



# MRCC EdTech enhances the learning experience with GeoGebra interactives for a Higher Ed Publisher

## About the Client

The client is a prominent higher education publisher with a strong focus on innovation and technology-driven solutions. They specialize in providing comprehensive educational materials for various subjects, including science, technology, engineering, and mathematics (STEM). With a reputation for delivering high-quality content, the client strives to offer engaging and interactive learning experiences that cater to diverse learners' needs.

## Business Requirements



- The higher ed publisher wanted to develop 2D and 3D interactives using the GeoGebra platform for Lay, Linear Algebra, 6th Global Edition.
- The main objective of the project was to recreate the Wolfram interactives using GeoGebra.
- The interactives were to be used for classroom and online activities for Science, Technology, Engineering, and Mathematics (STEM) learning and teaching.
- The main features expected were an interactive geometry environment (2D and 3D), a built-in spreadsheet, and a built-in computer algebra system (CAS).

# Challenges

01.

Developing 3D interactives involved intricacies in designing immersive experiences that accurately represented mathematical concepts.

02.

Implementing randomization required careful planning and coding to ensure the randomness did not compromise the educational integrity.

03.

Ensuring 508 compliance and making the interactives accessible to all learners, including those with disabilities, was a significant concern for the publisher.

04.

It was crucial to ensure that the interactives were compatible with the publisher's LMS.

05.

Designing an intuitive interface that facilitated smooth interaction and navigation within the interactives required thoughtful design considerations.



# Solutions

To successfully recreate the Wolfram interactives using the GeoGebra platform for the Lay, Linear Algebra, 6th Global Edition, the MRCC team followed a comprehensive approach that encompassed access to resources, collaboration with subject matter experts (SMEs), and ensuring accessibility compliance. The solutions employed for this project are detailed below.

## ✓✓ Resource Acquisition and Understanding Learning Objectives

- The project began with MRCC gaining access to the original Wolfram interactives for recreation using GeoGebra.
- The content of Lay, Linear Algebra, 6th Global Edition, was also analyzed to understand the learning objectives for the interactivities.

## ✓✓ Interactive Development:

- The interactives were designed with math problems and 2D/3D graphs, allowing students to engage directly with the content.
- To achieve this, we leveraged the features of the GeoGebra platform, including zoom, slide, rotate, and click buttons, providing students with a hands-on approach to exploring mathematical concepts.

## ✓ Collaboration with Math SMEs

- The Math SMEs coded and designed the interactives, ensuring that the content accurately reflected the learning objectives and provided an optimal learning experience.
- To test the interactives from a student's perspective, we deployed a QA Tester with subject matter expertise.

## ✓ Implementation of Randomization

- We incorporated different levels of randomization into the interactives.
- By integrating a "Reset" button that generated new and similar interactives upon each click, students had the opportunity to explore a variety of interactives.

