An International Perspective on Assessing Group Projects

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The value of group work for enhancing learning is well documented. However, to maximize the impact of group work on student learning, faculty should carefully consider course design and assessment. This chapter draws on research, policy, and practice from the US, Canada, Australia, and New Zealand to emphasize the importance of adopting an integrated approach to group work through careful planning. Guidelines emphasize ways to provide for the responsive, responsible assessment of group projects.

LOOKING AT GROUP WORK, INCLUDING ITS VALUE

Human beings are social animals who have banded together from their earliest evolution to meet common needs such as the procurement of food, shelter, and protection. Not surprisingly, for many years, groups have been used in higher education around the world as a teaching-learning strategy. However, the widespread assessment of group work is a more recent phenomenon growing out of the impetus for accountability and a growing awareness of the complexity of fair and ethical evaluation. Both group work and its assessment (including self and peer assessment) have been the subject of considerable research and discussion in the higher education literature (e.g., Boud, Cohen, & Sampson, 1999; Johnson & Johnson, 1996; Millis & Cottell, 1998).

In a wide variety of teaching contexts group work has been shown to enhance student learning. For example, cooperative learning, a highly structured form of group work emphasizing the positive interdependence of students, their individual accountability (no undifferentiated group grades) and attention to their group processing, and social skills, has a well-established research base at the higher education level. Cuseo (1992) finds cooperative learning to be “the most researched and empirically well-documented form of collaborative learning in terms of its positive impact on multiple outcome measures” (p. 3). Such outcomes include not only increased academic achievement, but also affective outcomes important to faculty around the globe: increased self-esteem, more harmony in multi-ethnic classrooms, higher attendance, and greater liking for the subject matter. Support for cooperative learning emerges from virtually all areas of educational research. For example, Astin’s (1993) comprehensive longitudinal study of the impact of college on US undergraduate students determined the significance of two factors in particular—student-student interaction and student-faculty interaction—both of which are also important attributes of structured group work. He declares, “Classroom research has consistently shown that cooperative learning approaches produce outcomes that are superior to those obtained through traditional competitive approaches . . .” (pp. 425–427).

The international literature (e.g., Boud, Cohen, & Sampson, 2001; Millis & Cottrell, 1998) documents a range of academic and social benefits of group work. These include improved student performance; the development of cooperation and planning skills; opportunities for leadership and shared leadership; active participation and involvement; the promotion of student autonomy by transferring some of the responsibility for teaching and learning to students; the opportunity to critique personal understanding and receive peer feedback, fostering students’ ability to think critically about their learning and to determine what criteria should be used in judging their work. Few of these desirable outcomes will occur, however, if the group-related elements of the course are disconnected from the objectives.

EFFECTIVE DESIGN AND ASSESSMENT

Linking Group Projects to Course Objectives

Learning objectives provide the starting point for the course or the section of the course taught. To determine these objectives, faculty members can ask themselves key questions: What topic am I teaching? Is it substantive knowledge, a skill, or a process? What do I want my students to take away from the

course or this portion of it? What do I want them to remember or be able to apply ten years down the academic road?

McKeachie (1994) and many other scholars (e.g., Biggs, 1999) emphasize the need to develop clear course objectives from which “all the decisions in course planning should derive . . .” (p. 9). Assessment should also be carefully linked to the course objectives. Astin et al. (1992) note:

Assessment is a goal-oriented process. It entails comparing educational performance with educational purposes and expectations—these derived from the institution’s mission, from faculty intentions in program and course design, and from knowledge of students’ own goals. . . . Clear, shared, implementable goals are the cornerstone for assessment that is focused and useful. (p. 2)

Well-thought-out group projects, which are also carefully and responsibly assessed, can help students learn both skills and content germane to many disciplines.

Deciding When to Use Group Projects

Most researchers and practitioners agree that group work should be considered when one or more of the following criteria are met:

- Some goals are best achieved through students working in groups.
- The task can only be carried out by a group (e.g., where students work as a management team or are required to assign roles to group members).
- The task is too large or too complex for one person.
- Resource limitations require group work (limited equipment, limited number of “real” clients).

Michaelsen, Fink, and Black (1996) emphasize that to become cohesive, groups need well-designed assignments. “The critical variable,” they claim, “is the degree to which the activities involved in completing the assignment require a high volume and intensity of group interaction” (p. 36). When group projects are either too easy or require too much writing; students tend to delegate rather than cooperate. Delegation is basically an independent task. Thus, these authors do not recommend group term papers.

