Team 1 – Product Backlog

Andrew Arpasi, Andrew, Rothwell, Aung Myat, Matin Hormati, Noah Johnson, Vishnu Vijayan

Problem Statement

Learning has conventionally taken place in a live, physical lecture where the overcrowding of students and distractions of others are all too real of problems. Vyden is able to conquer these adversities by administering an engaging virtual reality classroom experience. When the weather takes a turn for the worst, you have the convenience of watching lectures without being in the actual class. At Purdue, the only legitimate service similar to Vyden is Boilercast. The issue here is that Vyden surpasses Boilercast in that it does more than just streaming lectures. With Vyden's customizable interfaces, 3D models in custom environments, and advanced learning metrics, learning has never felt more real.

Background Information

Audience

Since the dawn of education, students have had to physically meet up in a single place to learn from a teacher. After the melding of technology with education, this paradigm has started to shift. Students are able to watch lectures and learn within the comfort of their own homes. Instructors are able to deliver their material in more convenient and immersive ways. Unfortunately, existing platforms to view lectures lack the feel and intimacy of going to a classroom.

Similar Platforms

Many platforms exist today that can be used to deliver lecture material over the internet. The first services that come to mind are BoilerCast and Echo360 - both of which are used at Purdue. They allow instructors to stream lectures over the internet for students to view in their browser once the lectures have ended. iClicker provides a proprietary platform with which instructors can ask quizzes during lectures. Blackboard allows instructors to upload course information, grades, and announcements and students to view them.

Limitations

All of these services are useful; however, because there are so many of them with their own functions, the students' and instructors' experience is fragmented. Lecture streaming services simply allow students to view a recorded video of the lecture. The atmosphere of the classroom is lost as the students are not able to see the instructor and their peers. Most, if not all of these services are proprietary. Costs quickly add up purchasing multiple services while trying to provide a complete educational experience.

By building Vyden, we hope to provide a robust, complete solution to deliver classroom content over the internet in an immersive and learning-conducive way.

Functional Requirements

1. As a student, I would like to be able to login to my unique student account.
2. As a student, I would like to be able to log out of my student account.
3. As a student, I would like to be able to update account information.
4. As a student, I would like to be able to change my password.
5. As a student, I would like to be able to enter a code to enroll in a class.
6. As a student, I would like to be able to see all the classes I am enrolled in.
7. As a student, I would like to be able to see a list of lectures relevant to each class.
8. As a student, I would like to be able to switch between classes.
9. As a student, I would like to be able to remove classes.
10. As a student, I would like to be able to see announcements from my instructors.
11. As a student, I would like to be able to view 3D lectures at any time in a browser with the help of a VR headset.
12. As a student, I would like to exit a lecture at any time I please.
13. As a student, I would like to view 3D models in the scene.
14. As a student, I would like to be prompted for multiple choice quizzes in VR.
15. As a student, I would like the option to answer quizzes in VR by gazing at the answer for a set time.
16. As a student, I would like the option to answer quizzes without a VR headset by clicking an answer.
17. As a student, I would like to see my quiz details, such as questions, choices, and score for each lecture.
18. As a student, I would like to watch the online lectures without obstructions.
19. As an instructor, I would like to be able to log-in to my instructor account.
20. As an instructor, I would like to be able to log-out from my instructor account.
21. As an instructor, I would like to be able to update account info.
22. As an instructor, I would like to be able to change my password.
23. As an instructor, I would like to be able to create classes.

24. As an instructor, I would like to be able to post video lectures for my classes.
25. As an instructor, I would like to be able to make announcements to my students.
26. As an instructor, I would like to be able to see all the classes I am teaching.
27. As an instructor, I would like to create quizzes and have them show up mid-lecture.
28. As an instructor, I would like to be able to enter quiz details, such as questions and answers.
29. As an instructor, I would like to manage the quiz grades through the interface.
30. As an instructor, I would like to be able to see quiz analytics, such as average score.
31. As an instructor, I would like to change the environment properties such as the background in a scene.
32. As an instructor, I would like to be able to upload and store 3D models.
33. As an instructor, I would like to determine a timeline for a lecture in which lecture specific content is shown.
34. As a developer, I would like each component of the application to have its own working branch.
35. As a developer, I would like to write rigorous test cases for each feature of the application.
36. As a developer, I would like tested and functional code in the master branch.
37. As a developer, I would like to receive user feedback.
38. If time allows, as a developer, I would like to allow students to be able to chat with their peers before and/or after the lecture.
39. If time allows, as a developer, I would like to allow students to take notes using their phone camera feed during lecture.
40. If time allows, as a student, I would like to be able to watch the lectures without VR equipment.
41. If time allows, as a student, I would like to be able to ask questions about lecture content within the application.
42. If time allows, as a student, I would like to virtually see other students in the classroom who are also attending the lecture.

Non-Functional Requirements

1. As a student, I would like to watch the lecture stream without any frame stutter.
2. As a user, I would like the interface to be beautiful and have an easy learning curve.
3. As a developer, I would like to minimize bandwidth usage.
4. As a developer, I would like to manage login credentials with the most up to date security practices, including https and server-side encryption of sensitive data.
5. As a developer, I would like 99% uptime.
6. As a developer, I would like unit and integration testing before each deployment.
7. As a developer, I would like critical error log reporting and notifications.

8. As a developer, I would like the UI/UX to be simplistic, minimal, and functional.
9. As a developer, I would like to be able to build a scalable backend whose performance does not degrade when many users are online.