DATA DREAM TEAM

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Intervention Points

Main Insight: Using the pulse questions to identify which students need more help in each chapter, and then using page views to see which chapter sections students struggled with, so we know where to add more resources.

Sections that held the most engagement (activity on the page) + tried again clicks (number of times attempter) + brief idling (on the page but not engaged)

Random Forest Model

Definition: machine learning algorithm made of multiple decision trees that handles regression problems and provides predictions... like this one!

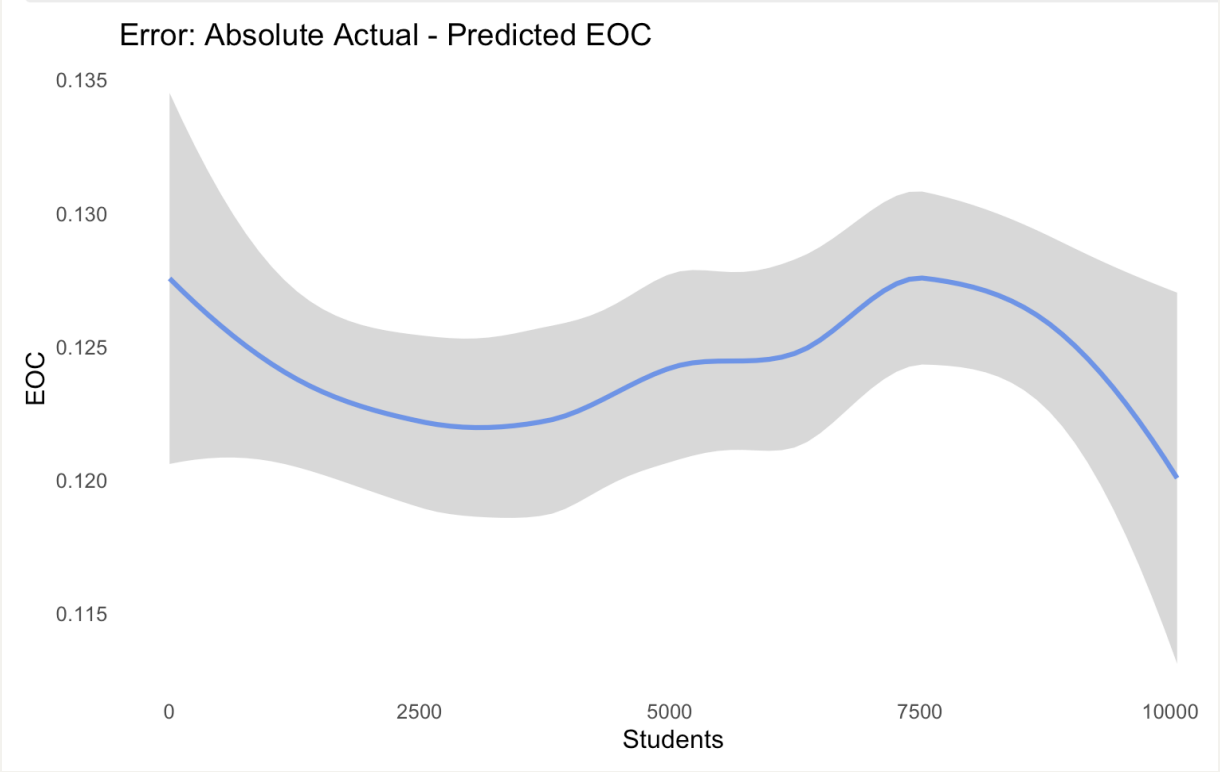
The model is based on data points collected from the pulse responses:

- Expectancy
- Utility
- Intrinsic
- Cost
- Chapter Number

The overall MSE of the model is 0.028

Ranking of %IncMSE, which is the effect on the prediction if that variable was randomized.

A higher %IncMSE means it's more important to the prediction.



