

Report on Groupwork as a Form of Assessment

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1. Introduction

This report was requested by the Graduate Studies Committee, Faculty of Economics and Commerce at the University of Melbourne. The report has been written to provide the Graduate Studies Committee and the Faculty with an understanding of the literature surrounding groupwork as a form of assessment. The report identifies the benefits and problems associated with the practice of groupwork. It also makes some recommendations about how to maximise the advantages of groupwork while trying to minimise the disadvantages.

2. The Advantages of Groupwork

The importance of groupwork as a form of assessment has long been recognised among educators. The use of groupwork can be justified on the following grounds:

- It promotes “deep” as opposed to “surface” learning (Entwistle & Waterston, 1988).
- There is also evidence that groupwork promotes “active” as opposed to “passive” learning (Kremer & McGuinness, 1998; Ruel, Bastiaans, & Nauta, 2003),
- It promotes experiential learning (McGraw & Tidwell, 2001) and collaborative and cooperative learning (Ackermann & Plummer, 1994; Lee, Ng, & Jacobs, 1997; Mahenthiran & Rouse, 2000; Nance & Mackey-Kallis, 1997).
- Groupwork can also be justified on the grounds of promoting the construction of knowledge (Hodder, 1998) and enhancement of problem-based learning among students (Dolmans, Wolfhagen, van der Vleuten, & Wijnen, 2001; Hendry, Frommer, & Walker, 1999).
- It is also a realistic form of assessment in terms of a student’s later employability, as working in groups is an essential part of an individual’s career, and recruiters often ask students about their experience working in team settings (Ackermann & Plummer, 1994; Bourner, Hughes, & Bourner, 2001; Maguire & Edmondson, 2001; Mutch, 1998; Ravenscroft, 1997).

More pragmatic advantages of the use of groupwork as a form of assessment include the following:

- If used effectively, groupwork is an efficient way of dealing with the increased growth in student numbers in higher education (especially in regard to reducing time taken in assignment marking and allowing reduction in class time).
- Groupwork is also the most expedient way of ensuring that students develop transferable skills for life-long learning (teamwork, leadership, project management skills, communication skills). This has largely been in response to industry demands for more flexible workers.
- Groupwork aids in fostering social membership in a mass education environment which can be alienating and confusing for students. (Watkins, 2004).
- Peer groups help students by providing an informal forum in which new ideas can be discussed and assimilated (C. Brooks & Ammons, 2003).

However, despite its advantages, groupwork has a number of disadvantages. A number of these have been noted in the literature.

3. The Problems with Groupwork

Motivation of participants has been noted to be a serious problem in groupwork (N. L. Kerr & Bruun, 1983; Morgan, 2002). Social loafing and “free-riding” have also received considerable attention in the literature (Jones, 1984; Lantane, Williams, & Harkins, 1979; Ruel et al., 2003; Strong & Anderson, 1990; Watkins, 2004). Free-riding has also prompted an “inequity based motivation loss” (sometimes known as the “sucker effect”) where capable students reduce their input into a project when they experience free-riding (H. L. Kerr, 1983; Mulvey & Klein, 1998). The relationship between the ethnic mix of students in a group and grades has also been the subject of discussion. An additional problem in the literature is the social dilemma of maximising advantages to a group while being principally concerned with maximising the advantages to oneself as an individual (Watkins, 2004). The most significant of these problems will now be discussed in detail. I look at other important factors in **Section 6**.

3.1 The “Free-Rider” Problem

Free-riding has been defined as follows: ‘The problem of the non-performing group member who reaps the benefits of the accomplishments of the remaining group members with little or no cost to him/herself’ (Morris & Hayes, 1997). Free-riding has been distinguished in the literature from “social loafing” (Watkins, 2004). The difference is this: social loafing is a reduction in effort due to not being noticed or lack of identification in a group task. Free-riding is actively obtaining reward for no effort. Thus, social loafing can lead to free-riding. In other papers, the terms are used interchangeably (C. Brooks & Ammons, 2003; Strong & Anderson, 1990).

The main way of solving the problem of social loafing and free-riding is to carefully consider the nature of the task given to students and to reward the effort of groups as well as reward the work of individuals. Tasks need to be designed to maximise students’ contributions and to recognise and notice their efforts (see **6.3** below).

3.2 The “Sucker Effect” Problem

The Sucker effect refers to individuals responding to others free-riding upon their efforts by free-riding themselves (H. L. Kerr, 1983). It appears that competent students try to avoid being “suckers”. They make a calculation of whether or not they are the subject of free-riding from others in the group. If they are, and they feel it unjustifiable, they try to avoid being a “sucker” by reducing their own input to the task. Kerr has shown that students will even choose to fail as a group rather than be a “sucker” (H. L. Kerr, 1983). It is suggested that the sucker effect problem is the cause of procrastination in many groupwork activities. Conscientious students find it hard to get the attention and compliance of free-riders and decide not to proceed alone until a deadline is imminent (Strong & Anderson, 1990).

But the situation is more complex than it appears. Watkins claims that competent students are less likely to think of themselves as suckers if they *genuinely* feel that they are covering for a member of the group who is unlikely to succeed by themselves. Thus, one way of minimising the sucker effect is to allow members of groups to ‘get to know each other better’. If this happens, competent students may be less inclined to feel like “suckers” and are less likely to free-ride (Watkins, 2004). In ad hoc, short term groups—where group members do not socialise as readily—this way of overcoming the problem might be less effective. However, this is only part of a solution, of course. A comprehensive solution will reduce free-riding—and maximise the contributions—of all students in groupwork activities.

