



University Department Module	Glasgow Institute of Biomedical and Life Sciences Level 1 Biology Lifestyle Project
Overview	The first year Biology course at the University of Glasgow consists of Modules 1X & 1Y, with typically 650-700 students annually. The modules are a requirement for students intending to progress into Level-2 Biology, but they can also be taken as optional modules by any student on a degree programme at the University. Module 1Y, which runs over a period of 12 weeks, is designed to provide students with a broad-based understanding of the basic concepts of Biology at the whole organism and population level. The course also encourages the acquisition of general scientific skills relating to the systematic assembly, critical analysis, interpretation and discussion of factual information and data. Module 1Y comprises 40 one hour lectures, delivered at 4 per week for 10 weeks, 3 skills workshops, 2 tutorials, 7 practical laboratories and 3 discussion sessions. For several years students have also been required to complete a group exercise in which up to 8 students work together for 5 weeks to create a poster and also take part in a biological debate. Over the last 6 years the topic for this group exercise has been 'Lifestyle'. Students are graded using two paper-based objective question assignments (15%), a laboratory report (15%), the Lifestyle Project (20%) and a 2-hour end-of-course examination (50%) comprising MCQs, short essays, calculations and sequencing questions. The Lifestyle Project was designed to encourage students to develop team-working skills, acquire oral and visual presentational skills and to undertake independent research on topics of interest. A peer marking component was included in this group exercise in response to student feedback in previous years, as a way to identify "passengers" in the group. The Lifestyle Project has three parts: (i) students work in groups to produce a poster which compares the lifestyle of a typical UK resident with one from another country (ii) in a head-to-head debate, groups of students argue for the extinction of a chosen species from the planet, and for the retention of their opponents' species and (iii) students research and complete an individual problem. Apart from two scheduled meetings, groups are expected to interact in their own time outwith designated sessions, and they do so in a variety of ways (email, text, face-to-face). The diverse backgrounds of the Level-1 students in terms of other commitments (work, family, travel etc.) mean that many students cannot attend such meetings, which is a significant weakness of the arrangement that can limit the extent of the interaction of group members. The group tasks (i) and (ii) are each marked by two members of staff. They assess the quality of the debate presentations for and against each species, and also the ability of the groups to respond to questioning. The posters are marked against a number of defined criteria. The marks for the debate and the poster carry equal weighting and form 12% of the final mark for the module. In addition, students are asked to mark the other members of their group on the basis of their individual contributions to the debate and poster and according to a list of criteria agreed by the individuals in a group. This method of peer marking for the group exercises has evolved each year over the lifetime of the exercise, and in 2005-06 students allocated marks to the other members of their group on a confidential webform. Students are also asked to assess their own contributions to the group tasks and to write a short paragraph justifying this mark. In these ways the evaluation methodology does to some extent engage students in their own self-assessment, but only in an <i>ad hoc</i> manner. Although the peer marking for most groups is processed automatically, without the need for manual intervention, in many cases the peer marking shows no clear pattern and in these cases the group leaders and deputies would be consulted for further comments, and group marks would be checked to identify unusual marking patterns (an extremely time-consuming process). Student responses to the Lifestyle project are ascertained from a specific questionnaire that they complete during class time.
Drivers for change	The main driver for change was to increase student motivation in Level 1 Biology, and thereby improve retention of students within the first year course and increase their progression to Biological Honours Degree courses in subsequent years. It was intended to achieve this by enabling the students to be more actively involved in their own learning, and to participate in a greater range of group activities, thus allowing the possibility of discussion, reflection, peer assessment and support. It was our intention to implement the group activities through online discussion forums within Moodle, which has recently been adopted by the University of Glasgow as its main Virtual learning Environment (VLE). Moodle is particularly appropriate for the proposed pilot project on group activities as it is designed to promote a "social constructionist pedagogy" (collaboration, activities, critical reflection, etc), and contains dedicated Forum modules. The main drivers for embedding the activity within Moodle were that it provides a more accessible forum for group interactions than previously available, and will therefore improve the students' learning experience; that it allows students to participate in the group discussions regardless of the timing or other commitments (family, travel, work etc.); that it avoids any problems arising from student absence and 'no shows', since all students in a group will have access to material 'posted' in the forum; and that it provides a permanent record of the group interactions for consultation by both students and staff. On completion, systems and procedures will have been established for performing group exercises on-line. These will offer the possibility for efficiency gains thereafter, by providing savings in the staff time required to set up and monitor these exercises, and to investigate problem cases. These savings will allow us to consider using these on-line group activities more extensively through the whole year, without a further impact on staff time.



