

# Grading for Growth: Student Perceptions and Experiences with Outcomes Based Grading Practices in an Upper-Level Engineering Course

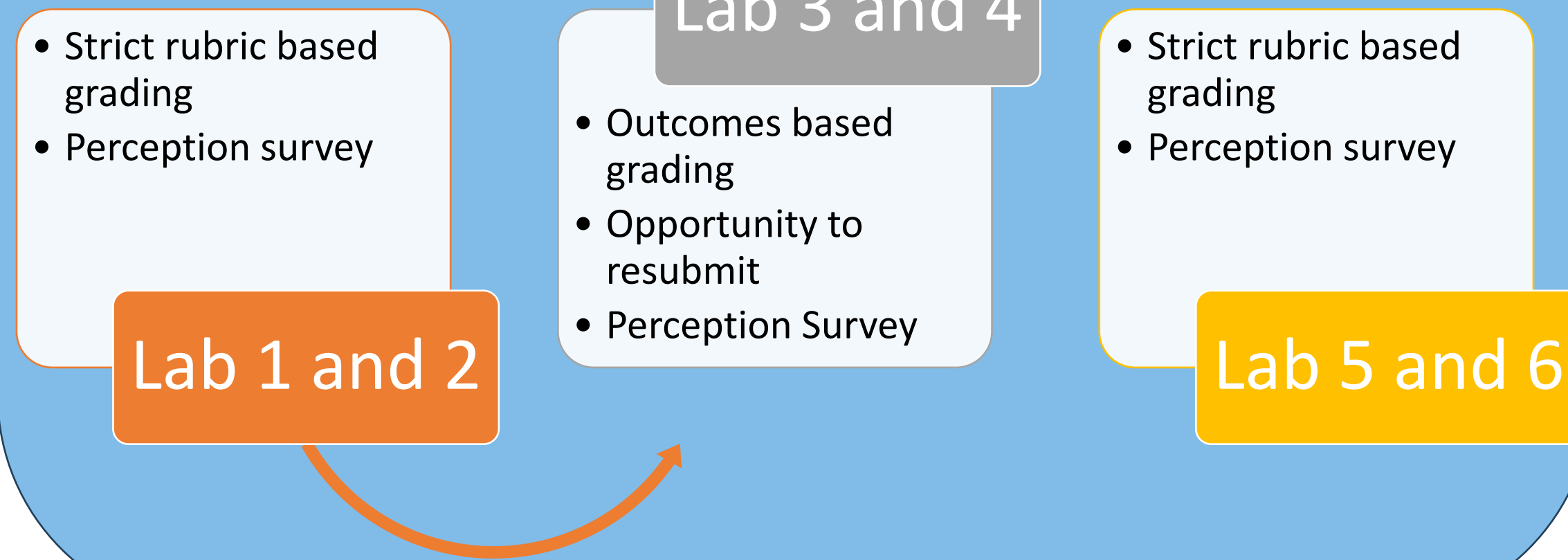
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## Motivation

- Grade-oriented vs. Learning oriented
- Will student perception change if grading for growth?

## Experimental Setup

- Control – Lab 1 and 2; Lab 5 and 6
- Mitigates learning curve effects
- Treatment – Lab 3 and 4
- Data collected after 2, 4, and 6 grading