3.3 Groupwork and Ethnic Mix

Another related issue discussed in the literature is the effect of culturally mixed groups on grades. It has been observed in the Faculty that culturally dissimilar groups do not spontaneously mix. One

area of discussion in the literature is whether multicultural groups with students from non-English speaking backgrounds (NESB) tend to achieve lower average scores in groupwork projects. If true, this might be a plausible explanation of the “sucker effect”. Local native-English speaking students avoid ethnically diverse groups because they obtain lower grades when they join them. When forced to join them this invites the sucker effect, and free-riding by conscientious students. However, studies have not confirmed the link between ethnicity and lower grades. Multiculturalism in groups has *no significant negative impact* on grades (in fact a positive impact has been detected) and grades are not necessarily determined by the least able member of the group (De Vita, 2002).

But culture clearly has some influence on behaviour in groups. Melles has found, in a small-scale qualitative study, that ethnically diverse students perceive the advantages and challenges of groupwork in a similar way to native English speakers. However, he did find differences in the way that ethnically-diverse groups tackled issues in groupwork. Specifically, the cultural and linguistic background influenced the way students responded to groupwork debates. They tended to “take up discourses” that reinforced their own culture and language and identity, and that there was an observed correlation between language choice and the general positions taken up by students (Melles, 2004). Of course, this can be a good thing insofar as a plurality of views can be heard. It can be a bad thing if it leads to “free-riding” (for example, if culturally-reinforced habits of being quiet in a group—and allowing native-English speakers to dominate discussion—stifles the contribution from the non-native English speaker(s)).

Another way in which the composition of groups might be negative is when most of the written work is taken over by the students with the best language fluency (an understandable practice, but an unfair one). Careful selection of groupwork tasks with multiple “duties” (not all requiring a high level of competence in English) might be a solution to this. For example, data collection might be undertaken by NESB students. Surveys might also be conducted, diagrams drawn, powerpoint slides prepared, or any number of other non-“language rich” duties. Initial drafting of assignments might be the role of the NESB student (with final editing by the native speakers in the group). This might overcome perceived ethnic inequities in groupwork tasks. Instituting a policy of multiculturally diverse groups is therefore, not in itself negative, as long as practices to minimise free-riding are adopted in parallel. I shall be returning to the topic of task selection later.

Recommendations for Ethnic Mix in groups:

1. Be attentive to possible ethnic influences on groupwork. When assigning groups ensure that there is an appropriate ethnic mix. NESB students should not be completely dominated by local students, for example. It is not appropriate to have groups composed entirely of ethnically-similar NESB students too. Realistic practices, to a large extent, depend on the ethnic composition of the class. In a group of three, 3 students from completely different ethnic backgrounds would be ideal.
2. Where this is not feasible, ensure that the groupwork task assigned has a number of necessary duties (which do not all require a very high degree of linguistic fluency). These duties should be *necessary* for project completion, not just “busy work”. The NESB student can therefore still play a useful role in the group if they are anxious about their level of competence in English.
3. NESB students should, of course, have a role to play in writing the assignment (e.g., preparing an initial draft). In practice, however, it should be recognised that they will naturally defer to the local students for help. This can be acknowledged and even formalised in the assignment task (for example, lecturers might insist on reviewing each stage of the written assignment: initial draft, second draft, final draft. This will ensure that all students have contributed fairly). Stress the importance of *all* members of the group contributing to the task assigned.

4. Institute a policy of anonymous feedback on group members and ensure that desirable models of outcomes expected are made clear to students (see **6.2** and **6.3** below).

3.4 The Social Dilemma Problem

Watkins notes that there are two sources of motivation for students: *intrinsic* and *extrinsic* (Watkins, 2004). The former refers to altruistic behaviour which results from a selfless commitment to others. This kind of motivation is quite different from motivation resulting from the aim to maximise one's self-interest. Extrinsic motivation results from external incentives such as assessment marks and falls under the second category. Clearly, in groupwork there is a clash of internal and external motivations. The more powerful motivation is for students to maximise their self-interest and to obtain high grades at the expense of others in the group. The dilemma in setting groupwork tasks for students is how to foster intrinsic motivation while allowing for the understandable and natural influence of extrinsic motivations (Watkins, 2004).

Watkins notes that this is best done by allowing long-term commitment to a group to occur. Long-term commitment would be more likely to result in a sense of common purpose (Watkins, 2004). This happens partly because better communication is formed between members of the group. Some studies have found that open communication between group members will increase the probability that individuals will sacrifice self-interest (extrinsic motivation) for the interests of the group (intrinsic motivation) (Brechner, 1977; Dawes, McTavish, & Shaklee, 1977; Stern, 1976; Strong & Anderson, 1990). One study found that individuals in a group will match the announced level of effort they intend to put into a task regardless of whether that task was a group task or an individual task. Moreover, the study found that when individuals did communicate their intentions, others in the group reciprocated (Jackson & Williams, 1985). It appears that altruistic behaviour is more likely to result in groups that have established good intra-group communication. This, in turn, demands that groups are of longer-term, rather than shorter-term duration.

Following a short discussion of models of groups (**Section 4**) and recommendations for setting up groups (**Section 5**), I will discuss other critical variables influencing groupwork (**Section 6**).

4. Models of Groups

There are three basic types or models of groups, but a variety of ways in which these groups can be implemented. I shall summarise the basic models and follow it with some concrete examples of implementation, as used by Faculty staff and elsewhere (**Section 5**).

1. Informal Learning Groups

As the name suggests, these are ad hoc clustering of groups for occasional uses—for example, discussing a point raised in a lecture—but only *within a single class session* (B. G. Davis, 1993; B. G. Davis, 2002).

2. Formal Learning Groups

These are teams that are brought together to complete a designated task or assignment which may occur over several weeks or until the assignment is graded (B. G. Davis, 1993; B. G. Davis, 2002).

3. Study Teams

This is a group that is long term in nature (i.e., a semester in duration). It has a stable membership and offers support to group members during the study period. The function of a study team is less focussed on assignments and more on learning support and encouragement (B. G. Davis, 1993; B. G. Davis, 2002).

