

GROUP PROJECTS – A FAIR ASSESSMENT

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ABSTRACT

Group assignments and projects are widely considered to be a key component of many degree courses, however, in spite of this it is surprising how often it is said that they are too difficult to manage and that ensuring that every group member obtains a fair mark is almost impossible.

At Coventry University staff have had many years experience in running and assessing group activities from small assignments in years 1 and 2 to much larger projects in the final year of a course. For instance, in the final year of the MDes/BSc Industrial Product Design Degree courses half of the year's work is concerned with a major group project normally in conjunction with an industrial partner or other external collaborator.

The benefits of the group project may be summed up as follows:-

- it allows students to be given a task which is larger than could be completed individually
- it provides a framework for students to learn from each other; it legitimises and encourages co-operation
- it provides students with an experience of teamwork which helps prepare them for employment
- it can provide an opportunity for students to develop their evaluation and reflection skills

This paper will draw on the experiences of many years of conducting group projects together with examples of a number of possible assessment strategies and mark allocation algorithms and recommendations for the future which give students confidence and are not too onerous for the staff.

Keywords: design education, group projects, assessment

1 INTRODUCTION

When contemplating the running of group projects it is essential that potential problems are identified at an early stage i.e. when formulating the assignment brief, and that the students are confident that they will be assessed fairly and accurately, as well as having an understanding of the "rules of the game".

Depending upon the nature and duration of the group assignment a number of problems can arise.

- 1 Students may have strongly held views about the mechanism used to form groups: should groups be tutor-allocated or student-selected?
- 2 Sometimes a group can break down causing difficulties with the completion of the task and its assessment.
- 3 Students may make differing contributions to the task in terms of effort and involvement.
- 4 Students will bring different skill-mixes to the task which may affect their ability

to contribute.

- 5 A student may feel that a group task will not allow them to perform to their full potential and thereby maximise their personal mark.
- 6 Students can be unclear about how the task will be assessed and in particular how their personal mark will be determined.
- 7 Groups can find it difficult to get together, to schedule meetings and to communicate amongst their members.
- 8 Part-time students may find it very difficult to find time to participate outside class.

The above eight points are addressed in the following three sections: - Forming and managing Groups, Student Information and Assessment

2 FORMING AND MANAGING GROUPS

The formation of stable, cohesive and complementary teams is one of the key elements in trying to ensure that group assignments achieve the desired learning outcomes and assessment goals.

2.1 Group Selection

Over the years a number of scenarios have been used to form groups with varying degrees of success. These tend to fall into three categories: -

- Student self selection
- Tutor selection
- Student/Tutor selection using Belbin, Myers Briggs or similar psychometric tools

In general terms the use of Belbin or Myers Briggs may be useful in terms of developing the individual student's self-knowledge but has been found not to be a particularly good mechanism for the formation of successful groups. This may be a result of students resisting what are perceived as attempts to categorise or even to manipulate them.

Total tutor imposition of group membership is equally unlikely to find favour with the student population.

It has been said that the Danes best form groups from their evening drinking colleagues, however it has been found in the UK that this is not necessarily a good idea. However, students forming groups from friends who may live together or have the same aspirations appears to produce consistently good results.

Thus over the years student self selected groups have been found to generate the best performing teams.

2.2 Group Size

It has been found that the optimum group size is four and this is usually aimed for. It also has the advantage that if one member drops out adequate progress can be made with a group of three and conversely a late-comer to the class can slot in to a group without making it overly large.

It is however pointed out to the students that the expected project outcomes are designed for a group of four and that a group of 5 would be expected to produce more whereas a group of 3 would be treated more leniently.

2.3 Dealing with Part-time students

It can be difficult where students are studying on a part time basis although in general terms the number of part time students joining full time classes is very low and usually, in the author's experience, integrate well. Those classes that are run purely for part time

students also do not present a problem of group formation but do have their own particular problems with regards to arranging meeting outside class contact hours. It is therefore important to allow sufficient timetabled hours to allow group meetings.

2.4 Time and Space

It is important to allow time in the programme to facilitate group working, to allow student groups to interact with each other – for the purposes of cross fertilisation and to obtain tutorial support from tutors. It has been perceived that teams who talk to other teams become competitive and raise their own game.

It has been found extremely useful to insist that groups keep formal minutes of their meetings and that these are included in the final project report. These are useful reminders to students as to what was done by whom and are also useful to the tutor as revealing snapshots of group activities. They also serve as an aide memoir to facilitate the writing of the final report. It is also important to give a good understanding to students of group working. Important to indicate that the various duties have to be shared around that meeting should be base touching exercises for information exchange and targets setting and that sitting around in a darkened room for 3 hours is unlikely to be productive.

2.5 Dealing with Group Dysfunction

On some occasions groups can become dysfunctional. There are generally two ways in which this can happen. The first is where a particular individual fails to engage with the project. In the majority of cases this is caused by the student having personal problems and will probably need to be withdrawn from the course for a while. In many cases, however, a sympathetic group will support a student with problems providing all parties are clear how the assessment procedure operates and how their individual marks may be affected. The opposite case is that of an individual who takes over the project completely to the exclusion of all others. Both scenarios can be handled by tutors holding regular seminars with each group, monitoring attendance/participation and by having access to each group's meeting minutes. This ensures such splits will become obvious at an early stage allowing them to be tackled through tutor/group/individual discussion as appropriate or expedient.

