Groupwork as a Form of Assessment

Abstract
This paper reviews some of the literature on the use of groupwork as a form of assessment in tertiary institutions. It outlines the considerable advantages of groupwork but also its systemic associated problems. In discussing the problems, the paper considers issues such as “free riding” and the “sucker effect”, issues associated with ethnic mix in groups, and the social dilemma problem—in which students face conflicting demands between altruism and self-interest. The paper then outlines several models of effective groupwork and makes suggestions for implementing groupwork tasks. The paper also looks at the key assessment tasks which are commonly employed—namely, additive, conjunctive, disjunctive and discretionary tasks—and assesses which are most suited to groupwork. The paper considers the related issues of task complexity, recognition for effort, and strategies for minimising issues concerning group size. The paper also briefly considers strategies for implementing incentives for groupwork members, and outlines the issue of penalties for unproductive group members. The paper concludes by providing recommendations for how to maximise the advantages of groupwork while trying to minimise the disadvantages.

Introduction
The importance of groupwork as a form of assessment has long been recognised among educators. Its use has been justified on the following five principal grounds. While many of these claims can be challenged, this paper does not wish to do that, preferring instead to take the advantages of groupwork for granted, and to concentrate on the substantive drawbacks, and ways to overcome them. The advantages commonly given for groupwork are these:

- Groupwork promotes “deep” as opposed to “surface” learning (Entwistle & Waterston, 1988).
- Groupwork promotes “active” as opposed to “passive” learning (Kremer & McGuiness, 1998; Ruel, Bastiaans, & Nauta, 2003).
- Groupwork promotes experiential learning (McGraw & Tidwell, 2001) and collaborative and cooperative learning
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(Ackermann & Plummer, 1994; Lee, Ng, & Jacobs, 1997; Mahenthiran & Rouse, 2000; Nance & Mackey-Kallis, 1997).

• Groupwork can 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).

• Groupwork is also claimed to be an authentic 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 group 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. In addition, it can be a way of dealing with larger numbers of students in the same amount of class time.

• Groupwork is also one of the most expedient ways—along with work placements—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).

It should be noted that these advantages apply to working in groups simpliciter. They do not necessarily apply to procedures of assessing groupwork. Students can, of course, work in groups without necessarily being summatively assessed. Assessment-related issues will be discussed later in the paper.

Despite the advantages, groupwork has a number of disadvantages. A number of these have been noted in the literature. The remainder of this paper outlines the disadvantages of the use of groupwork in tertiary education institutions. It outlines several models of effective groupwork and makes
recommendations for implementing groupwork tasks. Different types of assessment task are briefly considered. The paper also considers strategies for minimising problems, such as those concerning group size, task complexity and recognition of effort as well as strategies for implementing incentives and penalties between group members. The paper concludes by outlining ways to maximise the advantages of groupwork while trying to minimise the disadvantages.

What is Groupwork

In his seminal text on Learning in Groups, David Jaques defines the notion of a “group” as having at least some of the following key attributes:

1) Collective perception: the conscious recognition of the existence of the group by its constituent members;
2) Needs: the recognition that a group will potentially be able to help individuals within a group;
3) Shared aims: the recognition of aims or incentives that motivates group members;
4) Interdependence: the relationships between the members within a group depend on the contributions and behaviours of its constituent members;
5) Social organisation: there is an intrinsic order to a group which encompasses various rules and power relations;
6) Interaction: the potential of communicative exchange must occur within groups even if they may not be geographically in the same place (thus allowing for “virtual” groups);
7) Cohesiveness: Members of a group should want the group continue and have a desire to contribute to, and benefit from it;
8) Membership: A group can be defined by the extent of its membership relations. There must be a sense of exchange in a group. Thus, ‘two or more people interacting for longer than a few minutes constitute a group’ (Jaques, 2001, pp. 1-2).

These attributes help to distinguish between “groups” and collections of individuals (e.g., on a bus or at a sports arena). Groups can form spontaneously and in an ad hoc manner. For example, individuals on a bus may begin to discuss something of common interest. Collections of individuals, by contrast, occur everywhere without any sense of group solidarity.

Another less robust distinction might be made between “groups” and “teams”. This relates, in particular, to the third point above. As noted, groups can arise in a random and ad hoc manner. Teams, by contrast, are created to serve specific, and often ongoing, needs in relation to specific projects or activities. Thus a sports team is rightly called a “team” instead of a “group”, as the
aims are relatively long-term and on-going. By contrast, “group” is a more appropriate designator for most short-term university assessment tasks (e.g., assignments and term papers).

