Credit where credit's due – confidential peer assessment of individual contributions to group project work

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Background and rationale

Biological Clocks is a Level 2 module worth 10 credits that runs for half the academic year. About 150 students take this module which has run for the past seven years. The module was designed to develop transferable skills in students. It was built around the need to provide more group work, so as to develop the skill of working in a team and to improve the students' communication skills.

The module consists of lectures for the first five weeks followed immediately by the course exam. The remainder of the module is spent doing a group project where the students carry out an experimental investigation. This encourages the understanding of experimental design, both in terms of implementation and flaws. Specifically the students are instructed to find and measure, and if appropriate alter, a biological rhythm in any life form they choose. The project outcome is to produce a poster of their results.

Critical to the design of the project was how to persuade the students to take the group work seriously. In a Level 1 Biology course that was running when the Biological Clocks module started, there was a group project assignment on AIDS. Those who had completed the AIDS project complained that there were students who had not done their fair share of the work and yet still got the common mark at the end and student feedback indicated that 47% of the students wanted credit for their teamwork. Consequently we decided to get the students to grade the contribution made by each of their colleagues in the group.

'How to do it'

The project is organised into three compulsory two hour scheduled meetings and a one hour session where the students present their poster to the other students and staff. They are given a free choice of what to study and groups usually meet outside their allocated times. The students are randomly allocated to the groups of between 8 and 14.

We felt it necessary to have a facilitator (a member of teaching staff) at the scheduled meetings. The facilitator supervised either one or two groups of students. If the facilitator had two groups to supervise they met in adjacent rooms. The role of the facilitator is encouragement, very gentle guidance and minimal intervention. They have a role to ensure the good functioning of the group, i.e. to avoid the group being dominated by one particular vociferous student or to ensure that someone who is very shy or quiet gets the full opportunity to participate. The facilitators are not assessors. However they do have a role in monitoring attendance at the three scheduled sessions. Students who consistently fail to attend are chased up and any extenuating circumstances noted. The facilitators also check that the group's project is both feasible and acceptable. At the end of the project the facilitator is useful in monitoring how functional a group has been if there were any queries with their marks. However this was very rarely required.

35% of the summative assessment mark for the Biological Clocks module is given for the group project. All the members of the group receive the same mark for their poster, a portfolio of their results and the presentation of their poster (15%). Each student is given attendance marks (10%) and must complete a confidential peer assessment form where they allocate marks to all their other group members (10%). The students' marks are entered into a spreadsheet and each student is given the average of the marks allocated by their peers. Giving an attendance mark was felt necessary to encourage the students to participate.

All the project marks for an individual are added to give their final mark out of 35. This is then converted to a grade A, B etc. The students usually allocate each other marks between 7 and 10. This results in the majority of group members' grades being the same and weighted towards the standard of their poster and its contents. Typically if one member of the group has been thought of very highly by the rest of the group, they will get a grade higher than the rest and if a student is marked down by all the other members of the group they may get one or two grades lower. This penalises appropriately those who make little effort even when their group achieves high marks for their poster. The member of staff calculating the grades monitors the marks and checks with the facilitators if any students' marks seem out of order.

The relative weighting of the importance of the group work in the Biological Clocks in relation to the overall mark for the module is higher than the weighting of the Level 1 project. For this reason we think summing the marks is fairer in this situation as opposed to the proportions calculated for the Level 1 project (see case study 4 from the guide). As mentioned above relatively more credit is given for the group outcome by this system.

Each student is given a personal peer assessment form (i.e. their own name and number is at the top of the form) with a table of the names and matriculation numbers of all the other students in their group. For the system to work it is important to have as near to 100% return of forms as possible. The students are given zero if they fail to hand in their form. Each student is given an envelope addressed to the office where the forms are to be handed in.

As a result of concern that the students might be working collaboratively to fill in their forms or the possibility that a powerful member of the group might be exerting pressure on other group members to give every one ten out of ten, the students are instructed to complete the forms alone. Each student is given an envelope addressed to the office where the forms are to be handed in.