Faculty must establish and maintain grading policies for group projects that clearly further the course objectives, and they must be equally careful

about how they explain their grading system to students. Loacker, Cromwell, and O'Brien (1986) remind us:

Assessment requires [faculty] to articulate...explicit and public statements of criteria of performance. By doing so, faculty refine their own understanding of expected abilities, clarify for their colleagues the basis of their judgment, and enable students to understand what performance is required. (p. 51)

Michaelsen, Fink, and Black (1996) advocate grading systems for group projects that provide frequent, meaningful feedback and reward group performance.

Determining Strategies for Assessing Group Projects

A number of methods are available for assessing aspects of group work, including allocating a shared group mark or individual marks based on product alone, or on a combination of product, group process, and individual effort. In addition, assessment may involve peer and/or self-assessment as well as assessment by faculty members. Faculty members should answer a number of critical questions before finalizing their assessment approach for group projects.

- Should I give students all the same mark or a mark based on each person's contribution to the group performance?
- If I assess each student's contribution, how will I know what each person has contributed?
- What proportion of a student's course mark should be allocated to a group project?
- Is it appropriate to include an "opt-out" clause for students who do not want to work on the project?
- What do I do if a group member leaves, thus leaving the group with a gap in the allocation of duties to members?
- What do I do if a group falls apart? Or if a member fails to do his or her share?

Specific issues related to group work. Possible problems and pitfalls are associated with group projects and their equitable assessment. As with any form of teaching, a number of potential problems may arise. Staff and students at

the University of Technology, Sydney (n.d.) identified the following concerns related to group work:

- Poor internal group dynamics
- Exclusion or marginalization of individual group members
- Inappropriate tasks or assessment criteria for the subject or the range of students
- Less than desired levels of academic support or intervention
- Assessment of group work where there is no acknowledgement of differences in individual contributions
- Excessive amounts of group work when compared with individual work in a program or course

International practitioners agree (e.g., Webb, 1994) that appropriate use of group work, careful planning, support, and monitoring will reduce the likelihood of these problems adversely affecting student learning. Furthermore, faculty members meeting regularly with groups can assess progress, provide feedback, and head off disruptive behaviours.

Many of the problems with “difficult” groups or students can be reduced if detected and discussed early on. However, students reluctant to reveal problems should have opportunities to raise concerns in confidence. There needs to be a clear procedure concerning who can help if there is a group problem and what students should do. Scheduling group consultation times and providing confidential email access to the lecturer can help identify and eliminate problems. However, these avenues need to be made clear in course documentation and reinforced in class time. Making class time available to work on the group project provides opportunities for faculty who monitor student progress to identify any group that is, or is in danger of becoming, dysfunctional.

Where problems are detected, students can be asked to respond in writing to the following questions:

- What is the main problem in this group?
- What could be done about it?
- What is your most immediate concern?
- What messages would you like to send to the group?

Lecturers should discuss the results with the group and negotiate a way of working to achieve the groups' learning goals. Alternatively, if student management teams (Nuhfer, 2001) or quality circles (Angelo & Cross, 1993) have been established in a classroom, then other students in the class will actually become involved in the problem-solving efforts. Both of these approaches involve designated class members who serve as a liaison between teachers and students. The overall goal is to optimize the success of students' experiences in a course.

Most groups work quite well with little intervention if clear roles and criteria have been established (see Appendices 17.1 and 17.2 for sample group assessment instruments). Problems may arise if a group member becomes ill or has other personal problems, stops communicating with others, does not contribute equitably or if political alliances arise. An insightful discussion of recommended classroom management approaches appears in Millis (2002). Even after addressing some of these project-specific issues, faculty members need to step back to review their overall assessment philosophy and subsequent strategy.

Fundamental issues related to assessment. University education is based on an assumption that final grades reflect individual student achievement. This approach clearly presents difficulties when the process and/or product of a group project are attributed collectively to group members. To operate group work within a system of individually allocated marks, one response has been to encourage students to enhance their learning through collaboration and assess students on the basis of individual assignments. Individual marks allow outstanding performance to be rewarded and freeloading to be penalized. No competition need be introduced provided marks are allocated based on the standard reached by each student rather than the performance of groups. Thus, students might collaborate on the research aspect of a given project but submit individual papers for which they receive independent grades. The University of Otago's (2001) assessment guidelines, however, conclude that while this method of assessment "preserves the individual character of final grades, [it] tends to undermine motivation for collaboration" (Assessment of Group Work section, ¶ 3). Thus, students who perceive themselves as more capable may think that collaboration on a group project will undermine their advantage on the subsequent individual assessments, especially if the grading is substantially norm-referenced.