## ✓ Interactives and Delivery:

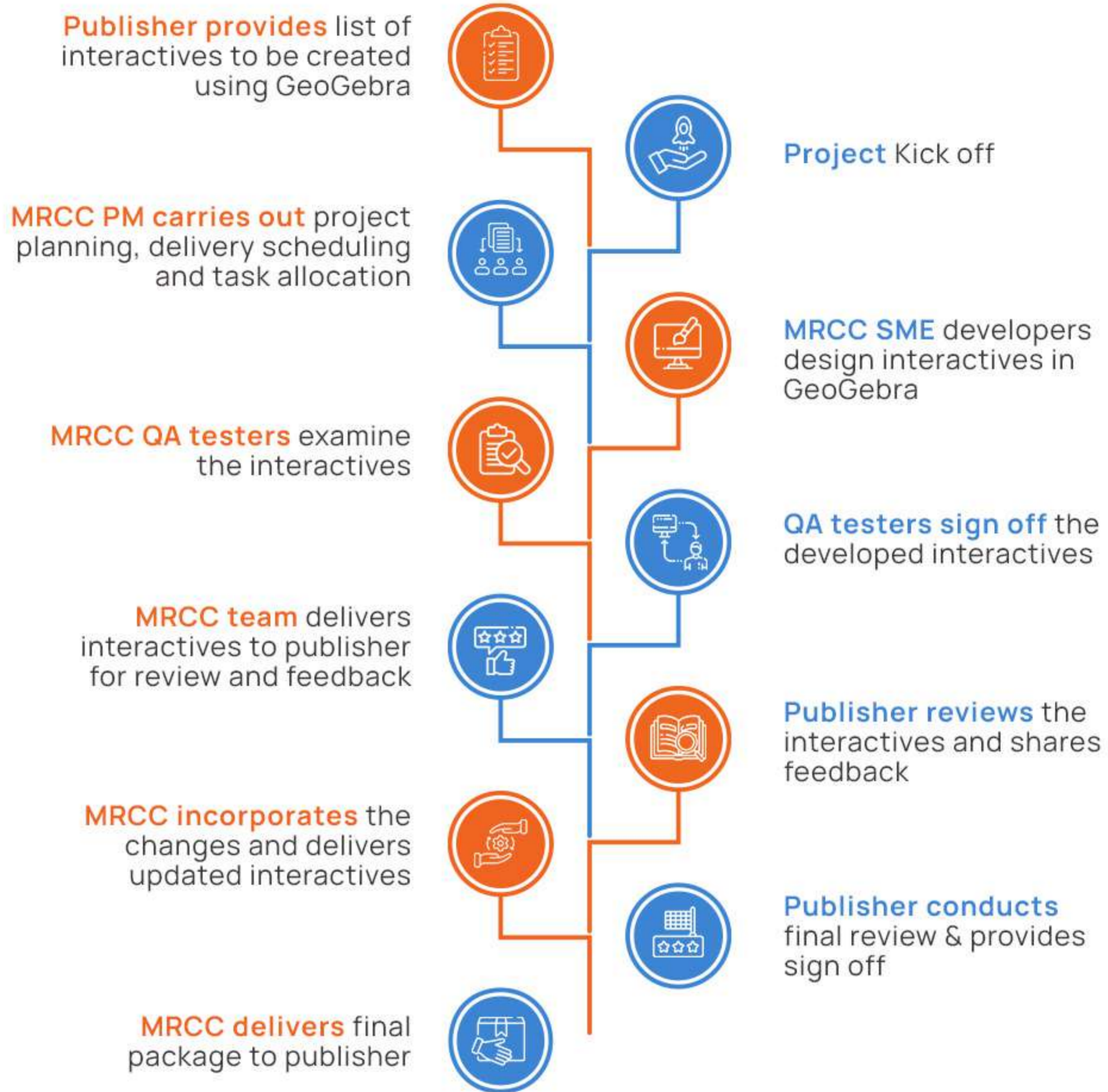
- Around 100 interactive elements were comprehensively developed.
- To ensure seamless integration into the publisher's Learning Management System (LMS), the interactives were delivered as packages, including .html and .ggb files.

## ✓ Accessibility Compliance:

- Recognizing the importance of accessibility in education, we implemented 508 compliance standards for all the interactives.

