Interactive online assessment and authoring tool

Client is a leading provider of digital learning solutions. Client offers solutions that help students, educators and administrators to improve performance and results by enabling personalized, data-driven and engaging solutions. Their solutions largely utilize research-based content to achieve the best possible outcome for students, instructors and institutions

Situation analysis

Various learning departments at client's organization used to author a lot of online assignments for students with variety of question types and surveys included in it. Content authors and instructors faced a lot of trouble as each assignment was unique and they had to get a help from the technical team to create each assignment. The solution was heavily dependent on the technical team and lead time was high. This was impacting the go-to-market time and in turn incurred losses to the client.

Due to time constraint and fire-fighting for each assignment, the application was never made available on the tablets which was one of the objectives of the client.

The client was looking for a simple and interactive tool where content authors and instructors could create the assignments themselves without any dependency on the technical team. This tool would include the components to create variety of question types as well as the branching and grading logic as required by the authors.

The Vision

The client envisioned to use some of the best emerging digital technologies to guide assessment, teaching and learning to drive their solutions towards better learning experience. The client approached e-Zest with the following three key objectives:

- Develop a digital application tool for authoring labs for their content authors or instructors
- Develop reusable components to be shared across various departments
- Enable conditional page display based on answers on previous page

Our Solution

e-Zest's UX team designed different wireframes and designs for student, instructor and author views. The key benefits for each user class are outlined below:

- Student – The UI of the assessment tool enables students to take and submit assignments and get the scores on real time. Post submission, students review their questions and see the actual answers. They can also see the feedback given by the authors with scores
- Author – Define statements and assign weight to them. Learning solution also allows an author to add points to each option and also provide range based feedback on the points
- Instructor – Assign the questions to the students, track and update the questions. The application would also enable the instructor to assign the score and feedback to the assessment questionnaire

Challenges

The key challenge was to develop reusable components to be shared across sections/departments which can be used to build assignments combining multiple components. The task in hand was to successfully create a professional authoring tool that is easy-to-use for all the three user class that includes student, author, and instructor.

Solution Architecture

e-Zest came up with a visually appealing authoring tool that is both interactive and intuitive whereby author and instructor can easily create a questionnaire or survey by dragging and dropping various components and can modify their properties. A typical questionnaire could have variety of questions such as scales, fill in the blanks, multiple-choice, multiple responses, true false, point based, simple mathematical expressions etc.

All the components created were reusable and could be used across various departments to create any multiple styles of assignments including grading and feedback system.

The application acted as a supplementary tool that further engages existing and new students through various online assessments, adaptive learning solutions and real time feedback.

Technology Stack

- HTML 5 / CSS 3
- JavaScript / JQuery
- Twitter Bootstrap
- Amazon Web Services

Project Breakthroughs

e-Zest's robust application development platform and backend services met the client's goals to find a highly flexible platform that would evolve with its business.

After a careful evaluation, e-Zest decided to use custom build object oriented architecture rather than open source CKEditor which proved to be one of the success factors for the project considering complexity involved in author side design and formatting.

e-Zest's homegrown framework is the key that helped to bring the client's vision to reality in crafting a very simple and Intuitive tool with the following key solution areas – responsiveness, reusable, scalable and extensible and robust

Business Benefits

- Client is the sole owner using these components – this makes them not to rely much on the technical team and be independent
- Adaptive learning based on questions and answers – the tool behaves based on the responses
- This assessment tool is suitable for any domain and hence can be replicated in various departments
- Tool was developed for one specific lab but can be used by anyone to design their assignments. No modifications are required at all

Bottom Line

By Accurate mapping of requirements to the product, e-Zest ensured that the client requirements are aligned with their business needs and effectively managed not only gathering, analyzing, defining the requirement accurately but also translating them to final business requirement which won a lot of appreciation from the client.

"From a tool that is dependent on technology team, client desired to migrate to a fully independent tool. This was made possible by e-Zest's focus on user experience with agile development where e-Zest's expert development teams proposed various enhancements, features and components to meet the client's vision."