

Reading Reflections in Physics

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Context: out-of-class; Engineering Physics

Keywords: reading, written reflections

Student Activity Time: 10 minutes

Students read their physics assignment and reflect on the material through an online reflection form.

Introducing the Reflection Activity

In classes like physics, getting students to read the textbook and not focus solely on problem solving can be challenging. In order to help students learn physics material, an educator assigns the daily readings with a reflection assignment. The primary purpose of the activity is to prompt students to process and identify important concepts from the physics reading selection.

At the beginning of the term, the educator included reflections on reading assignments in the course syllabus for each of the 50 reading assignments. The educator explained to the students that for each reading assignment, 2 points would be awarded for responding to four questions on the course management tool. For each reading assignment, students were to respond to the following 4 prompts:

1. Please write a short summary of your thoughts on the reading assignment.
2. What parts seem to be the most difficult for you?
3. What parts would you like to spend more time on in class?
4. What parts do you feel the most comfortable with?

After students read the assignment and completed the short survey questions outside of class, the educator reviewed their responses and in some instances, revised the next class content to address shared misconceptions. In the next class session, the educator responded to the students' feedback and spent additional time on the topics that students requested.

There are several outcomes for students based on this activity. In general, the educator identified that fewer students fell behind in their course reading assignments due to the inclusion of this activity. The use of reading reflections enabled students to articulate the relationships of concepts and the meanings they derived from the concepts in the text book. The activity enabled the educator to provide "just in time" teaching" for many of the students in their class.

Recreating the Reflection Activity

	Description
1	Include reading reflections description and point value in the course syllabus.
2	Assign textbook reading and the reflection prompts with a due date before the next class meeting.
3	Review student reflections before class.
4	Discuss, respond to, or address student reflections during the class session.
5	Grade student reflection assignments for completeness.

In the words of the Educator: Tips and Inspiration

Make sure that students know that their responses are being read. Students need to know how feedback to their reflection responses is given back to them and that their responses are important for the success of the class. In the beginning of the term I can go up to particular students to point out their specific question from the reflection and point out how what we're doing in class relates to their question. Another thing I do in the beginning of the term is to ask them if I can share their reflection responses in class. It's a community vote and then I'll show them, with their names off of it. I also pick and choose some things that are consistent with the topics the majority of what the class is struggling with. A lot of times it's consistent with what all students typically have trouble with, so I already have strategies ready to address their questions. Having them buy into it really helps.

Expand the purpose of the reflection activity. Toward the end of the term, I try to articulate to the students that it is up to them to think about what they are doing after they do it - sort of empower them with the knowledge that they can do it on their own.

What was the inspiration for the reflection activity? The activity comes from a couple of things. The activity gets its roots from just-in-time teaching and a curriculum called smartPhysics which is an online textbook that I've used on another campus. With smartPhysics the just-in-time based activity was not based on readings, but a video that students would watch online called pre-lectures. The just-in-time teaching strategy, developed through a NSF grant, suggested a prescribed way to design a course so that students do a particular set of things before class and the instructor can then base the class session on what students have read or done right before the class.

In the past I've found that 20-60% of the class shows up not having read the assignment by the assigned deadline, and the reflection activity makes them read the text and take notes on it before they arrive. Getting students to read the text is a benefit, but not the real reason I started doing the activity. I really wanted to know what students need before showing up in class. I get a hint of what they need from their writing in the assignment.