



## Case Study: How do you get 50,000 students excited about mathematics?

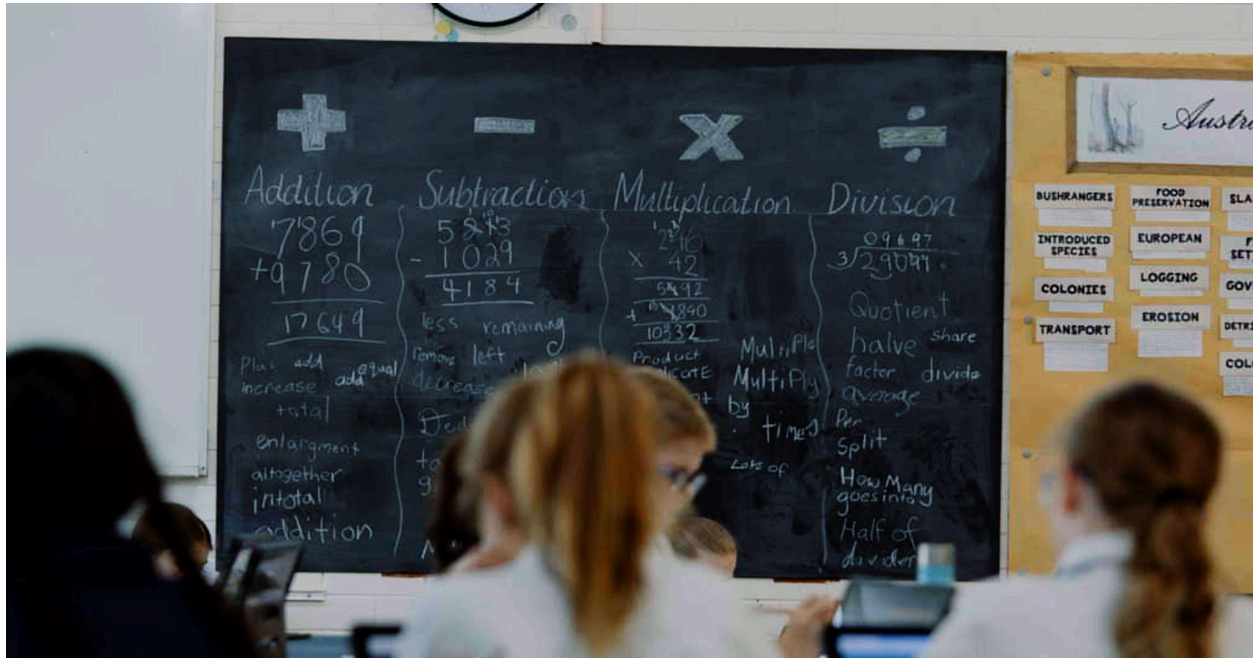
### Summary

During my time at Maths Pathway, I co-led a comprehensive redesign of the student application alongside the Product Owner, Justin. The project's primary goal was to address key challenges in student engagement while remaining true to the company's core mission: fostering a love of learning mathematics. By focusing on student autonomy, mastery, and intrinsic motivation, we delivered an innovative solution that transformed the learning experience for over 50,000 students.

### Context

Maths Pathway is an Australian company providing schools with software that enables personalised mathematics learning. Unlike traditional classroom settings where all students learn the same material simultaneously, Maths Pathway's model allows students to select and complete modules based on their readiness and understanding. This individualised approach ensures that no student is left behind or unchallenged, resulting in faster growth and deeper comprehension.

However, full autonomy in module selection posed challenges. Without guidance, many students gravitated toward “easy” modules or failed to challenge themselves sufficiently, which hampered their progress and reduced the potential impact of the system. Addressing these behavioral patterns required a fundamental redesign of the student experience while avoiding the overuse of gamification techniques, such as coins, XP, or leaderboards, which could undermine the intrinsic value of learning.



## Challenges and constraints

The project confronted two primary challenges:

1. Students tended to choose simpler modules to complete, avoiding more challenging but necessary topics.
2. Many students lacked motivation to complete as many modules as possible.

Additionally, we had to adhere to Maths Pathway’s philosophy of cultivating a genuine love for mathematics. Gamified mechanics, while effective in increasing engagement, were deliberately avoided to ensure that students valued the process of learning itself rather than external rewards.