## Survey Questions

5-point Likert Strongly Disagree to Strongly Agree

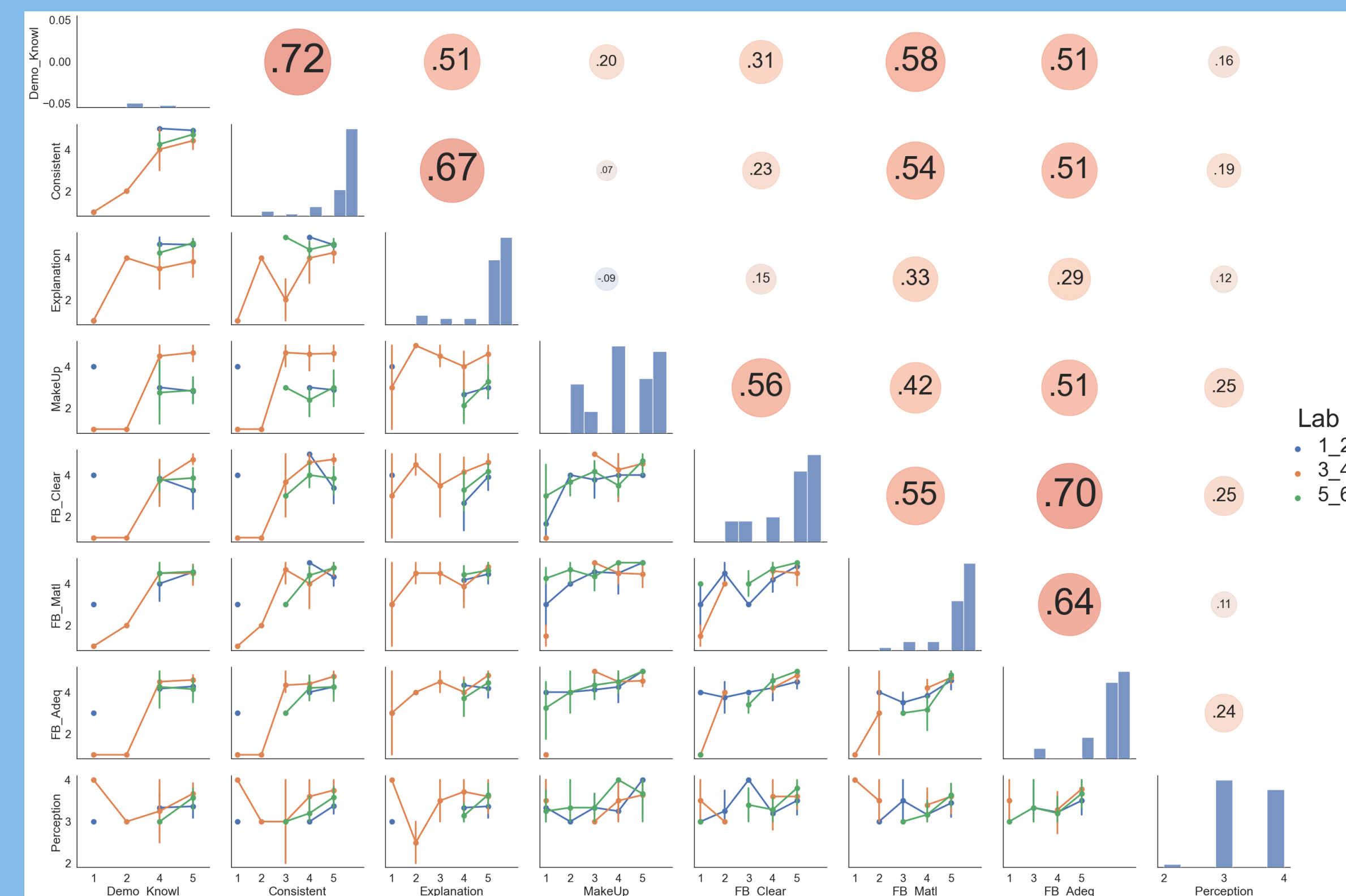
- Opportunity to demonstrate knowledge (Demo\_Knowl)
- Consistency in grading criteria (Consistent)
- Adequate explanation of grading criteria (Explanation)
- Opportunity to make-up (Makeup)
- Feedback is clear (FB\_Clear)
- Feedback in line with learning materials (FB\_Matl)
- Feedback is adequate (FB\_Adeq)

4-point Not Fair at All to Very Fair

- Perception of fairness of grading practices (Perception)

