Team

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MSCS '21  MSCS '21  MSCS '21  MSCS '21
Problem & Solution

Non-ESL secondary school teachers are ill-equipped to support the learning needs of ESL students.

AI-powered teacher platform that provides insight on student progress and suggestions for incorporating culture and language into class content.
Mission & Value

Mission
To empower non-ESL secondary school teachers with academic and cultural resources to support ESL students

Value
Understand ESL students’ needs beyond academics with culture and language
Overview

Redesign #1 → Usability Study → Study Results → Redesign #2
Overview

Redesign #1 → Usability Study → Study Results → Redesign #2
1. Changed Feedback Form Structure
Before

Strengths

- Understands the term tectonic plates
  Description: used this term correctly

- Knows where main tectonic plates are located
  Description: was able to draw tectonic plates on the map for HW

Areas For Improvement

- Thought lava and plasma were the same thing
  Description: lacked vocabulary to distinguish objects
  Suggestion: clarify states of matter

- Confused by the various stages of the rock cycle
  Description: lacked vocabulary to understand the stages
  Suggestion: use more visuals to show what the rocks look like at each part
Choose Items to Send

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Move to the next page

Added progress bar
Add Custom Feedback

Matthew is doing great overall! These are some areas that he can work on more:

Next
Select Recipients

Student

- email

Teacher

- Teacher 1’s email
- Teacher 2’s email

Parent

- phone number
- email

Send
Feedback Report Sent!
2. Grades/Progress UI

-eutanza

Improved icon UI

Removed gradient
3. Students Page UI

Improved UI
3. Students Page UI

- Improved UI
- Used text instead of arrow
3. Students Page UI

- Improved UI
- Renamed for clarity
- Used text instead of arrow
Overview

Redesign #1  →  Usability Study  →  Study Results  →  Redesign #2
Study Goals

- Test if the overall website is easy to use
- Improve navigation through the feedback form
- Make the UI of the content analyzer more intuitive
Methodology

Conducted over Zoom

Medium-fi prototype built in Figma

Participants controlled the prototype
Participants

- Target Participants: Secondary school subject teachers (not ESL trained)
- Recruited using connections of our contacts
Participants

Tim, a high school science teacher in Boston, MA

Andy, a high school science teacher in San Diego, CA

Ammar, a tutor for high school ESL students in San Jose, CA
Overview

Redesign #1 → Usability Study → Study Results → Redesign #2
Finding #1

- Users are interested in overall class progress
- “It would be cool to see overall class progress and improvement”
- 2 out of 3 testers
Finding #2

- Users want teaching suggestions from the content analyzer

- “I think pulling out the terms is useful, but I also want suggestions on how to teach these terms”

- 2 out of 3 testers

Translations of tricky words:

volcano  el volcán
ash        la ceniza
Finding #3

- Users were dissatisfied by the feedback form’s ordering and process

- “I want to choose the people I’m sending this to first because that changes what I write and include”

- 2 out of 3 testers were confused about how to select strengths and areas of improvements
Overview

Redesign #1 → Usability Study → Study Results → Redesign #2
1. Added Class Progress Statistics
Before
After
2. Added Content Analysis Panel
Before

Analyze Course Material

Volcano Basics

A volcano is a spot in Earth's crust where molten rock, volcanic ash, and certain types of gases escape from an underground chamber. Magma is the name for that molten rock when it's below ground. Scientists call it lava once that liquid rock erupts from the ground — and may start flowing across Earth's surface. (It's still "lava" even after it's cooled and solidified.)

Roughly 1,500 potentially active volcanoes exist across our planet, according to scientists at the U.S. Geological Survey, or USGS. About 500 volcanoes have erupted since humans have been keeping records. Of all volcanoes that have erupted in the past 10,000 years, roughly 10 percent reside in the United States. Most of them exist in Alaska (particularly in the Aleutian Island chain), in Hawaii and in the Cascade Range of the Pacific Northwest.

The edge of one tectonic plate may begin sliding beneath a neighboring one. This process is known as subduction. The downward-moving plate carries rock back toward the mantle, where temperatures and pressures are very high. This disappearing, water-filled rock melts easily. Because the liquid rock is lighter than the surrounding material, it will try to float back up toward Earth's surface. When it finds a weak spot, it breaks through. This creates a new volcano.
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Analysis

Translations of tricky words:
- volcano
- volcanic ash
- "el volcán"
- "la ceniza"

Teaching tips for Spanish speakers:
- Many of the English words related to volcanoes have Spanish cognates. We consider a pair of words to be cognates if they are spelled and sound similar and also have similar meanings. Encourage students to seek out cognates, like "el volcán" for "volcano."
- Some of the English words related to volcanoes are the same in Spanish, only pronounced differently. For example: magma. This is because both languages derive some words from Latin. Consider emphasizing the Latin roots of words in both languages!

Teaching aids for tricky terms:
- "Volcano" used in a sentence: "When the volcano in Italy erupted, lava flowed down its slopes and buried homes in its path."
- Volcano diagram:
3. Updated Feedback Form Item Selection
Choose Items to Send

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4. Improved Website Navigation

Hometown
Manila, Philippines

First Language
English

English Proficiency
Very Proficient

Cultural Norms
Introductory greetings are formal, usually starting with the eldest or most important person first.
Smart AI

- Analyzes class content to find difficult terms and cultural connections
- Provides suggestions and tips to help teach the difficult terms
- Reports a student’s and class’s progress by analyzing their assignments and tests
Questions and Feedback

● How to inform users about the AI features?
● Feedback about the class progress
● Ways to improve the feedback form
Appendix

- Interface Redesign #1 Prototype: https://www.figma.com/proto/QX0JbYdO4cgo2TeWYHNgFh/CS-377E-Project-Team-Coterm?node-id=275%3A0&scaling=scale-down-width

- Interface Redesign #2 Prototype: https://www.figma.com/proto/QX0JbYdO4cgo2TeWYHNgFh/CS-377E-Project-Team-Coterm?node-id=558%3A3&scaling=scale-down-width