As natural as this distinction seems, however, it is not sustainable in all educational contexts. This is because many graduate-level assessment tasks, for example, are of an on-going nature, and may occur over an entire semester or even longer (e.g., client sponsored research projects, project-based reports or long term “live” case studies). It therefore depends very much on the nature of the assessment task whether a given collection of individuals is termed a “group” (of shorter duration) or a “team” (of longer duration). Given that it is difficult to make a group/team distinction, it is reasonable to use the terms “group” and “groupwork” throughout this paper while bearing in mind that in some contexts “team” might be a more appropriate designator.

**Models of Groupwork**

There are three basic types or models of groups, but a variety of ways in which these groups can be implemented. A number of other types of groups are noted in the organisational literature.

**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).

**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).

**Study Teams**

As noted in section 2, a “team” has a different focus from a “group”. A team is long-term in nature (i.e., a semester or more in duration). It may be used as a form of social organisation in order to prepare for final exams or other long-term assessment tasks (a case study project). 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).

In addition to these three basic types there are also other types which are more closely associated with the corporate and managerial literature:
Self-managed work teams
These are sometimes called “high performance work teams” (Casey, 1995; Manz & Neck, 1995). They are more permanent than the other types of group or team models mentioned above, and are often put in place to redesign some aspect of corporate culture.

Project teams
These are also more or less permanent, and feature mainly in construction and information systems sectors (Handy, 1985). As noted by Mutch, the designations of a form of social organisation as being “group” or “team”, and the type of group or team it is, lies on a continuum of considerations: some are more permanent (such as self-managed work teams or project teams), others are more temporary or ad hoc (such as informal groups); some are formal in nature (such as learning groups), others informal; some are openly authorised or mandated or initiated by a company, others are hidden from view; some are self-selected others are composed of specifically selected individuals chosen for a purpose (Mutch, 1998). In the education context, however, the first three types of groupwork organisation are most common.

Problems with Groupwork
Motivation of participants has been noted to be one of the most serious problems in groupwork (N. L Kerr & Bruun, 1983; Morgan, 2002). Some group members may be reluctant participants in assessment tasks and be uncommitted to the aims of the group (and the subject for that matter). Motivational issues can arise as a result.

Examples of motivational issues associated with groupwork are social loafing and “free riding”. These issues have 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 what is called 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 as a problem with groupwork tasks. 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). These issues will be discussed in the sections that follow. In Section 6 a number of recommendations to deal with these problems are provided.
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).

One 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. However, this is harder than it sounds. Tasks need to be designed to maximise students’ contributions and to recognise and notice their efforts. Ways of doing this will be discussed in a later section (see 5.3 below).

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
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However, this is only part of a solution, of course. A better solution will reduce free-riding—and maximise the contributions—of all students in groupwork activities. However, this is also easier said than done. We shall revisit this problem later in the paper.

**Groupwork and Ethnic Mix**

A related issue discussed in the literature is the effect of culturally mixed groups on grades. It is often observed in English-speaking universities that culturally dissimilar groups do not spontaneously mix. Students from non-English speaking backgrounds (NESB) do not contribute as much in class or in groupwork discussions as local students (Volet & Ang, 1998). Other literature indicates that this problem occurs less in online environments. Here, contributions from NESB students in group discussions are more forthcoming (Freiermuth, 2001).

In classes that are not diverse, lack of communication among different ethnic groups is a problem for effective groupwork. In one paper, medium levels (i.e., 33-38%) of classroom diversity, i.e., students coming from culturally dissimilar backgrounds, are positively (though not always significantly) related to the reported educational gains of students. By contrast, “low” and “high” levels of diversity may be negatively related to learning gains (Terenzini, 2001). An important issue is whether multicultural groups with NESB students 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, perhaps surprisingly, 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 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). 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). This is particularly a problem in some universities where very large numbers of NESB students are being educated. Careful selection of groupwork tasks with multiple “duties” (not all requiring a high level of competence in English) might be a partial solution to this. 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. There is a sizable literature on the influence of gender and groupwork (Cohen & Mullender, 2002; Pryor, 1995; Scanlon, 2000). However, this is not discussed in this paper.