		Intervention	The aim of the intervention was to make it more explicit that the group exercises involved active engagement of students in their own learning, group interaction, self-assessment criteria, cyclical development and progression. More effective tutor interaction and feedback, and further development of the existing peer assessment procedures were also intended. Thus the group exercises were redesigned to capture study time and effort outwith the timetabled course programme by embedding them in a technological system (Moodle) which could provide an appropriate and effective on-line vehicle for these student-centred group activities. Implementation involved creating an on-line structure within Moodle of closed forums for private interactions of group members (~80 forums with 8 members per group), and also an open forum for general interaction of all students and teachers; pre-loading instructions into the Moodle open forum, and directing students to these (thus making instructions consistent for all groups); releasing tasks progressively along a timeline and defining the 'time on task' allowed for each; requesting a series of defined deliverables to specific deadlines; making these deliverables available to class tutors; encouraging students to reflect at each stage (formative assessment); giving motivational feedback to whole class at regular intervals, in order to keep mutual contact. For each exercise the student groups do the following: decide on the marking criteria they will use to distribute their group mark, by picking from a list presented or by choosing their own; post this on their Moodle forum to be the agreed group criteria; decide on their choice of topic(s) from the options offered for the poster and debate exercises; post a brief rationale for their choices on their Moodle forum; decide on the group leaders and the division of tasks (research, synthesis of ideas, presentation); post a brief summary of their presentations on their Moodle forum; participate in the real event (create poster; participate in debate); after receiving their group mark by tutor assessment, all group members assess their peers against their own agreed criteria; they return marks for other group members through a secure webform, and a mark for themselves together with a statement of justification; they reflect on the exercise afterwards, and re-evaluate their marking criteria. Evaluation of the intervention has involved an analysis of use of the Moodle forum traffic and postings, correlation of these data with both the group and individual marks given, and analyses of the student questionnaires, focus groups with students and interviews with staff. According to these responses, the intervention has improved the learning experience for students, has enhanced their team skills in gathering, assembling and sharing information and has improved their motivation for the subject. It has also provided a saving in the staff time and effort needed to deal with the moderation of the peer marking process and to resolve problem cases.
PROCESS	EMPOWERMENT	NICOL'S 7 PRINCIPLES OF GOOD ASSESSMENT DESIGN	Activities
			Principle 1 (clarify criteria)
			1) Prior to undertaking the tasks in the online group project, and also regularly and progressively throughout it, information about the exercises, including deadlines for group deliverables, is posted to the forums 2) Students attend a Workshop on principles of poster design. This includes exemplars of posters produced by previous student cohorts
			Principle 2 (self-assess, reflect)
			1) Groups choose their topics for the poster and debate exercises by consensus following on-line discussions on their Moodle forum 2) Groups post a brief rationale for their choices on their Moodle forum, which encourages reflection 3) Groups decide on their own marking criteria, and post their agreed list to the forum 4) After the group assessments and peer marking, students can reflect on the exercise, and re-evaluate their marking criteria.
			Principle 3 (tutor feedback)
			1) During the on-line task, information about the exercises, including deadlines for group deliverables, is posted to the forums regularly and progressively. 2) Motivational feedback is provided to whole class at regular intervals, in order to keep mutual contact
			Principle 4 (peer feedback)
			1) Students reflect on their on-line postings for the poster exercise in the light of comments from their peers 2) Students engage in discussion around the selected topic for their debate in order to assess the strengths of their own argument and reasoning and that of the other group members. This enables them to compare and contrast their own knowledge with their peers while increasing autonomy by encouraging them to explore information or interpretations outwith the course remit. 3) Students can gain increased understanding of feedback when it is provided by peers since it is likely to be formulated in linguistic terms that they as fellow students are more familiar with 4) All group members formally assess their peers against their own agreed criteria, and also provide a statement of justification for the mark they give to themselves
			Principle 5 (motivation)
			1) Groups are encouraged to divide up the leadership role and the group tasks (research, synthesis of ideas, presentation) 2) The social support, group cohesion and reinforced social identity from being a group member strengthens self-esteem 3) The involvement of the students in the real events (creation poster; participate in debate) provides effective motivation



ENGAGEMENT	GIBBS & SIMPSON'S 4 CONDITIONS OF TIME & EFFORT ON TASK	Principle 6 (close feedback loop)	1) Students close the learning and performance gap through the repeated cycles of research, discussion, posting of information of and ideas on the Moodle forum, participation in real events, and responding to the reactions of their peers and tutors
		Principle 7 (shape teaching)	1) All on-line discussions and postings from student groups are available as feedback to the tutors
		Condition 1 (in and out of class)	1) The on-line Moodle forums provide the opportunity for additional 'time on task' outwith the lecture/lab timetable 2) Groups must submit multiple postings to their Moodle forums, which provide multiple opportunities for study between each submission
		Condition 2 (spread evenly)	1) The tasks rely on effort and adequate allocation of study time of all of the members of the group, who must work together as a team over a period of 5 weeks to ultimately develop the group outputs. This ensures engagement of all students with peers, tutors and content material
		Condition 3 (deep not surface)	1) Students can ensure that they are engaging in the appropriate kind of study by recording, comparing and contrasting their understanding of the task, feedback and learning strategies with other students on the Moodle forum. This encourages them to think at a deeper level about learning, both in and out of class time
		Condition 4 (high expectations)	1) Students are able to meet learning expectations by participating in the group presentations with at least five other groups. This involves peer discussion, reflection on tasks and feedback
		Efficiencies	1) Savings have been made in terms of staff time and effort needed to deal with the moderation of the peer marking process and to resolve problem cases
		Informal Learning Gains	1) Increased engagement with peers and concepts
		Formal Learning Gains	1) Pending course completion