

Exam Analysis

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Context: out-of-class; Biology, Chemistry

Keywords: exam wrapper, study skills

Student Activity Time: 1 hour

After the first course exam, students completed an exam analysis to determine what went wrong in an effort to improve their future exam performance.

Introducing the Reflection Activity

Taking the time to describe errors on an exam and to identify the outside factors contributing to performance is a useful strategy for improving future exam performance. For students in chemistry and biology, two educators provided a post-exam analysis as an opportunity for students to reflect on each exam response and possible reasons for a missed response. The purpose of this activity was to support students' reflection on their exam performance so that they may correct those issues in the future.

After returning the first graded exam to their classes, two educators assigned an exam analysis for students to complete before the next class meeting. For each incorrect exam question, students were to indicate one reason that best described why they answered the question incorrectly. The list of possible reasons included misreading the question, trouble interpreting the question, lack of confidence in the answer, or not studying a concept enough. The next prompt asked students to identify an improvement plan or strategy to work on for the next exam. For the first educator, the assignment included a survey of questions related to the attributes of the students including their commitment to their education, and possible factors interfering with their success. The educator also prompted students to recall their educational and professional goals.

On the form, the second educator asked students to review their calculation errors to identify themes such as, units, setting up the problem, or conversion factors. The next prompts focused on studying habits and using resources for success. Students in both classes then tallied the cause of their errors to identify patterns. The educators collected the student exam analyses, and when consistent themes emerged across the class, they took time to address the group with strategies to overcome the shared difficulty.

One of the primary outcomes of this activity was an increase in student responsibility. After completing the exam analysis, students often realized that the errors on the exam were generally due to factors that they could control, study for, or at least moderate. Students also increased their communication with the educator both via email and in office hours to support their knowledge of the course material.

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Analysis & Self-
Evaluation –
Fiorini

📁 8.2 Exam Analysis
– Mauldin

Recreating the Reflection Activity

	Description
1	Administer, grade, and return the first exam.
2	Provide students with the exam analysis form, instructions, and the due date.
3	Collect and grade exam analyses. If applicable, meet with students regarding the improvement plan.
4	Address any common themes in the next class period.

In the words of the Educator: Tips and Inspiration

Help students recognize mistakes. This activity assumes that students can recognize what mistakes they were making, and that they are correctly classifying them. Surprisingly, some students just can't recognize the actual issue, but when I look at the exam, I can see a pattern repeated over and over again. When you see the trends and students don't recognize it, take the time to point it out. It helps them with their learning and knowing how to improve.

Open the lines of communication. I'm proud of the kind of relationship that gets established when we communicate with our students like this. It might be email, but I also try to sit down with students and actually look at the analysis with them. In those conversations, we can talk about what it actually means to study, why visiting office hours can be helpful, and identify resources that they could benefit from.

What was the inspiration for the reflection activity? Diane: I was suspecting that students weren't looking at their exams again – they just were getting over that hurdle and going on to the next hurdle without learning anything from that exam. I wanted them to look at that first exam and hoped it would carry over to other exams and help them improve, because it's a prerequisite for going into other healthcare programs. If they identify the patterns that are undermining their success, they can avoid them in the future. I can't say the next exam is very different from the first exam, and I like to think that when I do see improvement, it's because of this experience. I'm also happy with the relationship that comes from the activity; it opens up a line of communication that I didn't really have with them before.

Gina: It was the desire to have students take ownership for their own role in their own exam. It was really about wanting an attitude shift to happen with my students. That they do need to do certain things, look at other resources, and look at their exams to see what they were doing wrong. I recommend it for all of the first quarter chemistry teachers.