The Social Dilemma Problem

While there is a degree of natural self-interest in human nature, social behaviour is also influenced by how social situations are organised. Some settings can foster self-interest and the maximisation of individual welfare; others situations may foster a degree of altruism. Watkins notes that there are two main sources of motivation for students: intrinsic and extrinsic (Watkins, 2004). The former refers to altruistic behaviour which results from a selfless commitment to others, or a genuine interest in, and willingness to engage in a given task. 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). Some practical suggestions will be made on how to negotiate this dilemma in the Recommendations section of the paper.
Other variables affecting groupwork

There are additional variables that affect groupwork. These include the tasks given (type of task), task complexity, recognition of effort, the size of the group and the effect of incentives and penalties. These issues are not necessarily problems but they may impact on successful groupwork.

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). There 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.
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 subdivide 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 consumer price index, and so on). At the University of Melbourne, the Faculty of Economics and Commerce has a faculty-embedded Teaching and Learning Unit, which designs web-based programs to use in groupwork tasks. One such tool, called Critical Analysis and Learning in Macroeconomics (CALM), is designed to allow for anonymous commentary by group members on the work of other group members (Johnston & Olekalns, 2002). 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:**

The types of task given in groupwork are critically important. There is evidence that indicates that it matters. Steiner has produced tables of data showing how the probability of getting
an answer to a problem from students in a group differs greatly in different types of task. He has noted that in disjunctive and conjunctive tasks there are very different probabilities of success. He uses the following formula: 100(1- Qn) where Q refers to the number of people in a given population who cannot complete a task, and n refers to the number of group members. Steiner makes an estimate that 40 percent of people in a group cannot compete a task. According to the data supplied and the assumptions made about the numbers of people in a group who cannot complete a task, there was a 99 percent probability of getting responses in a disjunctive task, versus 8 percent in a conjunctive task (Bligh, 2000; Steiner, 1972; Watkins, 2004). This is because conjunctive tasks, as opposed to disjunctive tasks, demand that all group members complete a given activity. Steiner also notes that additive tasks, because of their nature, will result in “diminishing returns” the more people there are in a group, i.e., fewer responses to problems (Watkins, 2004). This is because additive tasks require that each member of a group “adds” to the group submission. From an economic standpoint, more group members result in ever-diminishing group contributions. This makes intuitive sense: If one has too many people adding to any given group project (say painting a house), it gets to a point when there are too many people and not enough tasks for them to do.

**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).

A second point is this. Tasks are often measured by optimizing
outcomes rather than maximizing 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”). Maximizing 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. Maximizing 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). There are therefore two different influences on the likelihood of free-riding occurring: 1) complex and easy tasks (perceived task complexity); and 2) optimizing and maximizing tasks (the degree of proximity of a task to a desired outcome or model). Of course, most academic tasks (e.g., essays or case studies) are not easily measured in terms of maximizing outcomes. They are generally complex and optimizing 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). In real world situations, of course, this is often difficult. But in the educational context, students can be given tasks which assist them in gradually learning the skills of managing task expectations. At higher educational levels, lecturers may well expect students to deal with ambiguity and manage it themselves.

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). As noted earlier, Web-based learning tools are now available to provide just this kind of anonymous individualised evaluation. The literature supports their use in overcoming groupwork problems such as free-riding.

**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 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. The larger the group, the smaller the effort expended by group members, and the greater the likelihood of social loafing and “free-riding”. Of course, to some degree the size of the group and the nature of the task are also important variables. But these have been already discussed in previous sections. 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). However, groups of this size may be impracticable in an educational context.
Incentives and Penalties
Several studies have looked at the role of incentives and penalties 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. Penalties also have some effect. Some papers have suggested, however, that penalties do 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).

Penalty 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 their groups 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 one of the principal aims 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 penalty 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 penalties are a suitable solution.

Recommendations for implementing groupwork
The following recommendations are provided to lecturing staff to assist in implementing groupwork as a form of assessment:

- Recommendations for Setting Up and Dealing with Groups
- Lecturers should keep in mind the purpose(s) they 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.

- If the former, the groups should be of longer duration to allow for socialising and a sense of group solidarity.
- If the latter, the groups should be carefully constructed to maximise the advantages and minimise the disadvantages of groupwork (see below).