Recommendations for Group Type

1. Keep in mind the purpose(s) you intend groupwork to serve. Is the function to provide a learning support network through the study period, or to complete a set task? These are not identical requirements.
2. If the former, the groups should be of longer duration to allow for socialising and a sense of group solidarity.
3. If the latter, the groups should be carefully constructed to maximise the advantages and minimise the disadvantages of groupwork (see discussion in **Section 3** and **Section 6**).

5. Implementing Groupwork

The following practical suggestions are worth noting when implementing groupwork (B. G Davis, 2002; Goodsell, Maher, Tinto, & Associates, 1988). (I thank several staff members for useful input here including Ray Zammuto, Bryan Lucas, Haydn Pound, Liliana Bove, Nasser Spear, Andre Gyax and Paul Coram).

1. Plan for Groupwork

Students work best when they know precisely what is expected of them. When preparing your subject take particular note of the type of activities that would lend themselves to groupwork tasks (see **6.1**). Consider how you will organise the groups and assist the groups in negotiating the task(s). How will the groups be organised? How many to a team? Who does what? How will tasks be evaluated? Explain all this to the students in your first session. Students are learning crucial skills in groupwork behaviour, it should not be assumed they have those skills already. Guidance is essential, at least in the initial stages of groupwork assignments.

2. Explain the Rules for Groups

Many students will not have had experience in groupwork before so you need to set ground rules. You need to decide on a well-defined task, guidelines for member participation, and—importantly—failure to participate. Make a list and explain them to your class. “I expect you to: 1) ... 2)” etc. You might consider making a list of “dos and don’ts”. You might also institute **contracts** between group members (see the **Appendix** for an example of a **contract proforma**). There is evidence that this works well in galvanising effective contributions in group activities (Connery, 1988). Other things you might do might include a formative **groupwork checklist** of the following type. (This can be used in consultation meetings with the lecturer and can be adapted as required):

Are you ?.	Lecturer	Group	Comments
Effectively clarifying your task or objective at each stage?			
Checking on progress?			
Clarifying and recording what your group decides?			
Clarifying who is going to do what?			
Clarifying when each task is to be done by?			
Establishing procedures for handling meetings?			
Keeping to agreed procedures?			
Listening to each other?			
Dominating / Allowing some members to dominate?			

Withdrawing / Allowing some members to withdraw?			
Compromising individual's wants for the sake of the team?			
Recognising the feelings of other members?			
Contributing equally to team progress?			
Following agreed procedures for writing and file naming?			

(R. Brooks, Scoufis, & McAlpine, 2006). NB: This checklist is based on one by Sharon Fraser in (Scoufis, 2000).

The following list of characteristics of an “ideal team member” is also useful. Distributing these before an assignment as a self-assessment exercise may help students to reflect on whether they have these characteristics.

Criteria for a Good Group Member	Student Skill Level			
	Very Poor	Average	Good	Very Good
1. Able to use the library resources to collect information				
2. Attends all team meetings				
3. Comfortable using PowerPoint				
4. Communicates well with other team members				
5. Respectful of other team members				
6. Displays an analytical business style				
7. Gives constructive feedback				
8. Has strong presentation skills				
9. Meets assigned deadlines				
10. Open to ideas from other team members				
11. Organized				
12. Enthusiastic attitude about the team assignments				
13. Productive team member				
14. Volunteers for tasks				
15. Sets realistic deadlines				
16. Shares the responsibility for team assignments				
17. Submits quality work				
18. Takes on a leadership role				
19. Comes to team meetings prepared				
20. Writes well and can edit other student's work				

(adapted from Corrigan, 2006). A variety of similar assessment rubrics are available in (Johnson & Johnson, 2004).

3. Explain the Skills Needed for Groupwork

Students may need skills to negotiate with each other and manage their time and that of others in the group. They may need to have meetings, keep minutes, delegate tasks to others, and so on. These skills should not be assumed. A self-assessment task (such as that above) will often bring the skills needed into relief. The **Teaching and Learning Unit** runs classes and has resources in these areas. (See: http://tlu.ecom.unimelb.edu.au/learning_resources/study/booklets.html). The university also runs professional development classes on such things in the **School of Graduate Studies**, as part of

the Advanced Leadership and Professional Skills Program (ALPS) see: http://www.gradstudies.unimelb.edu.au/prog_services/programs/alps/#1pd. It is suggested that staff inform students about these support materials and classes and encourage their use.

4. Cultivate Interdependent Groups and Challenges for Individuals within Groups

Groups work best when a sense of interdependence is fostered between group members (Kohn, 1986). We all work best when we know that people are depending on us. This has been confirmed in studies in the literature. Karau and Williams found that *potential* evaluation of individual contributions to groupwork had an ‘especially strong influence’ in ensuring that members of groups contributed their fair share to a group task (C. Brooks & Ammons, 2003; Karau & Williams, 1993). On the other hand, as already noted, we also respond best to extrinsic motivation such as individual grades. These two motivations need not be in tension, but some management is required.

Recommendations for Cultivating Interdependence:

- Consider a system of common rewards for groups (as opposed to individuals), for example, staged evaluation results for group progress in an activity;
- Note and recognise individuals within groups (for example, by allowing group members themselves to rate each members’ contributions anonymously) (See 6.3 below).
- One method that works well is the allocation of a “group mark” and an “individual mark”. The group mark might be given by the lecturer, and the individual mark an averaged score from the sum of scores allocated from individual group members.

5. Make Groupwork Relevant

Groupwork should be designed to be crucial to the aims of the subject. It should not just be “busywork”. Examples of relevant tasks include:

- A real-life Accounting task determining whether a local council should increase, maintain or lower council rates (given changing expenditure parameters). Group members might work on different parameters relevant to their arguments for their conclusions, write a mock budget paper, and then present these to the class as if it were a presentation to a Board of Directors.
- Consider creative tasks that might be relevant, for example, writing and editing a “newspaper” from the 18th century containing issues in Economics for a subject in Economic History (all members of the group are required to research and write sections, edit and prepare the paper).