Open-Ended thoughts/ideas text question

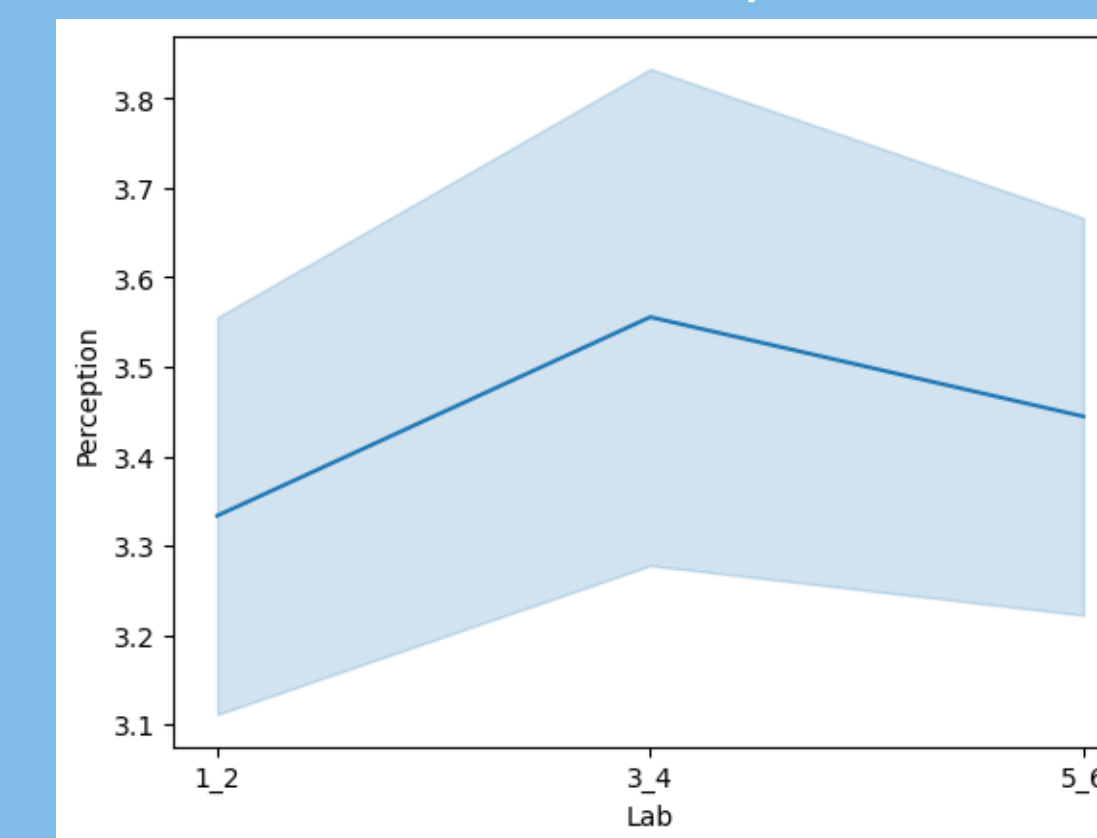
## Survey Variables and Perception



Relationship between every observed variable.  
Upper triangle: Correlation Coefficients  
Lower triangle: Plot of means colored by the control and treatment groups  
Diagonal: Histogram of observed variables

- Ability of make up work, and clear and adequate feedback – largest effect on Fairness Perception.
- Grading fairness perceived higher in outcomes based (Lab3\_4) grading.

Perception of Fairness vs. observation period



## Observations

- Students were receptive of the idea of outcomes-based grading.
- Resubmission after feedback made the outcomes-based grading method attractive to students.
- Reliance on rubric and grading were replaced by appreciation for feedback and opportunity for correction – see word clouds.
- A combination of rubric (structure) and outcomes-based grading was suggested by students.

## Reflections

- Students care about learning.
- Grades are important for them – but the learning experience is more important.
- Grading system based on achievement of outcomes is a good way forward.
- Will improve and repeat this experiment in other courses.

## Open-Ended Results



Top (Control): Lab 1 and 2 (Left); Lab 5 and 6 (Right)  
Bottom (Treatment): Lab 3 and 4

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