International experts agree (e.g., Little & Wolf, 1996) about the practice of norm-referenced grading, particularly when it involves grading on the curve. They urge, "Don't do it!" Grading on the curve is essentially a quota

system. Regardless of the class composition, instructors often announce at the beginning of the term, "Only the top X percent of you will earn A grades. Those in the next X percent will receive B's, and so forth."

Another option when assigning grades individually is to allow students to identify a specific part of the project for which they can be responsible and on which they will receive an individual mark. This approach, however, requires faculty members to pay attention to the task of coordinating and integrating the parts to determine who is responsible for what parts (University of Queensland, n.d.).

Instead of awarding individual grades, an alternative approach is to allocate undifferentiated group marks for a project that counts equally toward individual student's grades. Uniform marks encourage collaboration by removing any rationale for competition. The University of Otago's guidelines comment, however, that

this approach can lead to concern, from teacher or students, that some students are getting good marks based largely on the work of other members of the team, or that capable students would have gained better marks if they had not been handicapped by their weaker partners. (Assessment of Group Work section, ¶ 4)

Teachers using a variation of this approach assign a collective mark (usually a set number of points) to the group for the overall project. One group might receive, for example, 90 points for their overall project, another group 70. The group must then decide whether to divide these points evenly or unevenly among the group members. This approach, however, invites inequity issues and ill will. Too often personality clashes or intercultural misunderstandings occur. Unless specifically tied to course content such as performance appraisal, these frictions do little to promote course objectives.

Most assessment experts recommend an approach that looks at both process and product issues with peer, self, and faculty input. Students work collaboratively to complete the required group project. However, the allocation of individual grades takes into account the contribution of each member. Information on contributions can be provided in a variety of ways (e.g., use of oral tests, individual summaries of contribution and achievements, notes from group meetings, the use of peer assessment to evaluate the contribution of self and other members, group processing forms, group interviews, etc.). Information gained in this way can be used by the faculty member to determine a student's final mark. Most faculty members are comfortable with their own

grading standards and approaches, but may be more uncertain with students conducting peer and self-assessments.

Peer assessment. Many faculty members committed to group projects build in peer assessment as a component of the final grade (see Appendix 17.3 for a sample instrument allowing peers to assess group members' contribution). There are many justifications for this practice even though students, unless properly trained and similarly committed to the practice, may be hesitant about passing judgment on their peers. Allowing student input into the process of evaluation sends several signals consistent with a group oriented philosophy:

- Teachers, because they are not the sole arbitrators of success or failure, play less of a gate keeper role responsible for weeding out the unfit and the unworthy. The process of evaluation is shared.
- Students are in a logical position to be able to judge, far more effectively than an instructor, the individual contributions of their peers.
- Peer feedback is usually directed toward an individual within the context of a specific task. Besides being context-specific, it tends to be delivered promptly when feedback is most effective.
- Peer evaluation builds in accountability: Students realize that they are held accountable for their academic achievements and group contributions. They may be able to "psych out" a teacher, but they can rarely hide from their peers.
- Students benefit from the process of peer review. They learn valuable skills about the learning process and about teamwork efforts.

Because of accountability and equity issues, teachers should monitor carefully any peer review process. Students must be assessing peers on attainable course objectives based on carefully specified criteria. They must offer concrete evidence. Woods (1996) advocates training students to do such assessments and providing an environment where peers can give accurate feedback.

Peer assessment becomes even more meaningful when students have input and ownership over the process. For example, in business courses where performance appraisal is a topic of study, teams can develop their own criteria for individual grades for contributions toward a group project. As a first step, they can brainstorm the criteria for evaluation and then group them into broad areas, such as attendance, participation, preparation, cooperation, and attitude. The criteria can then be defined through a rubric with performance

standards that are finally weighted. Accompanying such an instrument can be the ground rules for its use.

Peer review is obviously complex. Woods (1996) integrates peer review into virtually every aspect of his problem-based learning engineering classes. Feedback, whether given by the student himself or herself or by peers, typically addresses five strengths for every two things that could be worked on. After all group meetings, students complete a feedback form that looks at both their task performance and their group skills. This approach emphasizes not only accountability to the group, but also self-assessment.