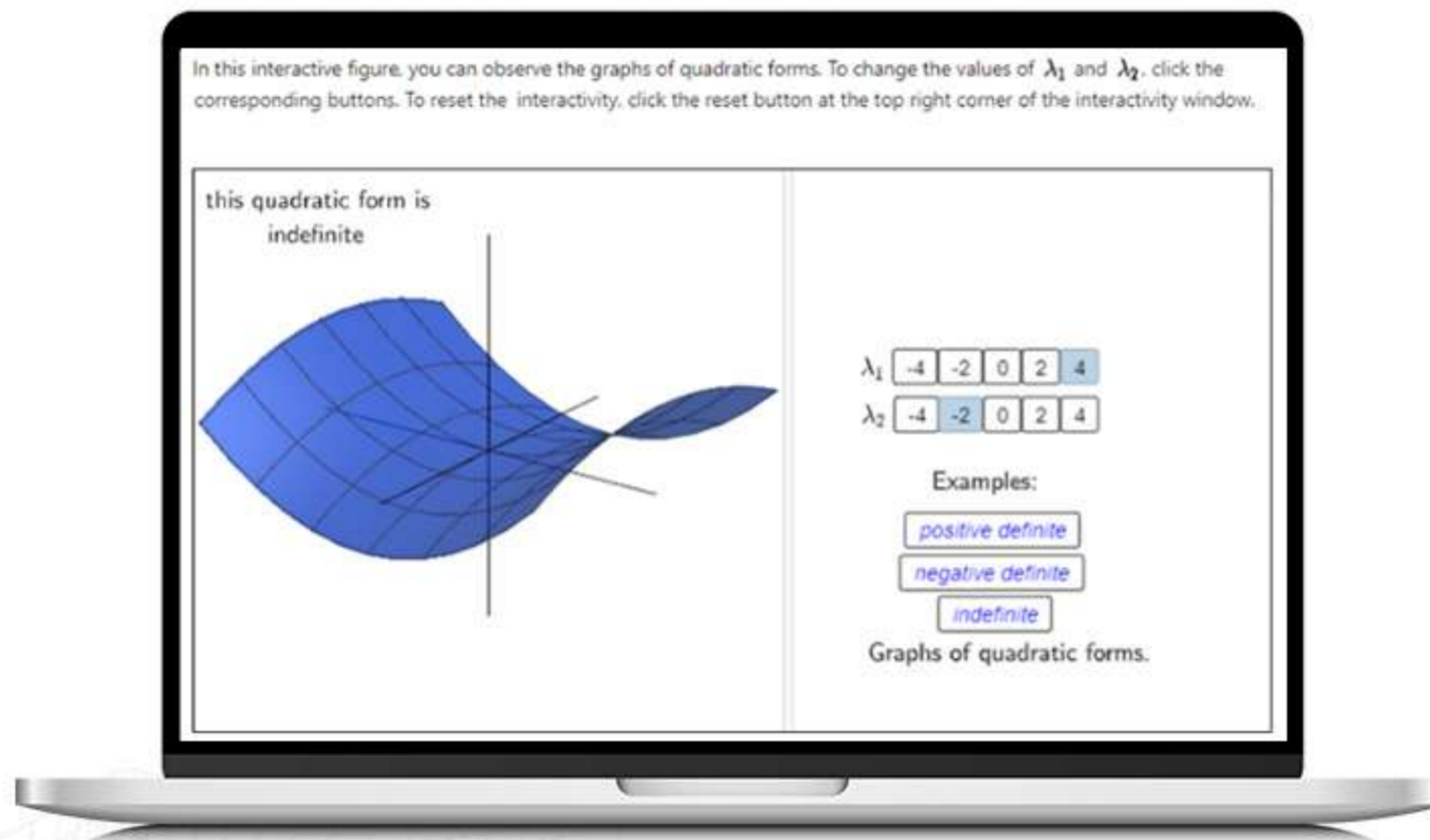


# Graphical Representation of the Development Process



# Sample Screenshots

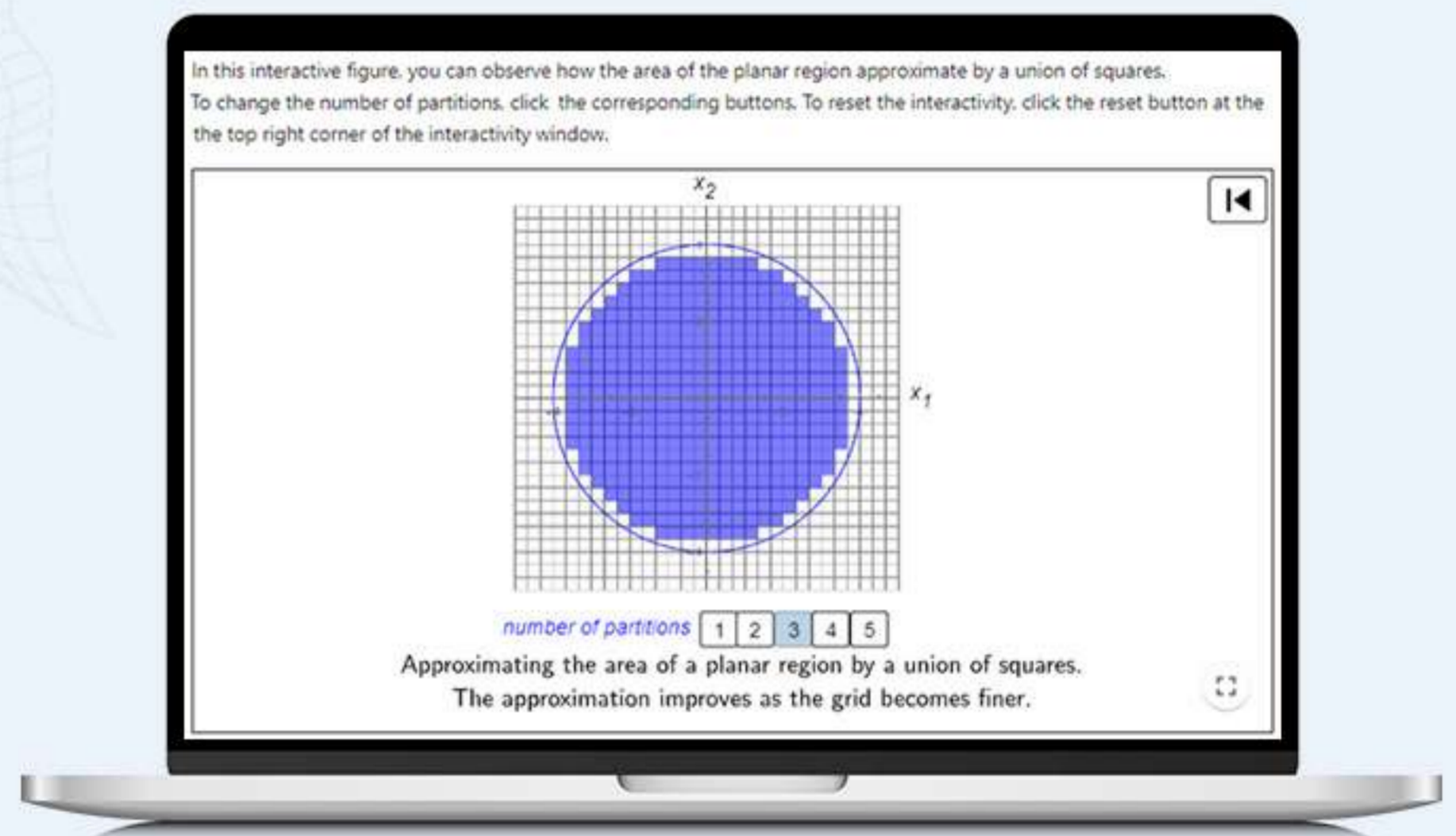
## 3D Interactive



## Impact

### Enhanced Learning

**Experience:** The 2D and 3D interactives improved students' understanding and knowledge retention by promoting active learning.



### Improved Student Engagement:

Interactive features increased student engagement and motivation in studying mathematics

### Inclusivity and Accessibility:

Ensuring 508 compliance made the interactives accessible to all learners, fostering inclusivity in education.

### Effective Teaching Support:

Interactive content served as a valuable teaching aid, helping teachers explain complex concepts more effectively.

### Positive Reputation and Market Positioning:

Successfully delivering engaging educational content enhanced the publisher's reputation and market standing in the EdTech industry.

MRCC Group Offices

Boston

Santa Clara

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Sydney

Mumbai

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