Many students will not have had experience in groupwork before so lecturers may need to set ground rules. Of course, if the students are advanced, and familiar with working in groups this may not be necessary. However, often this is not the case. Rules may seem prescriptive, and unlike the real world of ambiguity and complexity. However, in an important sense, the university is insulated from real world circumstances providing a forum for skill development (especially at the earlier levels of education).

Consequently, lecturers may need to assist students in deciding on a well-defined task, give them guidelines for member participation, and—importantly—failure to participate. It is a good idea for lecturers to make a list and explain these guidelines to their class. “I expect you to: 1) ... 2) ...3)” etc. Lecturers might consider making a list of “dos and don’ts”. They might also institute contracts between group members (see Appendix 1 for an example of a contract proforma). There is evidence that such contracts works well in galvanising effective contributions in group activities and helping students learn the skills of groupwork (Connery, 1988).

Lecturers might also develop a formative groupwork checklist. (This can be used in consultation meetings with the lecturer and can be adapted as required). An example is given in Appendix 2. It is also possible to design rubrics that evaluate the characteristics of an “ideal team member” (An example is given in Appendix 3). Distributing these before an assignment as a self-assessment exercise may help students to reflect on whether they have these characteristics. An alternative form of developing such a rubric might involve the students themselves in listing the criteria that they deem to be important, perhaps with teacher input where necessary.

**Recommendations for Ethnic Mix in Groups**

When assigning groups there should be an appropriate ethnic mix. NESB students should not be completely dominated by local students, for example, and it is not ideal for groups to be composed entirely of ethnically-similar NESB students. Realistic practices, to a large extent, depend on the ethnic composition of the class. In a group of three, for example, 3 students from completely different ethnic backgrounds would be ideal. Of course, age, gender, social and educational background are also
important variables. In the tertiary education environment in Australia—with around 35 percent of all students being international students (with a majority coming from Asia)—ethnic background is particularly important as a groupwork variable ("International Student Enrolments Up 20.0% in October 2008," 2008).

Where a mixture of ethnicities 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”. 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. Guidance from subject lecturers is important here. The NESB student can therefore still play a useful role in the group if they are anxious about their level of competence in English.

NESB students should, of course, have a role to play in writing assignments. 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, albeit in different ways. Initial drafting of assignments might be the role of the NESB student (with final editing by the native speakers in the group). Naturally, communication involves more than English language competence, and it is important to balance groupwork tasks so that NESB students are not insulated from activities that might lead to English language improvement.

The above strategy might not be acceptable in all cases, of course. This is especially true when it is vital that the same learning objectives are met by all students. However, an initial task segregation strategy might overcome perceived ethnic inequities in assigning groupwork tasks in large, non-diverse cohorts. Over time, by means of a number of formative tasks, students who are weak in one skill (e.g., academic writing in English) might obtain more confidence by being exposed to the skills of others in their group(s). One of the advantages of groupwork is that it provides a mechanism for collaborative learning and skill modelling.

Institute a policy of anonymous feedback on group members and ensure that desirable models of outcomes expected are made clear to students. It may be thought that anonymous feedback via web-based tools may be culturally challenging and new to students, especially those from non-English speaking backgrounds. However, there is evidence that NESB students respond to it as well as students from English speaking
Managing intrinsic and extrinsic motivation 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.

One way of ensuring that this intra-group communication occurs is to ensure that groups are of longer-term, rather than shorter-term duration (i.e., approximating “teams” rather than “groups”). Another way might be improved social relations generally among all class members which might need to be fostered over a longer period. Ways of doing this might include occasional social events among students and staff, regular informal get-togethers, demonstrated interest from teachers about student welfare, and the availability of teachers for consultation periods during the semester.

Consider a system of common incentives for groups (as opposed to individuals), 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 member’s contributions anonymously) (See below for an example). 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.

1) Ensure tasks are “additive” and “conjunctive” in nature rather
type of tasks

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. For example, what exactly is expected when a case study or essay assignment is set? Often assessment requirements are not made explicit. 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 themselves. Doing this would allow students to see the kind of output demanded of them, and give them the confidence to contribute to the exercise.

4) This can be taken a step further. In an essay task for example involving group members working together to produce a joint paper, what preparations are necessary to help the group to achieve its aims? A very effective class I have taken involved dividing students into groups of 3-4, distributing six or seven models of representative student essays, 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 can be very critical of work presented to them and offer 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)

**Recommendation 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. This can either be a matter of negotiation among students themselves or mandated by the instructor.

