Group Exams

Objectives

To align assessment with instructional techniques in an active classroom, by assessing interactively. To increase the motivation to engage in group work by creating coherence in the course and leveraging students' high levels of interest and motivation post-exam and providing immediate feedback on learning. These suggestions are taken from several articles, see right.

Activity

In a two-stage exam students first complete and turn in the exam individually, and then, working in small groups, answer the exam questions again. Students must come to consensus and use one answer sheet for the group portion. Grades are based on a combination of the individual and group score. See a video of this in action: excerpts with commentary, http://blogs.ubc.ca/wpvc/two-stage-exams/

Stage 1: Individual, between 2/3 and 3/4 of the examination time; a standard formal examination that students complete working alone. The majority of the exam score is typically given to the individual exam (85-90%).

Stage 2: After students turn in their individual exams, small groups solve similar or identical problems during the remainder of the examination time. This stage takes less time since students have already thought about the problems. The group score typically adds only 10-15% of the score, and cannot reduce a student's grade.

Individual portion

1. Start the exam as normal. Make the exam about 2/3 as long as normal and make sure there is plenty of time for both the individual and group portion.
2. As students finish the individual portion we ask them to hold onto their exam sheets until time is up. It is much quicker to get students to hand the exam in all at once by passing exams to the aisles. Also, when students still have their exams they are less inclined to whisper to their neighbors and disrupt others.
3. Have a well defined plan for the transition from individual to group. Give very clear instructions during the individual-to-group transition during the exam. For example, students should remain seated while their individual exams are collected. Remind and check that all names and student numbers are listed on the group exam. The switch can be done in less than 5 min; A short video showing logistics in a large class is at: http://blogs.ubc.ca/wpvc/two-stage-exams

Author

Various

Materials & Resources

Benefits of group exams

Two Stage exams

References at end of this article

Classroom Context

Various

Time Requirement

20 minutes

About this Project

This is one of a set of materials compiled for instructors to draw upon in order to frame non-traditional modes of classroom teaching for their students. Our hope is that these materials can help reduce any student resistance to such techniques.

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Other materials available online at www.colorado.edu/sei/fac-resource

Group portion

1. After all individual exams are collected, tell students to get into groups of 3-4 then raise their hands.
2. Students who do not have full groups or who do not have a group are asked to come to the front where they can be placed in groups.
3. Give one exam sheet per group to those with raised hands. It is very important that each group gets only one exam sheet. They must come to consensus on their answers. If each student has their own sheet they give up on discussion too easily and don't correct their errors.
4. During the group exam try to identify students who are not participating. If you find students who are not participating, approach them, find out why, and see if you can help. We inform these groups that everyone's help is important and that groups of less than 4 underperform.
5. Do not worry about cheating in the group portion. The room will be very loud and lively. Scores do not improve much after more than 4 people per group and those who listen to other groups will still get the benefit.

You can use various approaches for the content of the group exam: 1. Repeat entire exam 2. Repeat subset of questions (e.g. the most challenging ones; conceptual questions work well) 3. Turn open-ended questions into multiple choice or ranking tasks 4. Add a more challenging question that wasn't on the individual part. Two-stage exams work well with any question type except for longer essay type questions and lengthy calculations. Most other types of questions are short enough or structured such that everyone can contribute.

Grading

1. Marking two stage exams may be a little quicker than normal although for machine marked exams the time difference is negligible. A small amount of extra administrative effort may be needed to coordinate students' marks and combine individual and group scores. Well organized spreadsheets will make this more efficient.
2. Each student's grade will be a combination of their individual and group exam scores. Do not give the group portion of the exam too much weight. 85% /15% is enough to convince students to engage, but does not overly compensate people who are unprepared.
3. Do not penalize students who score higher than their groups, unless you have a good reason and spend lots of time explaining to students why you would do this. Our preference is to allow those few students who may beat their groups to keep 100% of their individual mark.