## Workshop process

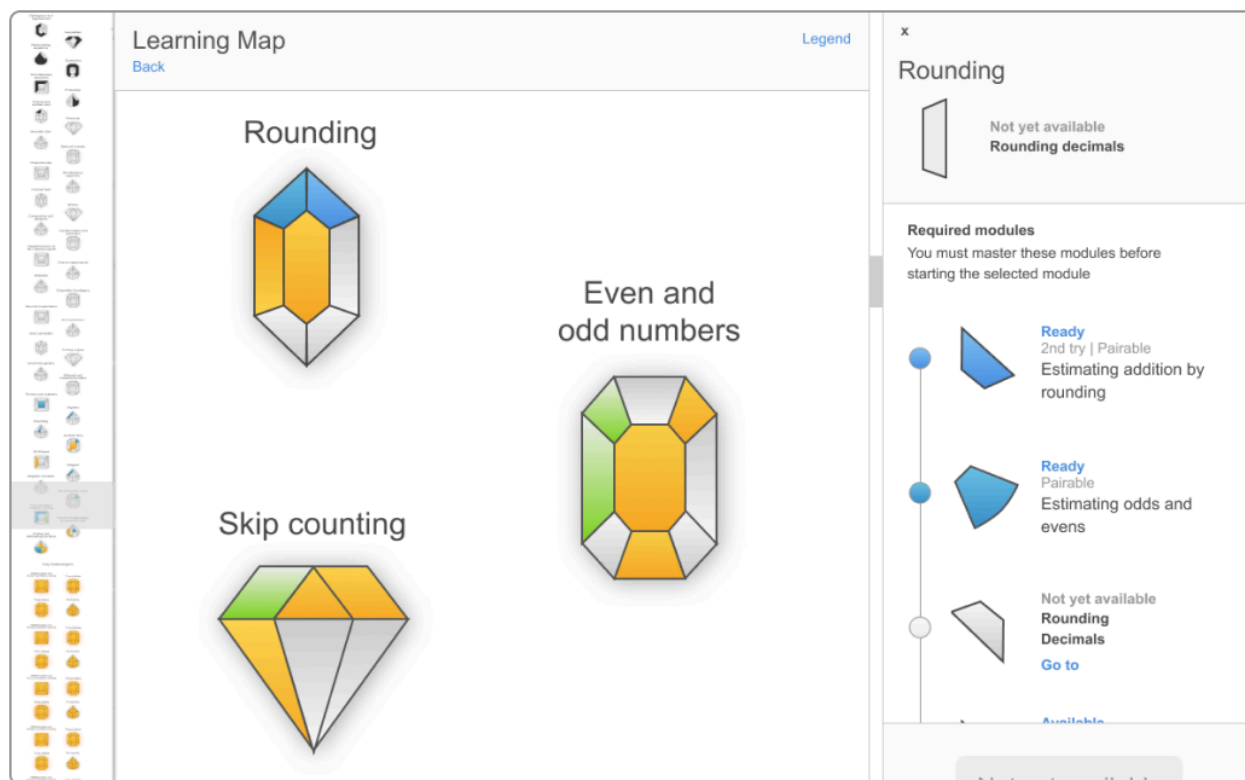


*Select images from the user workshop*

Understanding the importance of teacher insights, we organised a one-day workshop with teachers who worked closely with students and who were already using our product. Teachers offered firsthand perspectives on student behavior, struggles, and motivations.

The workshop began with a collaborative alignment on the problem statement, followed by structured brainstorming sessions. We encouraged teachers to think creatively about ways to foster mastery, autonomy, and purpose among students. The day concluded with a dot-voting exercise, allowing participants to identify the most promising ideas. The concept of “gems” emerged as a clear favorite: students would progress by completing modules represented as gems and assemble these into collections upon mastering a topic.

## Design & development



*An early stage UI design of the “gem map”*

Post-workshop, I transformed the gem concept into tangible designs. Using Figma, I developed wireframes and visuals that balanced simplicity with a sense of achievement. The idea was to create a rewarding experience that would encourage students to explore more challenging modules while celebrating the progress they had already made.