2) As already noted, 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 web-based tools or a peer evaluation procedure.

4) An effective assessment procedure that has been trialled in a cross-disciplinary business course is summarised below (C. Brooks & Ammons, 2003). The authors claim that such a procedure reduces free riding as measured by a decline of variance between peer evaluation assessments (It was not clear from this paper whether groups were self-selected or instructor selected. The second variation, given below, involved self-selected groups.)

**Assessment Procedure for Groupwork**

a. An evaluation pack is distributed containing instructions for the groupwork task, and an assessment sheet template which is completed anonymously by all students about their group members (a self-evaluation is also completed). Responses were typed to ensure anonymity.

b. 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).

c. Peer evaluation was held every 4 weeks. Thus 4 evaluations were done in total from each group member.

d. Evaluations were placed in a sealed envelope and handed to the instructor at the end of semester.
e. Instructor’s grade was averaged according to the group average.

f. Students are given their ratings from their group members as well as their instructor’s final grade (C. Brooks & Ammons, 2003).

**Assessment Procedure for Groupwork**

- 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 effectively for more than seven years and seems to overcome “free-rider” problems (Bryan Lukas, pers.com., 3/5/06).

**Recommendation 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. Note that age, gender and social and educational background may also be an important variable in groupwork.

**Recommendation for incentives and**

1) Consider interim grades and, if appropriate, penalty options such as “divorce” of group members and recombining of
penalties
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 in the formative stages of a task to foster collaboration. For example, consider offering feedback during the progress of a group activity.
4) To foster extrinsic incentives for individuals, reward individuals in groups with grades not groups themselves (i.e., consider individual as well as group grades).

Conclusion
This paper has reviewed some the key literature on the use of groupwork as a form of assessment in tertiary institutions. The focus has been on some of the problems and issues associated with groupwork and suggested solutions. It will be clear from the paper that groupwork tasks are more complex than they may initially seem. Certainly, effective groupwork assessment tasks involve much more than simply setting an assignment and asking students to “complete it as a group”. However, while the area is complex, and fraught with difficulties, overall it is an important and valuable form of assessment and should be encouraged. A number of practical recommendations have been suggested. It is hoped that the paper assists in understanding the key issues and giving staff practical ways of overcoming them.

Acknowledgements
A number of other sources were used in the development of the guides in this series.

Significant elements have been developed with the assistance of The Department of History Tutors’ Guide, John Fernald’s paper Taking Economics Tutorials from Harvard University, Marcia Devlin’s publication Teaching for the First Time (Swinburne University of Technology, 2003) and the Reflective Practice section of the Tutor Training: Online Professional Development project – a University of Melbourne and University of Sydney collaboration.

WCLA would also like to acknowledge the contributions of Martin Davies, Carol Johnston, and Mike Pottenger to these guides.
References and Resources


Outline of Group Contract Proforma
Source: Curtin Business School
Other contract proformas are available elsewhere (Anderson, Boud, & Sampson, 1996; Stephenson & Laycock, 1993).
[To be altered or adopted as each group considers appropriate and with flair and imagination!].

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]

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]
Objectives of contract
The objectives of the project are to [insert here what you wish to achieve for example; Distinction standard project Completion on time without extension Project capable of publication in a journal at a later date Etc].

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

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].

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].

Disputes
Where a dispute arises as to the following matters [for example Work load Quality of work 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].

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].

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

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.

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
## Appendix 2

### Groupwork Checklist

<table>
<thead>
<tr>
<th>Are you?</th>
<th>Lecturer</th>
<th>Group</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effectively clarifying your task or objective at each stage?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checking on progress?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clarifying and recording what your group decides?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clarifying who is going to do what?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clarifying when each task is to be done by?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establishing procedures for handling meetings?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keeping to agreed procedures?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Listening to each other?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dominating/Allowing some members to dominate?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrawing / Allowing some members to withdraw?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compromising individual’s wants for the sake of the team?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recognising the feelings of other members?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contributing equally to team progress?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Following agreed procedures for writing and file naming?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(R. Brooks, Scoufis, & McAlpine, 2006). NB: This checklist is based on one by Sharon Fraser in (Scoufis, 2000).
Appendix 3

Rubric for Evaluation of Group/Team Members

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

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