### Opening Scene

Transcript:

"Hi everyone! Today, I'm excited to walk you through my RPG-based educational app. This app combines the elements of classic role-playing games with a dynamic learning experience, creating an immersive journey that integrates content from educational textbooks and fantasy novels.

So it combines personalized education by adapting to students’ constantly changing interests,

and uses role playing elements for game-ification – overall it making for an engaging and entertaining experience

I’m going to dive right in to how to use the app and then discuss the use cases and tech stack at the end.

Whether you're studying biology, digital marketing, or European history, our app combines those topics with a thrilling RPG journey to create an unforgettable educational experience. So, let’s get started by selecting our learning and adventure materials."

### Selecting Textbook and Novel

[Action: Navigate to the textbook and novel selection options]

Transcript:

In this demo, I’ll choose the textbook ‘Biology’ and, for our adventure theme, ‘The Hobbit’. This combination will bring biology concepts to life through an adventurous storyline inspired by the world of Tolkien." There’s several options here from public domain such as Sherlock and Peter Pan, but I imagine there can be licensing agreements for IP like Harry Potter and Lord of the Rings.

[Action: Select the Biology textbook and The Hobbit novel, and choose a chapter]

Transcript:

"Now, we pick a chapter. I’ll select ‘Cell Structure’. This choice will allow us to see how concepts about cell membranes and cellular functions can be incorporated into a fantasy world."

### And As we can see the app has generated a descriptive setting for our adventure. Here we’re on a quest with Bilbo Baggins and the dwarves to reclaim their treasure from goblins. Three characters have been generated and assigned attributes that the player can upgrade later on. Rich descriptions have been generated for both the adventure and the characters.

### The app then creates a scenario for our first Question encounter – looks like we’re exploring the goblin caves with Bilbo, Gandalf and Thorin. This distinguish the immediate setting from the overarching story setting and sets the context for the question.

Looks like our first question is asking us to identify a microorganism that thrives in dark, damp environments. We also need to describe the specific characteristics that allow the organism, to survive in those conditions.  
  
  
I’m going to be honest, if you haven’t recently brushed up on your cell structure, European history or digital marketing strategies – then these questions are going to be pretty tough. For testing purposes you can drop the question into google and usually get a fully credit answer back. If you’re running the app locally you can also see the answer printed to the console.

The answer we’re looking for is fungi – which can grow in low light conditions and generate spores which easily disperse in damp environments. I’ve gone ahead and inputted this answer and the grader has given us a grade of 3 out of 4. Although correct, the rubric requires a more comprehensive answer for full points and we are marked down for not expanding on the specific fungi adaptations.  
  
We are then presented with travel options for the next encounter.  
  
  
If you do score 4 of 4 points, then you are given the option to upgrade one of your characters. Each trait has it’s own effect, ranging from bonus points when answering questions to having hint tokens refunded. Upgrading that trait will increase the chance that it’s triggered.  
  
If you’re unsure of an answer, just submit ‘hint’ to use one of your tokens and the AI provide assistance.

### Generating the Adventure

[Action: Click to generate the adventure]

Transcript:

"Once our materials are selected, we can start generating the adventure. Behind the scenes, the app uses Retrieval-Augmented Generation (RAG) to pull in context from both the textbook and novel, creating an adventure description that intertwines biology concepts with themes from The Hobbit. This makes it possible for learners to encounter challenges and trivia related to cell biology while journeying with familiar characters."

[Pause for the adventure description to load]

### Reviewing the Adventure Description

[Action: Read the generated adventure description on the screen]

Transcript:

"Here’s our adventure setup! We have an adventure description that introduces our storyline and characters. Our characters include Bilbo Baggins, Gandalf, and Thorin Oakenshield, each assigned a unique trait such as intellect, spirit, or strength. These traits not only add depth to the characters but also have in-game effects—such as boosting grades or preserving hint tokens. The adventure description also highlights key places and encounters we might visit, which are drawn from the fantasy setting and enriched with biology concepts."

### Exploring Places and Encounters

[Action: Choose a place or encounter to start the adventure]

Transcript:

"Now, let’s jump into one of these locations. I’ll choose the ‘Dark Forest’ encounter. Each location we visit will bring us new questions that challenge our understanding of biology while advancing the storyline."

[Action: Click to enter the chosen encounter]

### Displaying Setting Description and Generated Image

[Action: Display the setting description and generated image]

Transcript:

"As we arrive in the Dark Forest, the app provides a vivid description of the scene, integrating elements from both our biology chapter and The Hobbit. This description sets the stage, helping us feel immersed in the journey. The app also generates an accompanying image using NVIDIA’s Consistory model to give us a visual of our adventure setting. This helps to create an even stronger connection between the learning material and the fantasy world."

### Presenting a Question Encounter

[Action: Display the question generated for the setting]

Transcript:

"Now that we’re in the Dark Forest, here’s our biology question, woven into the storyline. This question asks us about the function of the phospholipid bilayer in cell membranes, tying back to the chapter we selected. The app presents questions in a way that aligns with the fantasy setting, making them feel like natural parts of the journey."

### Answering the Question and Receiving Feedback

[Action: Type a sample answer to the question and submit it]

Transcript:

"I’ll go ahead and type in an answer to this question. Once we submit, the app evaluates our response. Based on a grading rubric, it assigns a score and provides feedback. This feedback is designed to reinforce the concepts and help learners understand areas where they could improve. We can also use hint tokens if we need help—each character’s traits may help preserve or enhance these tokens."

### Navigating to the Next Encounter

[Action: Choose the next place or event for the adventure]

Transcript:

"With our answer submitted, we can now choose where to go next in the adventure. Each encounter brings a new question or challenge, reinforcing our learning in an interactive way. This cycle of exploring, questioning, and feedback continues, keeping the journey engaging while deepening our understanding of the topic."

### Highlighting the Technical Back-End

Transcript:

"I’d like to quickly highlight the technology behind this app. We’re using a combination of llamaindex and Pinecone for the retrieval-augmented generation, pulling context from the textbook and fantasy novel. NVIDIA NeMo and OpenAI’s language models support the generation of descriptive content and questions, while Streamlit provides an intuitive front end. This integration of GenAI tools allows us to create a fully immersive and educational RPG experience."

### Wrapping Up the Demo

Transcript:

"That’s the overview of our RPG-based educational app! By integrating academic content with fantasy elements, this app aims to make learning an active and engaging experience. We hope this platform can bring fun and discovery to learners of all ages. Thank you for joining me on this demo, and I look forward to seeing you on the next adventure!"

### End of Demo