There are detailed instructions on the form about how to allocate the peer assessment marks. The instructions are as follows:

> **This form should be submitted/mailed to the Undergraduate School in the envelope provided by Friday 12th December. Your marks for your fellow students will be Totally Confidential and fellow members of your group will never know what you awarded them.** You are required to give each member of your group a mark from 0-10 taking into account the contribution of each to the final poster. If you don't know who they are, you have failed as a group member. There is a wide variety of tasks involved in working together that will make the outcome of a group project successful. So a person who might say very little during the group sessions might do all the statistics or design a striking background for the poster. On the other hand there might be someone who talks non-stop in the sessions but actually collects little data and gives very little help to the final poster. When giving your marks consider the contributions throughout the full range of tasks appreciating that no student is expected to shine at more than one or two of them:-
>
> | | |
> |---|---|
> | Contributions in formal meetings | Contributions in informal meetings |
> | Contributions to actual poster session | Data collection |
> | Data handling and statistics | Producing graphs |
> | Art work | Literature searching |
> | Original ideas | Doing tasks on time |
>
> **Marking Scale:**
> 10 = Very good all round contribution or excellent contribution in one or more areas
> 8 = Good all round contribution or excellent contribution in a very narrow area
> 6 = Solid contribution but with no special features
> 4 = Fairly minimal contribution or solid contribution but over dominant
> 2 = Minimal contribution or tolerable contribution but antagonised the group
> 0 = No contribution of any value
> (intermediate marks, e.g. 7, may be used)

These marks must be allocated privately without consultation with group members. Co-ordinators will deduct marks from students' peer assessment if there is evidence of collusion within the group on this aspect of the project.
Students who fail to submit this form will lose all 10% of marks for this part of the assessment.

In the table of the group members on the form students are listed in matriculation number order. This makes entering the marks into the spreadsheet much easier than if they were in a random order. Although it takes considerable time to set up personal forms it is easier to keep track of who has handed in their form. The forms can be produced by an efficient secretary using the mail merge function of Microsoft Word. All the marks have to be entered into the spreadsheet by hand. Therefore, taking into consideration the production of the forms and chasing up of those students who have not returned the assessment sheet, this type of assessment does not save staff time.

Advice on using this approach
The second year students especially like being assigned to groups where they have not previously met each other and were able to make new friends. However this does mean that initially they do not know each others names. For successful peer assessment this situation must be avoided. Students are given badges to wear with their names. Part of the first session includes a "getting to know you" exercise during which each student makes a list of their colleagues' names and responses to various personal questions.

Does it work?
The students liked this peer assessment, take it seriously and are quite discriminating in the marks they allocate. Only a couple of times over the seven years has there been a group that all gave each other ten. In both cases the group facilitator confirmed that the groups had worked really well together so the marks were felt to be deserved. However if this tactic were adopted by all the students we would have to adjust the rules but so far we have not found this to be necessary.

The module is evaluated in a number of ways. The students are given questionnaires which are completed anonymously. We get a high rate of return (over 80%). There is also space on their peer assessment form for comments. Towards the end of course there is a staff-student committee meeting and after the module a staff liaison meeting. There were very few comments made about the method of assessment. Most of the comments were saying that they had found the module enjoyable and interesting especially the group work aspect. The following are some typical comments about the peer assessment:

"Method of assessment makes you very conscious of being part of a group and wanting the group to succeed. Do not suggest that any changes to the assessment method are required."

"The group worked well as a group and this type of assessment is quite fair."

"I thought working in a group was very productive method of grading and marking by other group members meant that non-workers couldn't get the credit for the work of others."

"The group had very different approach + attitude compared to the AIDS project last year."

As a result of the evaluations at the end of the first run of the module the contribution of the peer assessment was increased from an original value of 5% to its present value of 10%.

Further developments
The module has now run successfully for seven years with only minor alterations in the instructions to the students. When we started, Biological Clocks was the only module within the Institute of Biomedical and Life Sciences operating a peer assessment scheme contributing to summative assessment. Since then several other modules have started using peer assessment. In particular the large year Level 1 Biology class has followed our lead. However due to the size of the Level 1

class it was necessary to be able to automate the procedure (see case study 4). Now we too are benefiting from this as next year we will also be switching to web-form entry.