The following texts list examples of discipline-specific groupwork tasks in a detailed bibliography (Goodsell et al., 1988; Johnson & Johnson, 2004; Kadel & Keehner, 1994).

6. Increase the Level of Difficulty in Assigning Groupwork tasks

It is sensible to start with tasks that match the students’ initial competence and then increase the task difficulty. An example of a groupwork task involving research skills might involve:

- First asking groups to find an issue in an academic research paper and identify the research methods used. One student in the group might find the article, another identify the type of research method used, a third student might determine the sampling measures, and so on.
- Another task might build on this by requesting that a group generate their own research design and hypotheses (allocating sections to each group member).
- A final level of difficulty might be to ask groups to design their own research proposal for evaluation by other groups (B. G Davis, 2002).

7. Assigning Equal Tasks for Group Members

It is critical that there is an *equal distribution of labour* in groupwork. Tasks should be designed to ensure this. An exercise requiring understanding of different theoretical approaches to an issue in Management might, for example:

- Require that each student research a different theoretical position, write a page or two, and come to a conclusion about how the issue could be understood from their perspective.
- Each perspective is presented to the group, which then decides on the arrangement of a group assignment.
- The group then decides on their overall position to present to the class.

8. Encourage Competition between Groups

Groupwork with a competitive component between different groups works well. For example, design an accounting task that simulates a company and ask students to test the influence of various financial factors on profitability. This is more challenging than simply listing relevant factors. The groups might be asked to compete in terms of the most profitable company at the end of the semester. One class in engineering required groups to build a model bridge which was then competitively assessed by other groups in terms of different criteria such as structural soundness, aesthetics, and so on (B. G Davis, 2002).

9. Group Test Taking

One useful task is allowing groups to design and evaluate an assessment test. Here is a suggested procedure:

- Groups are formed early in the semester to allow bonds to form.
- Groups design test questions from lecture material and are encouraged to make the test as challenging as possible.
- Tests are distributed between different groups, who then complete the tests individually, and then meet and discuss answers as a group.
- Results are returned to the group who designed the test.
- Each group is required to grade the test and prepare a chart showing average scores between different groups.

According to some studies, group consensus scores are as much as ninety-five percent higher than individual scores (B. G Davis, 2002; Hendrickson, 1990; Toppins, 1989).

10. Creating Groups

There are various ways to do this, from self-selection to lecturer selected. Both have advantages and disadvantages. An advantage of the former is that students will be comfortable with each other immediately, however they may socialise too often and the group may not be productive (see **6.4** below). An advantage of the second is that the lecturer can mix stronger and weaker students, though this runs the risk of alienating the stronger students, who might be less stimulated in a group with less able colleagues, and intimidating the weaker students. It might also result in free riding and the sucker effect. An alternative “mixed” method is to allow students to express a preference (in writing) for two or three students to be in their group, and then allocating the students from these preferences taking other factors into account.

11. Establishing a Plan of Action

Groupwork is effective if groups are required to present action plans. Insist on **progress reports** and deadlines. Meet with groups on a regular basis to ensure compliance. This may involve drafts of sections of assignments, preparation of powerpoint slides, or verbal summaries of progress, etc. If

students are asked to prepare a “checklist” and then tick off things as they are completed it helps students and gives them a sense that their project is moving along.

6. Other Variables Affecting Groupwork

There are additional variables that affect groupwork in addition to those discussed in **Section 3**. These include the tasks given (type of task), task complexity, recognition of effort, the size of the group and the effect of rewards and punishments. Each of these are discussed below.

6.1 Type of Task

Many of the difficulties already mentioned can be overcome if attention is paid to the *kind of tasks* that are sometimes assessed by means of groupwork. Tasks can be defined in terms of whether they are divisible or unitary (i.e., many person versus “one-man jobs”) (Strong & Anderson, 1990). But the situation is more complex than this. Several key papers identify different types of tasks: *disjunctive*, *conjunctive*, *additive* and *discretionary*. Only some of these tasks can be properly assessed by means of groupwork; others are best assessed by other means (Bartlett, 1998; Ruel et al., 2003; Steiner, 1972; Watkins, 2004). These types of task can be distinguished as follows:

Disjunctive tasks:

These can be achieved by only one person in a group being required to think and provide an answer, for example, counting triangles in a diagram in an Economics class (Watkins, 2004). Disjunctive tasks are clearly unsuitable for groupwork assessment exercises. In these tasks, the productivity of the group depends on the productivity of the performance of the *best group member* (Ruel et al., 2003). Therefore they foster and encourage “free-riding”.

Conjunctive tasks:

As the name suggests, these require each member to contribute to an assessed task. An example would be a team written essay without clearly identifiable parts that are assigned to members of the group. These tasks may or may not be suitable for groupwork. If the response to the exercise takes the form of an additive task (see below) then it may be appropriate. However, in a conjunctive task the productivity of the group may depend on the productivity of the performance of the *worst group member* (Ruel et al., 2003).

Additive tasks:

These are tasks where each member of the group adds something to the task, i.e., there are inputs from each group member forming a composite whole. An example would be a cooperative writing exercise or a report with separate sections (Bartlett, 1998; Watkins, 2004). Bartlett’s example is the topic: “Should the UK adopt the Euro?” The group is asked to sub-divide the topic into parts, which are written by each group member. Each contribution is given to other group members for comment, which are then written up as a joint response to the assignment question. In additive tasks each part is essential. One part of the assignment necessarily requires input from the research done by other group members (one student covers monetary policy implications, another CPI, and so on). Some of the web-based programs designed by the Teaching and Learning Unit, e.g., Critical Analysis and Learning in Macroeconomics (CALM), are designed to allow for efficient commentary by group members on the work of other group members (“Online learning tools”, 2005) The contributions of the participants are best labelled as such and individually assessed in an additive task. These are the best kinds of tasks to minimise “free-riding” as they make individual contributions indispensable (Strobe, Diehl, & Abakoumkin, 1996).

