Activity

10

Process Problem Assignments

Educator: Jim Hanson, Professor, Civil Engineering
Context: Out of class; Statics
Keywords: first-year experience, statics
Student Activity Time: 1-2 hours outside of class each week

After completing weekly homework assignments, students reflected back on their process and described their process for engaging in the homework problems.

Introducing the Reflection Activity

In a first-year Statics course, after completing weekly homework assignments, students reflected on and wrote out their process for solving a selected problem from their homework assignment. The purpose of this reflection activity was to engage students in thinking about and communicating their process for solving problems.

At the beginning of the course, using example submissions, the educator introduced the idea of this reflection activity. Additionally, the educator talked to students about the purpose of reflection and the importance of being able to communicate their process. Then in their weekly assignments, students reflected back on their process of solving one problem from their assignment and described their process. (Note: The educator chose which problem the students reflected on.) After students submitted their weekly assignments, the educator graded the assignment using a full credit (2 points), partial credit (1 point), and no credit (0 points) approach using the following criteria:

1. Has the student provided sufficient detail, which another beginning Statics student could reproduce the approach to the solution?
2. Has the student demonstrated an understanding of what is being done in the solution process?
3. Is the description written so that an expert (TA or instructor) can understand what the student means?
4. Is the description focused on the approach to the solution of the problem, not the specific numbers of the solution?
5. Is the assignment formatted according to guidelines given?

In terms of outcomes, after students reflected on their problem solving approach, there was potential for them to better understand and communicate how they solve problems. Additionally, students may better understand the class content and Statics.

DIGITAL LIBRARY CONTENT

- 10.1 Writing Assignment Instructions
- 10.2 Writing Assignment Example
- 10.3 Writing Assignment Rubric

Recreating the Reflection Activity

	Description
1	Introduce students to the reflection activity.
2	Choose a question from the weekly assignments for students to reflect on.
3	Debrief students based on what you see in the reflections.

In the words of the Educator: Tips and Inspiration

Know the goal of the reflection activity. I want them to be communicating what it is they did. So that I'm in essence, forcing them to reflect on "what did I just do?" I want them to think beyond "I plugged numbers in here - I have to explain why I picked these quantities, these concepts, these things to use."

What was the inspiration for the reflection activity? I attended a workshop given by Dr. Julia Williams, another Rose-Hulman faculty member. In this workshop, Julia discussed the concept of writing across the curriculum in which her goal was to inspire educators to consider adding writing assignments to their classes. I had been teaching Statics for a little while, and I thought it would be a good fit. So, Julia and I started developing it together and collecting data, and it took off.