Feedback from Test Grades

Georg Rieger[1,2], Jess McIver[1], Silvia Mazabel[3], Sean Cooper[1], and Gerwald Lichtenberg[4]

[1] Physics & Astronomy
[2] Vantage College
[3] Faculty of Education now EOAS
[4] HAW Hamburg, Germany

The Idea

- Categorize test questions, similar to Bloom’s levels.
- Post average grades according to question type.
- Provide specific guidance for improvement in these categories.

Purpose

- Provide students with easy-to-interpret forward-facing feedback
- Feedback timely enough for students to adjust their study strategies

Two major benefits:

- helping students identify areas for improvement
- making them aware of different study strategies and prompting them to take action.

The Question Types

I Definition and units

II Concepts and comprehension

III Calculations for familiar problems (near transfer)

IV Calculations for unfamiliar problems (far transfer, rare in PHYS 118)

The Feedback

Question type	Type of Action	Check your understanding
I	Review and interpret definitions	Express definitions and basic equations in your own words. Be able to say what the equations on the formula sheet are about. Be able to express the content of graphs in words.
II	Review in-class worksheet activities and clicker questions	Explain concepts to yourself and others; give explanations to teaching assistants, instructors and friends; focus on reasons why something is correct or incorrect, i.e. evaluate all choices in multiple-choice questions. Do the conceptual questions on the practice test.
III	Solve problem questions	Practice your fundamental math skills: trigonometry, vector addition, vector components, vector products. Get into the habit of interpreting all symbols in an equation and be able to explain what they mean. Pay attention to negative signs. Practice your calculus: be able to use and interpret differentiation and integration in the examples we have discussed. Relate calculus and graphical interpretations: slope (differentiation) area (integration). Practice interpreting problem questions by writing main concepts and ideas that could lead to a productive solution, before attempting to solve or looking at a solution. Redo homework and worksheet questions you found hard. Do the numerical questions on the practice tests.
IV	Solve advanced problem questions	Solve ‘general’ textbooks problems that are not linked to specific textbook sub-sections. Do the practice exams.

Implementation

- Assign a type (I - IV) to each exam or test question
- Not sure what type or questions with more than one type? No worries, not an official grade, just additional information.
- Select type(s) according to what feedback/study strategy is most appropriate.
- Ten questions can reasonably be done in 15 minutes.

Survey

“Did you find the additional information provided by the ABC grades helpful or useful for your preparation of the final exam?”

Answer	**N**
I did not pay attention to the ABC grades	9
Very helpful or useful	8
Somewhat helpful or useful	21
Not helpful or useful	4

Student Quotes

“I used the ABC grades to determine which areas I needed to spend more time studying”*

“I kind of already knew, but the ABC marks confirmed to me that I needed to focus on concepts, which I did.”

** Changed name later to Type I – IV to avoid confusion.*

Instructor Experience

- Useful tool in office hours after midterm exam.
- Could give more individualized study tips to students without having to go through tests and exams.

More Information: this work will be published in *The Physics Teacher*:

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