Discretionary tasks:

These tasks allow students to use their discretion in how they contribute to a particular assignment. An example might be giving students different pieces of economic information from which they

need to analyse outcomes for a particular country. To complete the task effectively requires information from other students in a similar way to solving a jigsaw puzzle. This requires collaboration and coordination of information among individuals in groups. This kind of task may lead to either disjunctive, conjunctive or additive tasks depending on how students' determine their own workload. Therefore, discretionary tasks are neutral with respect to task effectiveness in groupwork. Some literature suggests that they tend to foster free-riding and should be used with caution (Strong & Anderson, 1990).

Inappropriate Groupwork Tasks:

An example of an *inappropriate* groupwork task is an essay assignment based on a topic or question in which every group member is expected to contribute, but where they are no clearly divisible segments or "parts", and students are not given any specific guidance or requirements in how to complete the task. This will invariably lead to the exercise being completed as a disjunctive task. It is an assessment exercise that virtually guarantees "free-riding" (the best writer/student will do most of the work). In such a case, it is also often hard to tell from an assessor's point of view that all group members contributed equally so there are disadvantages and equity issues in terms of assessment. Students who are weaker can have their abilities effectively masked by more able members of the group, and capable students are left unstimulated. Recent email comments to the Faculty from dissatisfied students may have arisen from this kind of unstructured activity (see student email below. NB: identifying names and subjects have been removed):

Dear XXXXX

I will be raising this with XXX in person when I see her on Wednesday however we (XXX and myself) have had a problem with considerable free-riding in our group ... assignment [sic] for SUBJECT. Basically XXXX (also studying SUBJECT) and myself did the whole assignment. We complained to XXXX outlining very clearly the situation. However, as is indicated in the email below he argues nothing can be done. Between XXX and myself we completed up to 90% of the assignment on our own. We feel it will be incredibly unfair for all group members to receive equal marks. Can anything be done through yourselves or XXXX? I have been incredibly [sic] dissapointed with this subject as I have indicated to both XXXX and XXXX (and also on all surveys I have completed) and this really has disappointed [sic] me even further.

Recommendations for Type of Tasks

1. Ensure tasks are "additive" and "conjunctive" in nature rather than "disjunctive" or "discretionary".
2. Do not simply substitute a standard task that an individual can effectively complete and make it a "group" task. This seldom works well.
3. As much as possible require that each student in the group *needs the research of their group members* to complete their part of the task. Each section of a group assignment should form part of a larger whole in which each of the parts are *indispensable to the completion of the exercise*.

6.2 Task Complexity

The literature indicates lack of unanimity regarding the impact of complexity of tasks for effective groupwork. Some papers suggest there is an inverse relationship between task complexity and the likelihood of problems such as "free-riding" occurring. The more complex the task, the more difficult it is to assess the performance of individuals in the group. Since evaluation occurs at the team level in many complex tasks, there is a reduction of individual responsibility and a

corresponding rise in the likelihood of “free-riding” (Strong & Anderson, 1990).

On the other hand, some studies have suggested that loafing occurs more often in “easy” tasks (S. G. Harkins & Petty, 1982; Jackson & Williams, 1985) as lack of challenge and stimulation negates the likelihood of unique contributions from group members, and therefore leads to a rise in loafing. The differences in the conclusions here might be due to lack of clarity in distinguishing “social loafing” and “free-riding” (it may be that loafing is more likely in easy tasks but not necessarily free-riding).

Tasks are often measured by **optimizing** outcomes rather than **maximising** outcomes. The former have some degree of ambiguity. Success is determined by the proximity of the finished product to a desired final outcome (i.e., work produced is compared to a regulative “ideal”). Maximising outcomes, by contrast, are measured by unambiguous goals achieved, e.g., in terms of rate or quantity or speed attained in producing the final outcome. Maximising tasks are much less likely to be beset by problems such as “free-riding” simply because they are clearer in terms of outcomes and less ambiguous (Strong & Anderson, 1990).

Of course, most academic tasks (e.g., essays or case studies) are not easily measured in terms of maximising outcomes. They are generally complex and optimising in nature. A conclusion that can be drawn is that groupwork tasks should be made stimulating and complex, but—as far as possible—measurable in terms of unambiguous aims and objectives (i.e., make the desired outcomes as *explicit as possible* for students).

What exactly is *expected* when a case study group assignment is set? Providing **models of desired outcomes** is essential. Providing a “model” essay or case study analysis along with a grading schema showing how the model meets the criteria is critical before asking students to commence such a task. Doing this would allow students to see the kind of output demanded of them, and give them the confidence to contribute to the exercise. This can be taken a step further. A very effective class I have taken involved dividing students into groups of 3-4, distributing six or seven models of representative student case studies, and asking students to rank order the examples according to a given marking schema. Even though students had only enough time to scan the assignments, I found that groups consistently ranked the assignments as I would have done (and this occurred in several different classes). When placed in the position of “examiner” students could be very critical of work presented to them and offered insightful comments to justify their rankings. Many studies demonstrate that providing students with **clear indications of expected behaviours**, and evaluating them according to **identified criteria** helps to reduce free rider problems and improves performance (Bloom, Hastings, & Madaus, 1971; Erez & Somech, 1996; S. G. Harkins, 1987; Young & Henquinet, 2000).

Recommendations for Task Complexity

1. Where possible, ensure groupwork task objectives are “maximising” rather than “optimising” (i.e., that there is little or no ambiguity in task objectives).
2. Where tasks are by nature complex and optimising in nature, provide “models” of desired outcomes along with a grading schema showing how the models meet the criteria. Spend a portion of a class *analysing the model* and explaining *why* it is good, and where it can be *improved*.
3. Try to ensure that groupwork tasks are sufficiently complex, stimulating and challenging so that individuals will be less likely to “free-ride” (but not so complex that it is hard to see the contribution of individual team members, otherwise social loafing will result). In general, the more complex the task, the more important it is to provide a model as an exemplar.

