Activity 4

Peer and Self-Assessment Using a Skills-Development Rubric

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Context: Second semester freshmen or first semester sophomores in a biomedical engineering class
Keywords: self-awareness, peer evaluation
Student Activity Time: One class period or less depending on the development of the team

As a part of a course using a problem-based learning approach, students evaluated both their own and their peers' performance according to a set of four skill areas.

Introducing the Reflection Activity

The skill of self-assessment is important to the development of a person both personally and professionally. A critical component of this approach is the development of a rubric that captures the developmental stages of skills development, specifying behaviors or individual actions that are indicative of the span from novice to expert. Using such a skills-development rubric as the basis for reflection, students are prompted to assess their own performance and the performance of their peers in a course using a problem-based learning approach. The purpose of this reflection activity is to have students practice engaging in constant self-reflection, to become self-directed learners, and to become agents of their own learning.

In this problem-based learning environment, students were arranged into teams of about eight for the duration of the semester and challenged to solve three large and complex problems throughout the course. Each student group had a facilitator (i.e. a faculty member, graduate student, or older undergraduate student), which the educator arranged and met with them during each class period to help them through the problems. After the formation of the group, each student was provided with a rubric with four skill areas to work on and develop: (1) inquiry skills, (2) knowledge building skills, (3) problem solving skills, and (4) team building skills.

At the end of each problem cycle, the team devoted a class session to self and group reflection. The session served as a calibration period for the team. The goal was for each student and the team collectively to take stock of what they had individually and collectively done and to prepare, based on prior activity and behaviors, for the next problem cycle. Prior to this meeting, students individually assessed themselves based on the rubric. During the reflection session, students individually talked to the group about their assessments of themselves, and after the individual accounting, teammates gave feedback on their performance and ratings. The session provided a supportive dialogue where team members all worked together to identify individual and team strengths and weaknesses. The facilitator mediated and commented on the

interactions during the assessments helping individuals and the team to identify things to work on in the next problem cycle.

At the end of the reflection session and the problem, students were awarded individual points based on the rubric scales that were, over the course, worth up to 20% of their overall grade. This was based on how well the student was progressing towards developing in the specified behaviors in the four skills areas. As a follow-up to the group reflection, students met with the facilitator to individually discuss their progress and self-evaluation. They were invited, at the student's request, to meet with the facilitator later in the term. This shifted the responsibility for seeking expert feedback to the student instead of leaving that burden on the facilitator.

In terms of outcomes, students practice critically assessing both their personal performance and their peers' performance in a supportive learning environment. The students are able to learn what it means to be empowered by taking charge of their own learning, while assisting team members to do the same, and to take that ability to future team based problem-driven learning environments.

Recreating the Reflection Activity

	Description
1	Develop a behavior-based rubric from novice to expert, which allows students to reflect on and assess their behaviors.
2	Divide students into groups of about eight.
3	Distribute the four skillsets rubric.
4	Allow students to work on the selected problem in their groups.
5	Students individually assess themselves according to the rubric.
6	Students meet with their teams and a facilitator and review their assessments and give each other feedback on their assessments as a group.
7	Grade the students on the rubric points.
8	Meet with student individually to discuss their self-assessment.

In the words of the Educator: Tips and Inspiration

Provide the scaffolding for reflection. It is important to scaffold the reflection around specific things that you want to develop in the students. You could do this reflection activity with any course. You probably have some concepts or skills that you want them to master. You have to develop a focused and behavior oriented chart that allows them step out of themselves in a way, and say, to what degree am I doing this, or to what degree do I know this?

What inspired the activity? This is part of problem-based learning because the goal of problem-based learning is to develop self-directed learners – people who are eager to do self-assessment. We have exceptional opportunities to do it right - including building and rooms.