



Quality Engineering Applies to Students' Learning

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Context: In-Class; quality engineering course
Keywords: quality engineering
Student Activity Time: 15-20 minutes

In a quality engineering course, students reflected on the quality of their work so that students are clear about the choices they are making related to their own learning.

Introducing the Reflection Activity

In a quality engineering course with a flipped style classroom and competency based grading, students were asked to reflect on the “quality” of their own effort and work. Each student was asked to assess his or her own quality of work on a 5-point scale and to reflect on a series of questions. After the reflection was completed, an intervention was held in the class to help students determine how to become more conscious of the quality of their work, and how to adjust techniques in the classroom. After two weeks, the students repeated the activity and reflected on how the quality of their work had changed.

After each round of reflections, the educator tabulated the results into a Pareto chart, which is a quality engineering tool to give feedback about their performance. The educator then facilitated a discussion about the results of the reflections.

In terms of outcomes, as a result of this reflection activity, students are given the opportunity to recognize their agency in their education. The educator briefly described the concept of the locus of control and self-determination theory, which gives students the opportunity to have enhanced engagement and motivation. The reflection also provided students a chance to think about their own work ethic and how improvements could help their learning and performance.

Recreating the Reflection Activity

	Description
1	Introduce students to the assignment and explain the 5-point rating scale.
2	Discuss various ways to improve the quality of their work in the classroom.
3	Tabulate the results and present them in a Pareto Chart (specific to quality engineering) and discuss students' reflections as a class.
4	Have students repeat the exercise two weeks later.

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7.1 Reflection Assignment – Quality of Work

In the Words of the Educator: Tips and Inspiration

Be transparent and don't get offended are two things that have seemed to be helpful to me. I think being transparent and not being offended are two things that have seemed to be super helpful to me as a teacher. When I feel something in class, I tell the students. For instance during this exercise I noticed that the students were pointing out many ways that I could change as an instructor, and almost no ways in which they could change as learners. I said to them, “Gosh you guys, all of these are ways for me to improve, and that’s not really fair.” I was being completely transparent with them, but also being light about it. It actually was curious to me. I went on to say, “You’re criticizing me, it’s crazy that you guys are doing that, I don’t think that’s how learning works. I think it is more a joint activity. You and I together.”

Be open to what they say. I also think we should be open to whatever they say. You have to not be too attached to a particular outcome of the activity. This activity wasn’t just to get feedback into the way I taught, it was actually to get them to think about feedback about how they learn and what kind of effort they are putting into a class. So anything could have happen in this process.

Recognize tradeoffs in giving students choices. I have found that when there is a lot of freedom to make choices about doing work or not doing work, that students initially use that freedom to not do work. I think it’s just because once the pressure is released they feel the relaxation. In my classroom there is a lot of freedom to make these choices, but I want them to consider what the cost of that is to them. So the reflection was really about choices.