

Using a Rubric from Pedagogical Partnership to Improve the Accessibility and Usability of Desmos Activities for Students in Calculus 1

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There was a successful departmental effort to improve the calculus DFWI rates at a midwestern university (Mingus & Koelling, 2021). To maintain this change during the pandemic, instructors developed Desmos-based activities to encourage student engagement and active learning. This platform allows students to interact with tools on activities designed by their instructors. Since the implementation, instructors sought feedback from the students on the digital experience. This study focuses on a partnership between the students and the instructors to develop a rubric to evaluate Desmos activities for the Calculus course.

Our goal is to understand how students interact with digital platforms to further improve students' learning experience. To accomplish this, a pedagogical partnership with undergraduate students was created with the intent to co-develop a rubric to evaluate activities. Pedagogical research with students provides benefits to both the students and instructors. The students gain a greater understanding of course content, learning, teaching, and improved agency. The instructor gains a greater understanding of student thinking and feedback on how to meet student needs. (Bovill et al., 2011, Cook-Sather & Motz-Storey, 2016, Partridge & Sandover, 2010)

An initial rubric was created as a result after the first focus group interview. The rubric consists of three categories: Overall, Between the Slides, and On Each Slide. The Overall category addresses the content in the whole Desmos activity. The Between the Slides category addresses the transitions of the content within the Desmos activity. The On Each Slide category addresses the content within the individual slide.

The poster will consist of the rubric and slides from an activity before and after the application of the rubric. It will be discussed how the team has used the rubric to modify Desmos activities to improve their accessibility and usability for students.

References

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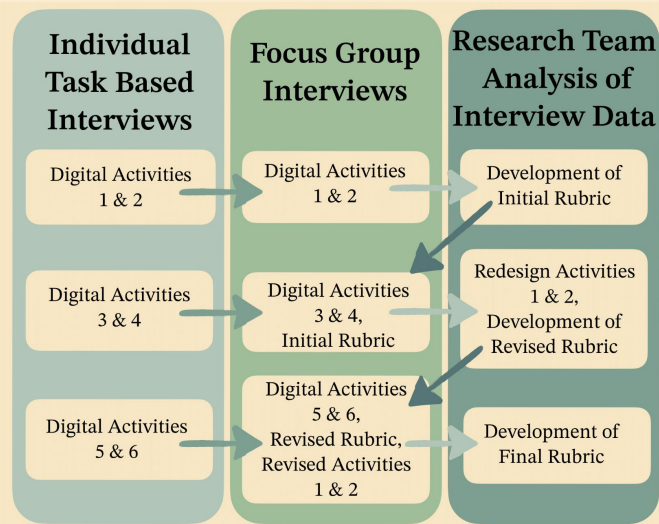
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Introduction

- DFWI rates decreased after previous course redesign [3]. Success of the course redesign motivated implementation of Desmos activities.
- Student response to the implementation of activities motivated pedagogical partnership.
- Goal was to create a rubric which instructors could use to evaluate the effectiveness of Desmos activities.

Study Design



- Students were selected from calculus courses taught the semester prior
- Interviews, rubric creation, and slide edits were conducted outside of the classroom

Rubric

Purpose: Evaluate the Desmos Activities to improve students' learning

Breakdown:

- Overall
- Between Slides
- On each Slide

Scan for References & Supplemental Materials

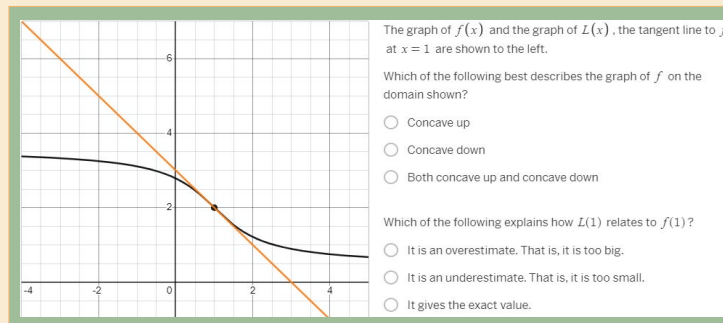
Data Sample

Discussion



Slide from Desmos Activity 5

Students below are discussing the slide shown during a focus group session after the creation of the initial rubric.



Student A: "I guess if you're able to zoom in, you get more clear understanding of graph. Sometimes, I probably would fall into that route to keep going in and out. If I got bored or distracted in class."

Student B: "Well, I guess it's just a give and take. I feel like it would be a distraction, but it's the kind of distraction that could be learned from..."

- Student discussions underscored the necessity for equitable learning material
- Using students as an authority to their experience in the classroom helps us build better curriculum materials.
- The study had to adapt to real-life constraints including availability, student interest, and fluctuations in student turnover.