6.3 Recognition of Effort

The impact of individual recognition of effort in a group assignment is also the subject of research. Some studies have shown that it is not the complexity of a given task that is critical in effective groupwork but the factor of *identification of individual effort*. Some papers suggest there is an inverse correlation between the identification of an individual's work and the likelihood of loafing. The harder it is to tell "who did what" in an assignment, the greater the chances of loafing by group members (Ingham, Levinger, Graves, & Peckham, 1974; N. L. Kerr & Bruun, 1981; Lantane et al., 1979; Petty, Harkins, & Williams, 1977). Some studies suggest that simply monitoring and identifying individual students' contributions to a group task might prevent the "free-rider" problem (S. Harkins & Jackson, 1985). Other papers suggest that lecturers should allow students to anonymously evaluate, or conduct peer appraisals, of the work of fellow team members' contributions (Strong & Anderson, 1990). There is evidence to suggest that this is associated with group members' perceptions of improved communication and reduced free riding if used for more than just developmental or formative purposes (i.e., for summative evaluation and grading) (C. Brooks & Ammons, 2003; Druskat & Wolff, 1999). Some of the web-based programs designed by the Teaching and Learning Unit (e.g., the Feedback and Assessment Tool) are designed to provide just this kind of anonymous individualised evaluation ("Online learning tools", 2005). The literature supports their use in overcoming groupwork problems such as free-riding.

An effective assessment procedure that has been trialled in a cross-disciplinary business course is summarised below (C. Brooks & Ammons, 2003). The authors claim empirical support for the assertion that such a procedure reduces free riding as measured by a decline of variance between peer evaluation assessments:

- An evaluation pack is distributed containing instructions for the groupwork task, and an assessment sheet template (see below) which is completed anonymously by all students about their group members (a self-evaluation is also completed). Responses were typed to ensure anonymity.
- Numerical scores are given. Each student has 100 points to allocate on each team member (i.e., in a group with 4 individuals there are 400 points to "spend" in total on their group members). Group members can receive more than 100 points if they did *more* than their "fair share" of work (or less, if they did not do their fair share).
- Peer evaluation was held every 4 weeks. Thus 4 evaluations were done in total from each group member.
- Evaluations were placed in a sealed envelope and handed to the instructor at the end of semester.
- Points were totalled and averaged for each individual.
- Instructor's grade was averaged according to the group average.
- Students are given their ratings from their group members as well as their instructor's final grade.

(C. Brooks & Ammons, 2003)

A similar procedure is used in the Faculty by Bryan Lukas with the following variation:

- There is a "one-off" peer evaluation (not every four weeks).
- Students allocate a percentage mark for each of their group members on an evaluation template.
- If the ranking of any one team member is significantly less than 90 percent a meeting is held between the group and the lecturer. A consensus is arrived at among the group as to the allocation of the marks. This ensures that the marks for any individual is properly considered and not unfair, and also ensure no "grudge" is held by the lower-ranked group

member (i.e., the members of the group have to make a convincing case for their ranking to the lower-ranked group member).

- A differentiated mark is arrived at by the lecturer in consideration of the marks awarded by group members.

This procedure has been used very effectively for more than seven years and seems to overcome “free-rider” problems (Lukas, *pers.com.*, 3/5/06).

Recommendations for Recognition of Effort

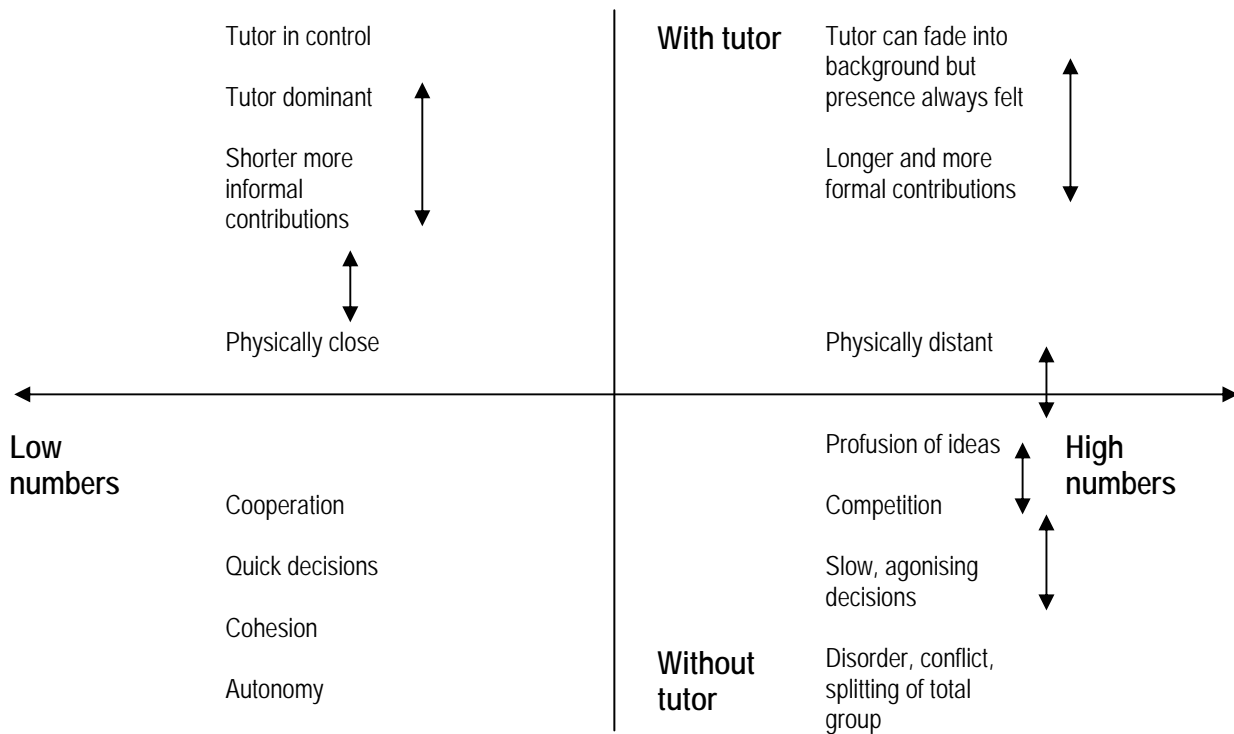
1. Work out ways to recognise, monitor and reward the individual effort of group members (simply tracking the contributions of students’ work and requesting that students’ names be given on a group assignment might be sufficient)
2. Evaluate the individual’s contribution to the groupwork assignment as well as the work of group
3. Allow group members to notice and evaluate each others’ contributions by means such as TLU web-based tools or a peer evaluation procedure.