Self-assessment. Researchers involved in determining how to promote deep learning have focused on students engaged in learning within specific contexts by observing, listening, and probing. As Rhem (1995) concludes, "In the end, they have focused on metacognition as the heart of learning and view it as a phenomenon more influenced by the demands of particular learning environments than by predispositions of personality" (p. 2). Similarly, Bransford, Brown, & Cocking (2000) consider metacognition essential to learning. With a solid research base and clear implications for teaching, they conclude that "a 'metacognitive' approach to instruction can help students learn to take control of their own learning by defining learning goals and monitoring their progress in achieving them" (p. 18). This recognition of the role metacognition plays in learning makes it desirable for teachers to include self-assessment opportunities in courses. Woods (1996) places self-assessment at the heart of learning. Students should learn to evaluate:

- The subject knowledge
- The problem solving skills used
- The group process used
- The chairperson skills displayed
- The acquisition of self-directed, interdependent, life-time learning

With assessment comes accountability for both students and the teachers. Assessments must be conducted responsibly based on measurable criteria, evidence, and objectivity.

When self or peer assessment forms part of the assessment requirements for a project, faculty members should do everything possible to ensure that the outcomes are equitable and credible. For example, as mentioned earlier, there may be differences, associated with culture and gender, in the extent to which students are prepared to promote themselves. Following recommended practices

for responsive, responsible group projects can alleviate a lot of the stressors for students and faculty alike.

Guidelines for Assessing Group Projects

All forms of student assessment should conform to principles of good practice. The following guidelines apply specifically to the assessment of group work. Faculty members should:

- 1) Clearly identify the purpose and function of the group project, including why it is appropriate for the project to be completed in groups and how the process and content of the project will help to achieve the stated learning objectives. This information should be communicated to students from the outset.
- 2) Ensure that the marking practices encourage and reinforce effective group work.
- 3) Give students, in writing, a full explanation of the requirements for the project, including the usual assessment information (weighting, due date, penalties, etc.). The explanation should also include full details of procedures relating to:
 - The project to be undertaken
 - The basis for group membership
 - Rules that cover the functioning of the group
 - Suggested task allocation within the group
 - The criteria for assessing the group report/project, including how marks will be allocated between the collaborative process (i.e., the way individuals collaborated during the project) and the project content
 - The procedure for assessing individual contributions, if such contributions are to be assessed
 - Who will carry out the assessment (e.g., individual faculty, panel of experts)
 - The fallback position if a group loses a member or in some way falls apart

- The conduct of group meetings—expectations regarding frequency and timing and group contact outside of scheduled class times
 - Feedback stages during the assignment period to report group progress and final outcomes
 - How the contribution of each member to the group project will be assessed (e.g., using individual process diaries, external assessment of collaborative process and project content; peer, self, and group assessment instruments; group interview, etc.)
- 4) Define any appropriate group process skills—these may include communication skills such as clarifying questions, asking open questions, including all members (turn-taking, sharing talk time), consensus building, giving encouragement/praise/positive motivation to members, giving and receiving feedback, summarizing discussions and decisions reached, goal setting, planning, evaluating progress, dealing with conflict—that are to be developed during the completion of the project.
 - 5) Give students practice in tutorials or workshops in the skills of group work.
 - 6) Involve students, whenever possible, in devising a combination of teacher and student developed assessment criteria for the project. The criteria should be crystal clear to all parties. Student involvement will likely produce greater buy-in and a greater depth of understanding.
 - 7) Use tutorials or workshops as a basis for further clarifying requirements. These should be circulated in writing to all students.
 - 8) Develop a process for providing the group with detailed feedback to assist the ongoing work of the group and to provide specific feedback on all aspects of the activity and its outcome upon completion. A high standard of timely feedback on assessment tasks is critical to students' development of understanding the relationship between the quality of their work and the assessment criteria. On longer group projects, interim feedback points are useful: brief presentations, one-page outlines of group progress or plans, or submission of different task components in stages can all be useful.
 - 9) Assign grades carefully. Graded group project marks should not be assigned to all members of the group without some moderation—whether by the inclusion of an individual component used to moderate

the collective component by a rating of the contribution of individuals to the collective.

- 10) Require students to keep a log of the activities that they undertook as part of a group project. These lists of tasks can form the basis for a group discussion on how marks for a project might be divided.
- 11) Assign an additional piece of written work in which students analyze how their group worked, what they contributed to it, and how its effectiveness might have been increased. Ask group members to evaluate their own and others' contributions to the group effort. These should include task, ideas, and group management functions. The combined evaluation of each individual's performance can be used to moderate the mark for the project, if desired.