3 STUDENT INFORMATION

It is important to ensure that students are issued with all the information regarding the operation, organisation and assessment of the project assignment as early as possible. This should be a clear document – the author's preference is for a hard copy supplemented by web-based material if this is a requirement of the institution. This should always be followed up by a verbal presentation outlining the important points.

The author usually does this immediately prior to the students forming their teams

It should be made clear to the students that it is their project and that they are responsible for their team delivering the assignment outcomes.

It has been found that hammering the point home that team members have a collective responsibility to the project deliverables does have a marked effect.

4 ASSESSMENT OF THE INDIVIDUAL AS WELL AS THE GROUP

This is considered to be the main area of concern and debate with regards to any group project or assignment.

It is the area that students, university administrators, external examiners and accrediting professional bodies often scrutinise closely.

Over the past dozen or so years at Coventry University following 3 assessment

strategies have been used for design projects

1. A project assignment is given a mark which all group members receive
2. A project assignment is given a mark and group members receive a mark based on their perceived contribution – i.e. they agree to a percentage of the module mark x No. of students.
3. A project assignment is given a mark and a more sophisticated formula, process or algorithm is used to calculate the individual students mark.

Scenario 1 is fine if used for a relatively minor piece of work at level 1 and has been used successfully with few problems. However it is the author's opinion that students should be introduced at an early stage to the concept that marks in the group environment are apportioned in some way according to their individual effort.

Therefore Scenario 2 is seen as a better option. This works quite well although it has been found that students will sometimes exaggerate each other contributions or lack of it and thus allocate fail marks to students who should be just passing and first class marks to students who are operating at the level of a 2:1.

It is also possible to operate the second scenario with the students each completing an individual proforma allocating percentages to team members without discussion and leaving it to the tutor to do the sums and to allow this to influence the final individual marks. This will of course have the same drawback as the simpler version.

Something more sophisticated is required! Over the years many different formulae and algorithms to individualise group marks have been proposed and used.

The simplest to implement is to take the student's raw percentages from Scenario 2 and factor them, or rather skew them so that no student is more than say 10% away from the given project mark. Variants have been noted where maximum deviations of 15% or 20% have been used.

A similar but somewhat easier method to apply is to have the students allocate a factor to each individual in the group. The factors being +2 +1 0 -1 -2. The total sum of the team's factors must be zero. These being used by the tutor to adjust the individual mark from the group mark in the range of +20% to -20%.

Over the years the author has found that a range of +20% to -20% from the basic group mark seems to satisfy most conditions and appears to align most closely with tutor observation of student performance.

There are more exotic systems in existence where the individual students are asked to assess their fellow team members against a range of team working skills or attributes. This procedure gives rise to a score which the tutor uses to factor the final marks. It has however been observed that students appear to be somewhat uneasy with this approach.

Hodkinson, Paine and Podmore in [1] go a stage further in their assessment strategy by using student peer groups to influence the final project mark.

In their scenario two teams of students assess another team's project along with two staff assessments – the average of these four assessments gives the project mark as a percentage.

The team are asked to 'pay' each other from the 'project budget' – i.e. to share say £10,000 according to the perceived effort. These amounts are then factored so that the total payment score is 1.00 x number of students in the team.

An individual's mark was then calculated as follows: -

$$0.4 \times \text{project mark} \text{ plus } 0.6 \times \text{project mark} \times \text{payment factor.}$$

This method appears a little contrived in terms of using the monetary reward principle but it does have the advantage of mitigating the effect of team member's assessment of each other's worth by reducing its influence. However the author believes that it goes rather too far in devolving academic judgement as 80% of the marks are influenced by the students.

5 CONCLUDING REMARKS

In conclusion the following points are made: -

It is important to have an assessment strategy that is transparent.

It is important to give students complete information.

It is important that tutors monitor group progress on a regular basis.

It is important to ensure that students understand that they have the responsibility for their assignment and that success or failure is in their hands.

It is no bad thing to contrive to put the teams in competition with each other – it merely raises everyone's game! In [2] Blount & Evatt suggest that competition between student groups can enhance project outcomes, and in [3] the author comments: - "It is also extremely interesting to observe that even though groups of students may be working on completely different project briefs they feel that they are in direct competition to be "best in class", even though tutors have not introduced a competitive element."

In allocating marks to individual team members it is the author's preference to put in place a process which is open and transparent and where each team member agrees the mechanism and proportion for mark allocation. It is a measure of success in forming an effective group when this happens. However it is acknowledged that in some groups such agreement and openness will not be possible and an approach which allows anonymity has to be allowed.

At Coventry University where, for the last decade or so, in the final year of the MDes/BSc Industrial Product Design Degree courses half of the year's work is concerned with a major group project there has been little dissent from students regarding the fairness or otherwise of their individual mark for their group work.

REFERENCES

- [1] Hodkinson, M., Paine, R., Podmore, G. Team Projects and Peer Assessment in action PDE94, Bournemouth University 1994
- [2] Evatt M.A.C. & Blount G.N., "A review of Project Strategies at Coventry University" 'ICED 99' MUNICH, August 24-26, 1999 ISBN N° 3 922979 53 X page 1291-1294
- [3] Evatt M.A.C., Is your project big enough? 2nd IE&PDE 2004 Delft 2004 ISBN N° 90 5155 020 0 page 425-432

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