6.4 Group Size

The literature indicates that the size of groups is critical for effective groupwork. There is more literature on this aspect of groupwork than any other variable (Strong & Anderson, 1990). There is even a name for the effect of group size on individual performance, the “Ringelmann Effect” (Ingham et al., 1974; N. L. Kerr & Bruun, 1981). This describes the inverse relationship between the size of a team and the magnitude of a group member’s individual contribution to the accomplishment of the task. In general, the *larger* the group, the *smaller the effort* expended by group members, and the greater the likelihood of social loafing and “free-riding”. Steiner and Bligh have produced tables of data showing how the probability of getting an answer to a problem from students in a group differs greatly in disjunctive and conjunctive tasks. The figures are startling: 99 percent = disjunctive versus 8 percent = conjunctive. (Bligh, 2000; Steiner, 1972; Watkins, 2004). It is also noted that additive tasks, because of their nature, will result in “diminishing returns” the more people there are in a group (Watkins, 2004).

The literature on social loafing has discovered a positive curvilinear relationship and positive correlation between loafing and group size in groups varying from two to six members using additive, unitary and maximising tasks (Ingham et al., 1974; N. L. Kerr & Bruun, 1981; Lantane et al., 1979; Petty et al., 1977; Strong & Anderson, 1990; Sweeny, 1973). Cooperation among group members appears to decrease with increasing group size (Bonacich, Shure, Kahan, & Meeker, 1976). Other studies have suggested that it is recognition of individual contribution—not size of group—that influences the effort expended (S. G. Harkins & Petty, 1982; Jackson & Williams, 1985). They argue that if maximising tasks are given that have opportunities for discrete, additive contributions from members (with associated recognition for effort expended), there will be little or no loafing, regardless of group size.

Most of the literature is consistent, however, in reporting the positive correlation between group size and free-riding/loading effects. Once groups become too large there is the danger of lower contributions from individual members, and even dissolution of groups. One study suggests the ideal group size for minimising free-riding is a group of no more than **two individuals** (Strong & Anderson, 1990). See the figure below for an illuminating representation of the influence of various factors on groups related to the size of groups.(NB: The short arrows represent possible variations of that characteristic on the chart (Jaques, 2000).



Recommendations for Group Size

1. Keep group sizes as small as possible (around 3-4 should be the upper limit)
2. Try to form groups early in the semester and allow them to last as long as possible so that relationships form, good communication develops, and students get to know each other. This may foster a sense of collegiality and common purpose, and altruistic behaviour.
3. Be aware that the ethnic composition of groups can influence the discussions and output from a group. This can be a good thing insofar as a plurality of views can be heard. It can be a bad thing if it leads to “free-riding”. Consider instituting a policy of multicultural groups as much as possible, but adopt practices to minimise free-riding as noted above.

6.5 Rewards and Punishments

Several studies have looked at the role of rewards and punishments to deter problems such as “free-riding” (Strong & Anderson, 1990). It has already been noted that recognition of individual effort is a crucial reward which positively influences groupwork behaviour. Punishment also has some effect. Some papers have suggested, however, that punishment does not stop free-riding as students generally do not confront free-riders with the consequences of their behaviour (though they are willing to anonymously “fail” or give poor grades to free-riders) (Strong & Anderson, 1990). Punishment approaches such as explicitly “firing”, “expelling” or “divorcing” free-riders from groups (if the majority of group members agree to do so), result in new groups being formed from “divorced” group members. This puts the obligation for micro-managing group behaviour onto students themselves when they complain about it to lecturers.

The advantages of this approach are that students learn skills such as the constructive use of confrontation and have the opportunity to practice their communication skills (which, after all, is the principal aim of groupwork) (Strong & Anderson, 1990). It also forces group members to face the problems in their group and do something about them. Discouraging feedback during a groupwork exercise can prompt these punishment options. As Strong and Anderson put it: “Receiving a poor interim grade can galvanize the non-free riders into action” (Strong & Anderson, 1990). The disadvantages of these approaches are that they are punitive, elicit the worst in

competitive behaviour, and result in different classes of groups (non-free rider groups and groups of “divorced” free-riders). These approaches may also be discriminatory toward women in groups (who are generally less confrontational and competitive in nature). There may also be better ways to achieve reductions in groupwork problems by rewarding students for good individual contributions rather than penalising students for poor contributions. Nonetheless, there might be some kinds of groupwork projects for which punishment is a suitable solution.

Recommendations for Rewards and Punishments

1. Consider interim grades and, if appropriate, “punishment” options such as “divorce” of group members and recombining of groups during a groupwork exercise.
2. Devolve the operation of groups to the students themselves. Require them to put in place strategies of dealing with “free riding” students.
3. Reward groups rather than individuals in groups (to foster collaboration in the group). For example, consider offering feedback during the progress of a group activity.
4. To foster extrinsic rewards for individuals, reward individuals in groups with grades not groups themselves (i.e., consider individual as well as group grades).