Teachers also should model reflective practice. At the end of every group project, they can provide a review of the original plan and the reality. To what extent have improvements been made in:

- The nature and quality of the task.
- The social setting of the collaborative activity and the behavior of students during the execution of the task.
- The teacher's behavior during the execution of the task.
- The teacher's role in group composition and management.
- The nature and quality of the reports made by each group.
- The teacher's performance as a synthesizer and as representative of the academic learning community.
- The relation of the collaborative activity to the design of the course.
- Student satisfaction with the group work.

CONCLUSION

Group projects can greatly enhance learning experiences when they are appropriately designed and assessed. Probably no aspect of teaching has a greater impact on student learning than the grading system. Just within a single classroom, grades affect students' motivation to learn, their perceptions about the teacher's integrity, and their relationships with one another. Lowman (1984) calls grades "an unpleasant and unavoidable reality" (p. 185) for both teachers

and students. Thus, faculty members must take the responsibility of ensuring that group projects do not turn into a counterproductive nightmare for students who may otherwise face interpersonal conflicts, negative learning experiences, and feelings of frustration or inequity. Universities in Australia and New Zealand take this responsibility so seriously that faculty have both policies and resources to guide their decisions. At Victoria University in Wellington (VUW), New Zealand, for example, the University Teaching Development Centre (UTDC) provides a pamphlet in the *Improving Teaching and Learning* series titled "Group Work and Group Assessment." Besides offering detailed guidelines, the pamphlet also contains appendixes with university-wide recommendations and policies from the Group Work and Peer Assessment Working Party report and from the 2002 VUW Assessment Handbook. Additionally, workshops—generic ones for all faculty and ones specifically tailored to departments—are available. One-on-one consultations also provide helpful guidelines and peer coaching. The best practices for assessing group projects are known. Faculty developers (called "academic staff developers" in many parts of the world) have, in turn, the responsibility and the challenge to make faculty aware of these best practices and capable of implementing them.

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APPENDIX 17.1

ASSESSING GROUP EFFECTIVENESS

(all group members to complete)

NB: Questions can be modified to be used at the end of the group work

Please answer all questions from your own perspective. If you cannot answer a question, please state briefly why the information is unavailable.

- 1) What specific goal(s) is this group trying to accomplish? Please list the goal(s) in your priority order. Do you think the group basically agrees on the contents of this list?
- 2) What activities has the group specifically chosen to undertake or assign in order to achieve its goal(s)? Indicate which activities, if any, are particularly effective?
- 3) Does each group member have specific—even unique—responsibilities that help the group attain its goal(s)? Y/N
List all group members by name and their individual responsibilities.
- 4) The work of your group is stimulating and worth your time.
Strongly agree_____strongly disagree
- 5) How many hours (on average) do you spend working with this group?

- 6) This group has the resources (e.g., organization, communication, leadership, talents, time) to achieve its goals?
Strongly agree_____strongly disagree
- 7) What additional resources are needed for real effectiveness?

(Modified version of the Classroom Assessment Technique designed by Walker) (cited in Diamond, 1998).

APPENDIX 17.2

GROUP PROCESSING FORM

Group Name: _____

- 1) Overall, how effectively did your group work together in learning the course subject matter? (circle the appropriate response)

not at all	poorly	adequately	well	extremely well
1	2	3	4	5

- 2) How many of the group members participated actively most of the time? (circle the appropriate number)

1	2	3	4	5
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- 3) How many of the group members were fully prepared for group work most of the time? (circle the appropriate number)

1	2	3	4	5
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- 4) Give one specific example of something you have learned from the group that you probably would not have learned on your own.

- 5) Give one specific example of something the other group members learned from you that they probably would not have learned without you.

- 6) Suggest one specific, practical change the group could make that would help improve everyone's learning.

(This form was adapted by Philip Cottell from one developed by Angelo, T. A. (1994). Using assessment to improve cooperative learning. *Cooperative Learning and College Teaching*, 4(3), 5–7.)

APPENDIX 17.3
GROUP MEMBER CONTRIBUTION

Your Name _____

Group members' names (including your own) in alphabetical order

1) _____

2) _____

3) _____ etc

Evaluation of group member participation involves peer and self-assessment. This information will be used by the paper coordinator to moderate individual student marks.

Scale: 1 = minimal contribution, 2 = minor contribution, 3 = satisfactory contribution, 4 = substantial contribution, 5 = very substantial contribution

Group Member	1	2	3	4	5
Contribution at meetings (do they attend, participate, and share ideas)					
Commitment to common goal (do they keep on task and show concern for doing things right)					
Skill input (do they show an understanding of ideas and apply them)					
Reliable completion of tasks (do they show a responsibility to the group and the tasks they have to do)					

(From VUW *Group Work and Group Assessment* UTDC Guidelines)