Recognizing that the interaction design needed to feel seamless and intuitive, I also created an HTML and CSS prototype. This visually functional prototype showcased key interactions, such as scrolling through gems, selecting modules, and the visual “assembly” of gems upon mastery. The prototype also included animations to enhance the emotional impact of completing a topic, fostering a sense of accomplishment.

## Collaboration and implementation

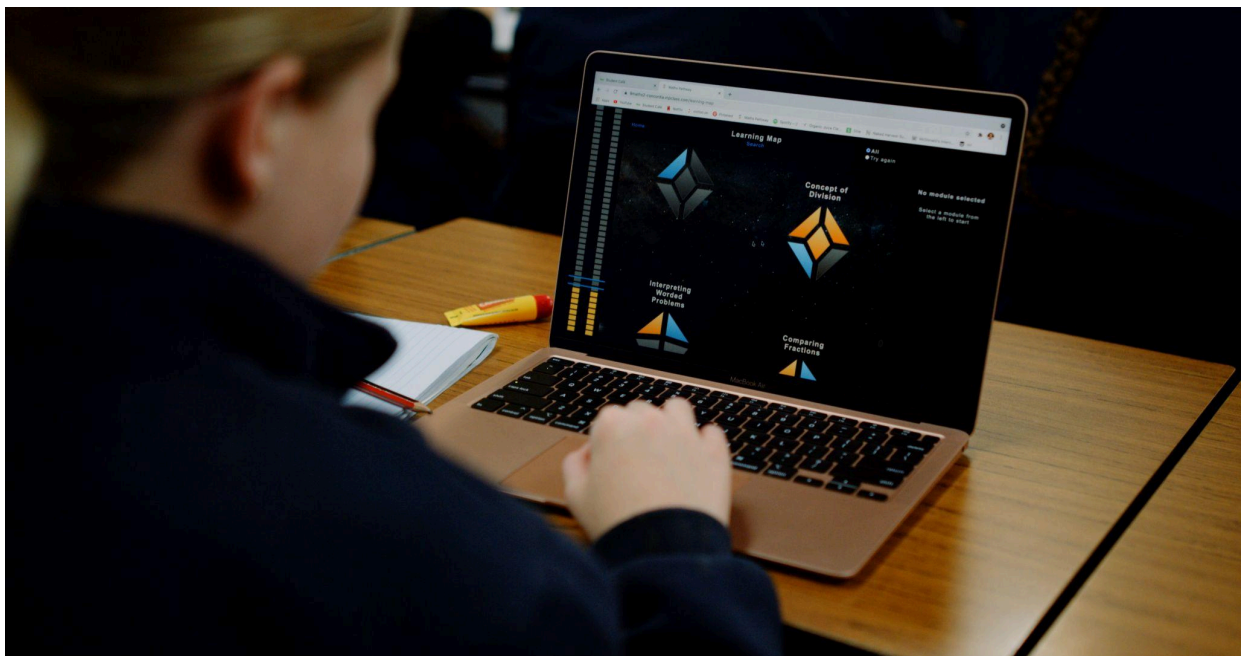
Throughout the implementation phase, I worked closely with the engineering team to ensure design fidelity and seamless functionality. I drafted detailed specification documents outlining the behavior and flow of the redesigned experience, which helped developers prioritize tasks and manage dependencies effectively.

I also contributed directly to the development process by writing HTML and CSS for key components. Regular design reviews allowed me to provide feedback and suggest refinements to enhance the user experience. By maintaining a hands-on approach, I ensured the final product aligned closely with the initial vision.

## Outcomes and impact

The redesigned application was met with enthusiasm from students and teachers alike. The gem system struck a perfect balance, motivating students to tackle challenging topics while maintaining a focus on learning for its own sake. Students often showcased their progress to parents, celebrating milestones like completing the “Angles” module and assembling their gems. This sense of achievement became a powerful motivator, driving continued engagement with the platform.

The project not only improved the user experience but also reinforced Maths Pathway’s commitment to innovative, student-centered education. By addressing the challenges of autonomy and motivation in a meaningful way, the redesign proved to be a transformative step in inspiring students to embrace mathematics.



*A student scrolling through the gem map in a classroom*