7. Summary of Recommendations:

Recommendations for Ethnic Mix in groups:

1. Be attentive to possible ethnic influences on groupwork. When assigning groups ensure that there is an appropriate ethnic mix. NESB students should not be completely dominated by local students, for example. It is not appropriate to have groups composed entirely of ethnically-similar NESB students too. Realistic practices, to a large extent, depend on the ethnic composition of the class. In a group of three, 3 students from completely different ethnic backgrounds would be ideal.
2. Where this is not feasible, ensure that the groupwork task assigned has a number of necessary duties (which do not all require a very high degree of linguistic fluency). These duties should be *necessary* for project completion, not just “busy work”. The NESB student can therefore still play a useful role in the group if they are anxious about their level of competence in English.
3. NESB students should, of course, have a role to play in writing the assignment (e.g., preparing an initial draft). In practice, however, it should be recognised that they will naturally defer to the local students for help. This can be acknowledged and even formalised in the assignment task (for example, lecturers might insist on reviewing each stage of the written assignment: initial draft, second draft, final draft. This will ensure that all students have contributed fairly). Stress the importance of *all* members of the group contributing to the task assigned.
4. Institute a policy of anonymous feedback on group members and ensure that desirable models of outcomes expected are made clear to students (see **6.2** and **6.3** below).

Recommendations for Group Type

1. Keep in mind the purpose(s) you intend groupwork to serve. Is the function to provide a learning support network through the study period, or to complete a set task? These are not identical requirements.
2. If the former, the groups should be of longer duration to allow for socialising and a sense of group solidarity.
3. If the latter, the groups should be carefully constructed to maximise the advantages and minimise the disadvantages of groupwork (see discussion in **Section 3** and **Section 4**).

Recommendations for Cultivating Interdependence:

1. Consider a system of common rewards for groups (as opposed to individuals), for example, staged evaluation results for group progress in an activity;
2. Note and recognise individuals within groups (for example, by allowing group members themselves to rate each members’ contributions anonymously) (See **4.3**).
3. One method that works well is the allocation of a “group mark” and an “individual mark”. The group mark might be given by the lecturer, and the individual mark an averaged score from the sum of scores allocated from individual group members.

Recommendations for Type of Tasks

1. Ensure tasks are “additive” and “conjunctive” in nature rather than “disjunctive” or “discretionary”.
2. Do not simply substitute a standard task that an individual can effectively complete and make it a “group” task. This seldom works well.

3. As much as possible require that each student in the group *needs the research of their group members* to complete their part of the task. Each section of a group assignment should form part of a larger whole in which each of the parts are *indispensable to the completion of the exercise*.

Recommendations for Task Complexity

1. Where possible, ensure groupwork task objectives are “maximising” rather than “optimising” (i.e., that there is little or no ambiguity in task objectives).
2. Where tasks are by nature complex and optimising in nature, provide “models” of desired outcomes along with a grading schema showing how the models meet the criteria. Spend a portion of a class *analysing the model* and explaining *why* it is good, and where it can be *improved*.
3. Try to ensure that groupwork tasks are sufficiently complex, stimulating and challenging so that individuals will be less likely to “free-ride” (but not so complex that it is hard to see the contribution of individual team members, otherwise social loafing will result). In general, the more complex the task, the more important it is to provide a model as an exemplar.

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Appendix: Outline of Group Contract

Source: Curtin Business School

<http://www.cbs.curtin.edu.au/files/cbsUnitsCourses/Contract%20Administration%20502.doc>

[To be altered or adopted as each group considers appropriate and with flair and imagination!].

1. **Parties to the contract**

This contract is made between the following students of [*insert unit*].

[*Insert student name, addresses, and contact details and student numbers*]

And

[*Student 2*]

And

[*Student 3 etc*]

2. **Course Controller and/or Tutor**

This contract is made for the purpose of completing assessment (the project) in [*insert unit*] and is to be handed in to [*insert tutor/course controller as case may be*].

3. **Objectives of contract**

The objectives of the project are to [*insert here what you wish to achieve for example;*

a) *Distinction standard project*

b) *Completion on time without extension*

c) *Project capable of publication in a journal at a later date*

Etc].

4. **The date of completion and handing in** for the project is [*insert date*].

5. **Allocation of work**

The allocation of work for the project shall be [*insert description of how the group will carry out the work, the division of research, writing, editing*]

[*NB. This is a significant clause in your contract - give it lots of thought. You may insert a separate clause for each issue ie. Research, writing etc. You should avoid doing a project that simply allocates parts of the project to each student, it is preferable that all students have a role in each aspect of the project or at a minimum in the editing of the project*].

6. **Meetings**

The group will meet to discuss the progress of the project on the following dates

[*Create a schedule attached to the contract of the days that you will meet*].

7. Disputes

Where a dispute arises as to the following matters [*for example*

1. *Work load*
2. *Quality of work*
3. *Input/emergency/contribution]*

The dispute will be resolved in the following manner [*insert your dispute resolution clause -you may find that some awards, workplace agreements or contracts may be useful for this clause*].

8. Unequal contributions

Where the group determines that the contributions of the parties have not been equal the group may [*insert the means of resolving this problem*].

[NB: *The course controller or tutor is not to be involved in the disputes in relation to workload, it is for the members of the group to resolve these issues internally*].

9. Schedules of Research

Attached to this contract is a schedule of the Research techniques employed to complete the project. [*Attach schedule*].

10 Self Assessment of Group

Attached to this contract is a schedule setting out the manner in which the group assessed its progress and whether it had achieved the objectives of the project.

11 Any other relevant clauses or schedules.

In this clause include any other matter that you think is important for the completion of the contract and project.

Signed:

Student 1 _____

Student 2 _____

Student 3 _____

Student 4 _____