

# Student Self Assessment as a Learning Tool in Calculus

Mario Banelos

University of California Merced, Merced, CA



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# Motivation and Background

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- At UC Merced, the outcome of having students “solve mathematical problems using analytical methods” is fostered by this course.
- By asking students to be cognizant of their performance,
  - We can encourage these outcomes
  - Students can become more sophisticated learners.

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- In this study, 13% of students in Math 22 (Calculus 2) did not receive a passing grade.
- The aim of this project was to determine if there was a relationship between student confidence and performance.



Source: [www.evaluationforms.org](http://www.evaluationforms.org)



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# Needs Assessment Survey

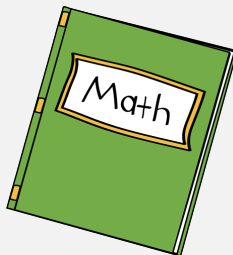
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What factors are important to success in this course?

- Attending discussion
- Attending lecture
- Completing homework
- Studying for quizzes and tests

# Textbook

Students did not consider reading the textbook as an important part of succeeding in the course.

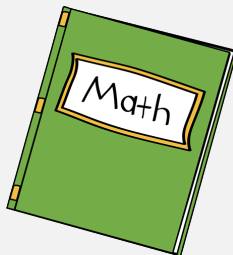




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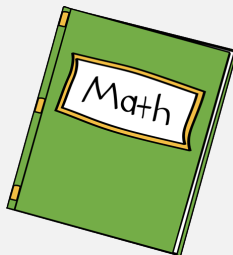
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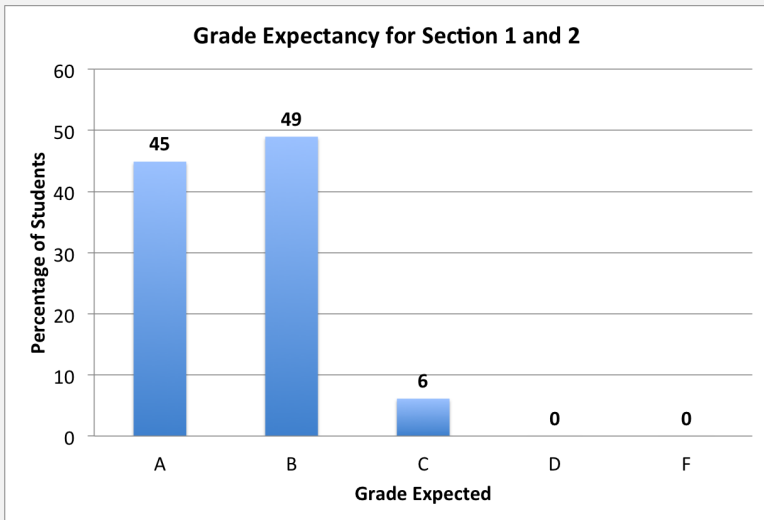
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- Encouraged textbook reading via introductory lectures
- Reminded students that quiz questions came from the textbook.



# Grade Expectancy



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- The comparison of student self-assessment and actual performance on quizzes.
- Self-reflection on what students did to prepare for the quiz.

## Self Assessment Example

**Example:** Sketch the curve and find the area it encloses.

$$r = 2 \sin(\theta)$$

**What have you done to prepare for this quiz and what is your comfort level with the material?**

Quiz Grade Prediction	9 – 10	8	7	6	5 or lower
I predict to receive a grade of	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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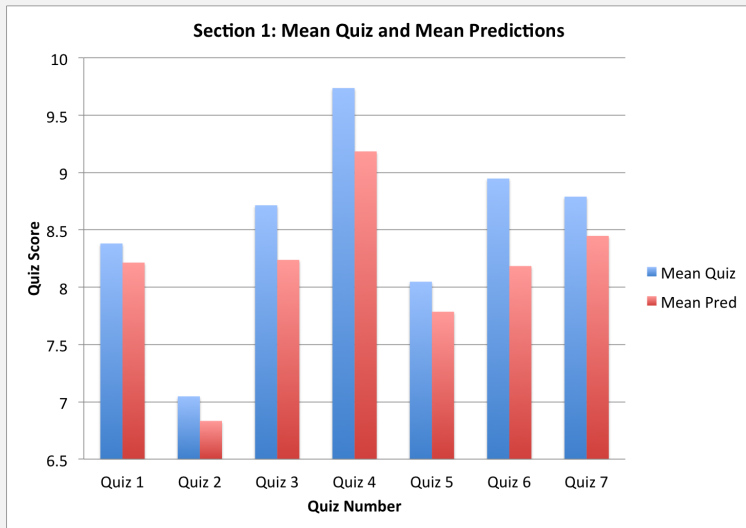
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- Student grade expectancy did not change dramatically.

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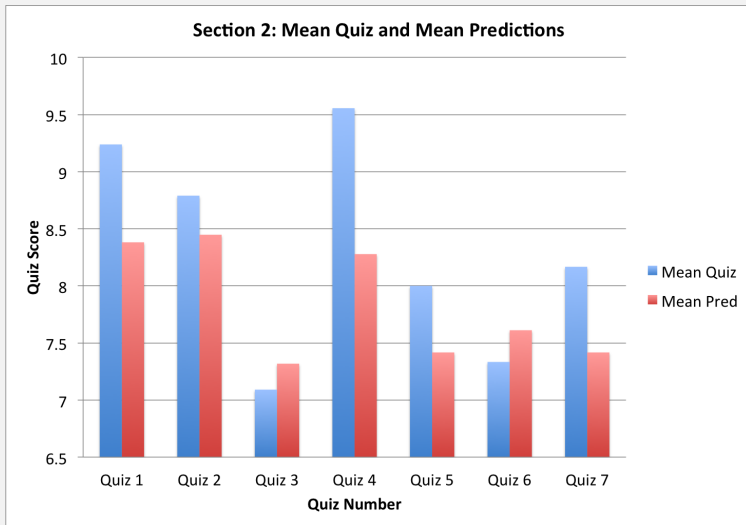
This follow-up questionnaire asked students about the effectiveness of group work, mini-lectures, and self-reflection.

- 86% of students found short lecture/review helpful in their understanding of the concepts.
- Student grade expectancy did not change dramatically.
- Group work and group learning could be more beneficial.

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- Students, more often than not, **underestimated** their quiz scores. Students scored relatively well, but this was not represented in exam scores.
- Students correctly identified their quiz scores within one letter grade.

# Future Directions

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- Build statistical models based of data to gain more insight into this phenomenon.

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- Results indicate UC Merced students underestimate their performance in Calculus. Are PLOs for course being met?
- Proposed possible explanations and future studies.

# Acknowledgements

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- Council of Graduate Schools
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## References



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