

Becoming a “World Class” Engineering Student

Educator: Steffen Peuker; Assistant Professor, Mechanical Engineering

Context: Out of class; Orientation to Mechanical Engineering

Keywords: identity, academic planning

Student Activity Time: 10-30 minutes for each reflection activity

Throughout an introduction to Mechanical Engineering course, first-year students reflected on attitudes and behaviors for success in college.

Introducing the Reflection Activity

In a first-year Mechanical Engineering course, students were challenged to think about and reflect on behaviors and attitudes they needed in order to be successful students at Cal Poly. The purpose of these reflections was to support students in becoming “world class” engineering students, specifically related to goal setting, community building, academic development, and personal development.

At the beginning of the course, the educator introduced the reflection activities in which students were charged with identifying changes in their behavior and attitude they would need in order to be successful students. Throughout the quarter, students regularly engaged in reflections about topics related to becoming a world class engineering student (16 topics total), for example, procrastination and ways to overcome procrastination. At the end of the course, students compiled these mini-reflections into a 10 - 12 page report about their personalized process of becoming a successful student. This report was built on top of reflections that were embedded throughout the 10-week course. These reflection assignments were peer graded and the educator oversaw the peer grading using the tool Calibrated Peer Review.

In terms of outcomes, students reflected on their attitudes and behaviors as they are right now and compared them to the attitudes and behaviors a “world class” student would have. By students engaging in these reflection activities, they were encouraged to set their goals, build community, and develop academically and personally. In analyzing the difference between where they currently are and where a “world class” student would be, they developed their own personal process to become a successful engineering student.

Recreating the Reflection Activity

	Description
1	Introduce students to the reflection activity.
2	Introduce and discuss topics related to becoming a “world class” engineering student.
3	Assign reflection exercise related to the topics discussed in class.
4	Discuss with students how their reflection connects to their development as a “world class” student.
5	Assign a culminating reflection, building on the previous reflection exercises, charging students with developing their own personalized process to become a successful student.

In the Words of the Educator: Tips and Inspiration

Tell students the reflection is about them. Number one is to tell students the reflection is about them, and nothing else. Students are very anxious in terms of their grade. They're grade focused, which is not necessarily bad, but in this case, they need to be focused on themselves. I also tell them we are not grading on the content they write so that students can freely write about themselves and not what they perceive I, as the instructor, wants to see.

Scaffold the topics students reflect on. You need to provide students with information about what it means to be a successful student. They might not know about time management. They might not know how to find their resources to make their plan to graduation, and so on. So you cannot skip that information.

What was the inspiration for the reflection activity? Ray Landis, who wrote the book, *Studying Engineering: A Roadmap to a Rewarding Career*. In 2012 I attended a workshop by Ray Landis, and he pitched the idea and asked if somebody would be willing to implement this reflection activity. I was intrigued by the idea to have students themselves develop their own process to become a successful student. We spend so many credit hours teaching students the technical topics of our discipline but virtually none on how to become a successful engineering student. The reflection activity is so powerful because it allows students to reflect on themselves and helps them develop an implementation plan. And implementation is key! Say you lecture students on how to be successful, there's no guarantee that they would actually implement any success strategies. A reflection exercise is a way to turn it over to the students, and say, now you design your own process to become a successful student.