------------|-----------|----------------|
|---------------|------------|-----------|----------------|

| | | | |
|--|-----|------|-------|
| <input type="checkbox"/> Sense of Purpose and Commitment | 3-8 | 9-11 | 12-15 |
| <input type="checkbox"/> Team Processes | 3-8 | 9-11 | 12-15 |
| <input type="checkbox"/> Focus on Performance | 3-8 | 9-11 | 12-15 |
| <input type="checkbox"/> Member Influence | 3-8 | 9-11 | 12-15 |
| <input type="checkbox"/> Satisfaction | 3-8 | 9-11 | 12-15 |
| <input type="checkbox"/> Interpersonal Relations | 3-8 | 9-11 | 12-15 |
| <input type="checkbox"/> Creativity | 3-8 | 9-11 | 12-15 |
| <input type="checkbox"/> Total | | | |

(84 – 105 = highly effective team; 43 – 83 = effective on some dimensions; 21 – 42 = ineffective team)

Appendix 3 - Understanding Student Roles
(adapted from Whetten and Cameron, 2002, pp. 466 – 468; Hellriegel et al, 1992, pp. 325; Gibbs, 1994, pp. 4 and 11; and Race, 2000, pp. 99 - 109)

Put a (√) beside all the various roles that you played on your team.

Task-oriented Roles. In my team, I...

- Clarify goals and objectives, ensuring the team has reached consensus.
- Clarify roles, responsibilities, timelines, and processes.
- Encourage creativity in problem identification and resolution.
- Track progress against agreed upon objectives.
- Help enforce and assess the effectiveness of team processes.
- Seek and provide needed information.
- Synthesize ideas.
- Evaluate ideas.
- Organize team meetings and summarize decisions.
- Achieve personal commitments.

Relationship-oriented Roles. In my team, I...

- Listen attentively to others.
- Support, encourage, and motivate others.
- Help resolve conflict.
- Relieve tension through the use of jokes and humour.
- Have a positive, optimistic, enthusiastic outlook.
- Challenge negative behaviours.
- Empathize with others.
- Tactfully contribute to the learning of others.
- Acknowledge and celebrate achievements.
- Ensure all members have the opportunity to participate.

Blocking Roles. In my team, I...

- Try to dominate discussions and decisions.
- Put my own self-interest ahead of the team's.
- Minimize my involvement.
- Procrastinate.
- Am highly critical and argumentative.
- Share my lack of interest in the team's task.
- Insult or personally criticize other members.
- Try to force quick decisions.
- Present opinions as facts.
- Have difficulty staying focused.