Preparation

1. Prepare students to work in groups by using group activities during lecture. Tell students before the exam about the format, why you are doing it, and how it will work.
2. Use two exam sheets. Develop the individual exam as usual. Then make the second, group part of the exam, identical or perhaps add one or two very difficult questions.
3. The individual exam should be about half the length of a normal exam. If this is a concern, add another midterm to the course (to increase questions tested over the term), book an evening exam slot, or take solace in research that shows longer exams are not necessarily better or more reliable exams.
4. On the group portion include four lines for student names and numbers plus space for a group number. Use your photocopier's "count" functions to add unique numbers to each sheet, or do this manually.

5. If exams are marked electronically (i.e. Scantron) each group can enter their group number on the answer key under student ID. When collecting marks you need only enter which group each student was in and use the VLOOKUP function in MS Excel to find their marks.
6. Prior to the exam explain to students the rationale of the format, preferably more than once. Describe the exam early, put it on the course syllabus, and reinforce that it will only improve their mark (see Post Exam below). When preparing them for the exam, encourage students to sit near their group in the individual portion. Also consider giving students strategies for dealing with deadlocks during the group process (for example appealing to arguments from the class – NOT just "Trust me" or flipping a coin).

Effectiveness

Used properly, two-stage exams can improve feedback, increase learning, and correct misconceptions. In the classic exam, students are intensely engaged with the material, but they lose the opportunity for formative assessment, because the feedback is mainly right/wrong and comes a long time after the exam. By contrast, in a two-stage exam, students receive immediate, specific feedback and increase their mastery.

In our two-stage exams, students participated strongly in the discussions, and their reactions were overwhelmingly positive. Even those who found the discussions uncomfortable, because they saw where they had made mistakes, acknowledged that they learned what they needed to learn. During the second stage, the room is filled with spirited and effective debate with nearly every student participating.

We have found that students' response to the use of two-stage exams is overwhelmingly positive. In response to a survey, 87% of the students recommended continued use of two-stage midterm exams and only a few percent recommended against their use.2 Some student quotes indicate what they found useful about the exams: "I was able to instantly learn from my mistakes." "Interesting. All had different ways [of] approaching the question. Very helpful to understand everyone's response and why they thought their answer was correct."

Overview of benefits:

1. Students get immediate feedback on how they did on each question of the exam. Lower achieving students benefit from extra explanation at their level.
2. Higher achieving students benefit from explaining concepts to others
3. Being forced to come to consensus develops important group work skills
4. Many students report reduced exam anxiety
5. Fewer students drop courses with group exams
6. Student retention of information is increased
7. ALL students participate! A class doing a group exam is awesome to watch.

What students say:

"Great idea! The group exams give you a chance to go over your answers to the exam while you still care about the questions."
"You actually learn what you got wrong right away from a student perspective"
"Discussion over tricky questions facilitate learning immediately and the answer/concept is stuck in your brain FOREVER!"
"You actually learn what you got wrong right away from a student perspective"
"They facilitate discussion amongst group members and people who know the material well can reason with others and improve everyone's understanding. For material everyone is only partly familiar with, discussion can help groups piece together the puzzle, so to speak."

References

1. B. Gilley & B. Clarkston, Collaborative Testing: Evidence of Learning in a Controlled In-Class Study of Undergraduate Students, J. College Science Teaching, 43(3), pp. 83-91 (2014), www.cwsei.ubc.ca/SEI_research/files/Gilley-Clarkston_2- Stage_Exam_Learning_JCST2014.pdf.
2. C. Wieman, G. Rieger, & C. Heiner, Physics Exams that Promote Collaborative Learning, The Physics Teacher, 52, pp. 51-53 (2014), www.cwsei.ubc.ca/SEI_research/files/Physics/Wieman-Rieger-Heiner_Two-Stage-Exam_PT2014.pdf;
3. G. Rieger & C. Heiner, Examinations That Support Collaborative Learning: The Students' Perspective, J. College Science Teaching, 43(4), pp. 41-47 (2014), www.cwsei.ubc.ca/SEI_research/files/Rieger-Heiner_2-stage-Exams_JCST2014.pdf.