Case Study

Modernizing Backend Infrastructure for a Scalable Online Learning Platform

Magic EdTech

The Client

The client is a widely adopted online learning platform serving learners across hundreds of institutions. After reaching 70,000 learners in 2022, the platform scaled to support over 200,000 learners annually by 2025.

The Challenge

The client's legacy backend was inflexible, costly, and misaligned with their evolving delivery model. It lacked robust role management, content control, and institutional dashboard capabilities. Frequent workarounds had increased technical debt, and the infrastructure could no longer scale efficiently.

Critical Success Parameters

✓ Replace the legacy LMS and DynamoDB setup with a unified custom backend.

✓ Preserve and optimize workflows across content, classrooms, and user roles.

✓ Enable seamless role-switching for 100,000+ cross-enrolled users annually.

✓ Ensure WCAG 2.2 AA and FERPA compliance with strong data governance.

✓ Support 10,000+ concurrent users and partner-branded SSO instances.

✓ Reduce infrastructure complexity and long-term technical debt.

Our Approach

✓ Served as end-to-end consulting and implementation partner from June–December.

✓ Delivered a custom backend integrated with the existing Next.js front end.

✓ Replaced legacy architecture with a modern relational database.

✓ Developed scalable program and classroom management tools.

✓ Implemented role-based access logic supporting seamless user switching.

✓ Integrated analytics and reporting tools across 500+ partner institutions.

✓ Supported branded partner environments with SAML 2.0 SSO.

✓ Managed delivery across 24 agile sprints with MVP completion.

Key Result Highlights

Backend migration completed ahead of schedule with **zero** disruption to learners.

Platform scaled to support **200,000+** annual learners, up from **70,000** in **2022**.

Reduced infrastructure costs by **20%**.

Cut admin workload by **40%** through improved content and roster management.

Resolved over **90%** of historic user-role permission issues.

Enabled full platform ownership by internal teams, eliminating dependency on engineering support.

Positioned the organization for long-term scalability and technology independence.