

# Assessing Exam Preparedness

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**Context:** In-class and out of class; Robotics Systems I

**Keywords:** robotics, exam preparation, educator feedback

**Student Activity Time:** 15 minutes in-class

*Before an exam review, students assessed their learning, preparedness, and confidence of class content.*

## Introducing the Reflection Activity

In an introduction to Robotics Systems I course, second-year engineering undergraduate students engaged in three content units intended to give them an overview to robotics systems. At the end of each content unit before an exam, students reflected in two activities to help prepare them for the exam: (1) an in-class assessment of their learning and preparedness of the concepts, and (2) an in-class confidence survey about their ability to apply the concepts. The purpose of these two reflection activities was to engage students in thinking about what they learned and how to apply their learning to different contexts.

Students engaged in an in-class exercise to assess their preparedness for the exam. In this reflection activity, the educator wrote a number of different problems that were similar to the ones that may appear on the exam on the board. Then students walked around the room and rated the ease of the question on a scale of 1-5, where 1 was, "I think this is an easy question, I wouldn't even need to review to answer the question" and 5 was "I think no amount of review that we could possibly do would ever have me able to answer this question." Even though this assessment was individual in nature, students often talked with each other about the questions and what it meant, and they were able to see other people's anonymous responses.





After the assessment of their learning and preparedness reflection, students took a confidence survey about their ability to apply course content to the real-world and how they think they learned the concepts (e.g., did they learn it from class videos and quizzes or do they think they learned it mostly from the labs and in-class activities). The purpose of this reflection was for the educator to evaluate where improvements in the course could be made, as well as for the students to think about their confidence in using the materials in the future.

In terms of outcomes, there was potential for students to better understand how to prepare for exams, think deeply about their learning, apply their learning to the real-world, evaluate their readiness for professional engineering, and think about themselves as professional engineers. In engaging in these reflection activities, there was potential to become more metacognitive and self-directed in their learning. Potentially, students could think ahead to how these concepts apply to their future careers, not just the applicability to the exam.

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**DIGITAL  
LIBRARY  
CONTENT**

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-  6.1 Individual Survey
  -  6.2 Survey Results
  -  6.3 Final Debrief Feedback
  -  6.4 Whiteboard Ratings
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**Recreating the Reflection Activity**

	Description
1	Teach students discrete content units.
2	Write questions on the board that are representative of the types of questions on the exam.
3	Invite students to engage with the questions by anonymously ranking their preparedness to answer the questions.
4	Invite students to complete a survey about their confidence in their ability to apply the concepts.

**In the words of the Educator: Tips and Inspiration**

*Encourage students to think ahead to their future careers, not just now for the test.* I think it is important to motivate students to think about the bigger perspective.

*Be aware that reflection responses may be higher than actuality.* In doing these types of reflection activities, sometimes students mark high confidence responses because they think that is what the educator wants to see. To help mitigate such false-high confidence responses, when starting the activity, be transparent about the purpose of the reflections and encourage students to authentically respond.

*Remember that their confidence results do not mean competency.* It is important to remember that their honesty about their confidence does not equate to competency in the skills.

*Use various reflection activities to see if there are any correlations.* Since students engage in a variety of different reflection activities throughout the class, you have different data points to help you understand better students' performance on the exams.

*What was the inspiration for the reflection activity?* These reflection activities are based on my experience informally checking in with students. As I continued this approach in my teaching, I began to see the importance of checking in with students more often in a more formal, structured way. In doing so, I can understand better what the students think they learned and what they think is going on. In particular, I find it valuable to compare what I believe students should have learned in the class versus what students claim they learned.