

Duke DataFest 2024: Using Memory Strategies to Learn Statistics
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Introduction

CourseKata is a platform that creates and publishes online interactive textbooks for learning statistics, and we were given student data surrounding engagement with CourseKata textbooks with goals to help improve the textbook.

We explored the effect of the implementation of learning strategies and engagement with content on student performance on end of chapter assessments. Through our research, we found that “well utilizing memory strategies could enhance the learning power and reduce time” (Liao). We simplified these strategies into the following categories: repetition, organization, elaboration, imagery, and extraction.

Through our research and analysis of the provided data we found patterns between the implementation of these strategies, student engagement with material, and student performance that we explore below and inform our suggestions for improving CourseKata.

Caveat

We found that there appeared to be a relationship between the variable “class_id” and EOC performance. We suggest that the relationship between class and student performance is further explored. We believe that student success rate in their course work is likely influenced by their professor, and that factor should be taken into account when analyzing student performance.

We also may want to note that factors such as state of mind impact retention and performance and that these could also impact student performance.

Conclusion

We found that there is a strong relation between the implementation of learning strategies and mastery of content. We found that there is a significant improvement in performance that is associated with an increased engagement with material and use of learning strategies on a chapter by chapter basis. In addition, chapters with videos showed much more interaction with content.

Our final suggestions to optimize for increased engagement and implementation of effective memory strategies to maximize student learning include the following:

1. More videos
 - Embed questions within videos to increase engagement with media
 - Promotes repetition.
2. Open ended questions
 - Emphasize active recall and repetition
 - Show correct answers once students complete to compare
 - Utilizes benefits of active recall and repetition.
3. Homework modules

- Provide additional questions and practice
- Include content with material from previous chapters to maximize benefits from spaced repetition and elaboration memory strategies.
 - Emphasizes spaced repetition and continued engagement with material.