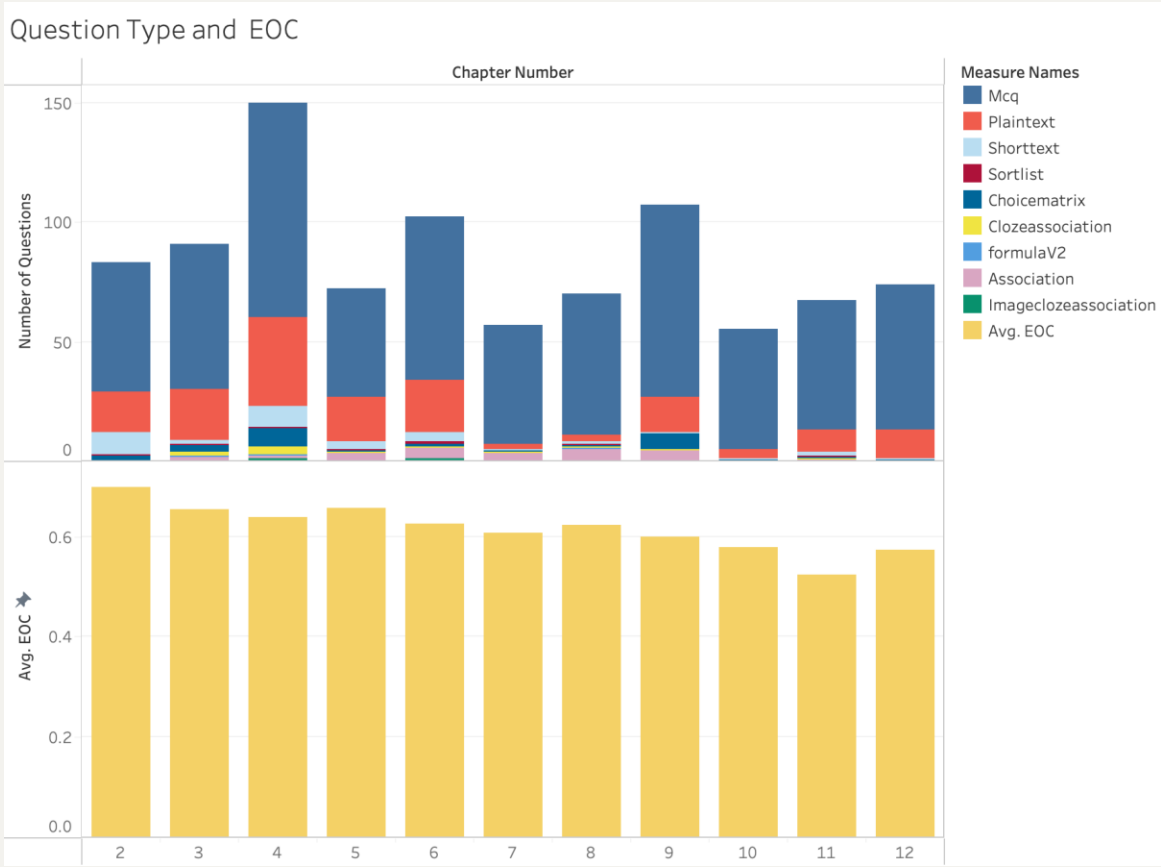
Suggestions

External Data:
- A mix of cognitive processes should be assessed
- Preferences in testing styles doesn't matter but student comfort does
- Active, more effortful strategies are more effective for learning than passive strategies

Applications:
- Better UI/UX design for more fairness and comfort
- Emphasizing teachers ability to identify what skills students struggle with

Future Data to Collect + Discussion:
- A/B testing to find out how to make it easier to navigate the platform
- Incorporate pulse questions to assess their capability to transfer skills to real life applications [coding, experiment design, etc.]

Above: Proportion of Question Type by Chapter



Below: Average EOC by Chapter

van de Watering, G., Gijbels, D., Dochy, F. et al. Students' assessment preferences, perceptions of assessment and their relationships to study results. High Educ 56, 645–658 (2008). https://doi.org/10.1007/s10734-008-9116-6