eduCulture

Bridging academics with culture and language for ESL students
Team

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ESL Educational Outcomes

- Twice as likely to drop out of school
- Twice as likely to repeat a grade level
- Drastically fewer ESL students are college-ready
Samia's ESL Experience

Unable to understand any teachers

Felt like a burden when asking for help

Didn't feel included in classes
Overview

Problem → Solution → Design Evolution → User Interface → Next Steps
Needfinding

Current ESL Students

Teachers and ESL Tutors

Former ESL Students

ESL Researchers
Point of View

We met... Sandy Wallace, a teacher with over 30 years of experience.

We were amazed to realize... that she is given little information about her ESL students and no preparation for assisting them.

It would be game-changing if... we could help prepare teachers to teach and understand diverse ESL students.
“We had no information [about the ESL students] and pretty much had to figure it out on our own.”

— Sandy Wallace
Overview

- Problem
- Solution
- Design Evolution
- User Interface
- Next Steps
Mission Statement

eduCulture empowers and equips secondary school teachers with academic, cultural, and language resources to support ESL students.
Solution

AI-powered web-based teacher platform that gives insight on student progress and suggestions for incorporating culture and language into lesson materials.
Understand ESL students' backgrounds
Track student and class learning
Share student progress
Enhance lessons with language and culture
Overview

Problem → Solution → Design Evolution → User Interface → Next Steps
Design Process

Low-Fi  Med-Fi 1  Med-Fi 2  Med-Fi 3  Final
Design Evolution 1

Consolidating lesson suggestions
Design Evolution 1
Consolidating lesson suggestions

Low-Fi
Separation of suggestions for lesson materials seemed confusing
Design Evolution 1
Consolidating lesson suggestions

Low-Fi
Separation of suggestions for lesson materials seemed confusing

Medium-Fi 1
Consolidate suggestions for lesson materials into one feature
Design Evolution 1
Consolidating lesson suggestions

Low-Fi
Separation of suggestions for lesson materials seemed confusing

Medium-Fi
Consolidate suggestions for lesson materials into one feature

Analyse 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. Magnesium is the name for that molten rock which is below ground. Scientists call it lava once it has escaped 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 3% 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.
Design Evolution 1
Consolidating lesson suggestions

Low-Fi
Separation of suggestions for lesson materials seemed confusing

Medium-Fi 1
Consolidate suggestions for lesson materials into one feature
Design Evolution 2

Creating student progress report
Creation of student progress report was unintuitive for users

Strengths
- Understands the term tectonic plates
  Description: was the 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: asked vocabulary to understand the stages
  Suggestion: use more visuals to show what the rocks look like at each stage
Design Evolution 2
Creating student progress report

Medium-Fi 1
Creation of student progress report was unintuitive for users

Medium-Fi 2
Breakdown creation of student progress report into multi-step process

Choose Items to Send

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Areas For Improvement
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**Design Evolution 2**

Creating student progress report

**Medium-Fi 1**

Creation of student progress report was unintuitive for users

**Medium-Fi 2**

Breakdown creation of student progress report into multi-step process
Design Evolution 2
Creating student progress report

Creation of student progress report was unintuitive for users

Medium-Fi 1

Breakdown creation of student progress report into multi-step process

Medium-Fi 2
Design Evolution 3

- L
- M1
- M2
- M3
- F

Adding class progress
Design Evolution 3

Adding class progress

Medium-Fi 2

Teachers wanted to view progress across classes
Design Evolution 3
Adding class progress

**Medium-Fi 2**
Teachers wanted to view progress across classes

**Medium-Fi 3**
Incorporate class progress on homepages
Design Evolution 3
Adding class progress

Medium-Fi 2
Teachers wanted to view progress across classes

Medium-Fi 3
Incorporate class progress on homepages
Design Evolution 3
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Teachers wanted to view progress across classes

Incorporate class progress on homepages
Design Evolution 3
Adding class progress

Medium-Fi 2
Teachers wanted to view progress across classes

Medium-Fi 3
Incorporate class progress on homepages

Incorporate class progress on homepages

My Students
Period 1
Anjini Karthik
Kayla Magid
Misbah Surani
Kimberly Te
Matthew Tan

Period 2
Jerry Cain
Chris Gregg
Cynthia Lee
Chris Piehl
Keith Schwarz

Class Stats
Participation Average 90%
Homework Average 65%
Exam Average 85%

Roster
Soraya Fey
Jenna Froland
Ella Hof
Anjini Karthik
Kayla Magid
Riley Nord
Andrea Scott
Misbah Surani
Matthew Tan
Kimberly Te
Overview

Problem → Solution → Design Evolution → User Interface → Next Steps
Final Tasks

Task 1
View student profile

Task 2
Analyze lesson and get suggestions

Task 3
Send student progress report
Task 1

View student profile

Matthew Tan
Grade 7

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.
Volcano Reading

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 50 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.

Tectonic Plate

Cultural context:
Volcanic ranges are very present in Latin America, particularly along the west coast, where we can find the Andean Volcanic Belt.

In Ecuador, home to 9 major volcanoes, Indigenous people commonly depict the volcano named Cotopaxi in traditional paintings on sheepskin canvases.

Discussion topic:
- Encourage students to ask their families of the significance of volcanoes near their hometowns.
- In Spanish: ¿Cuál es el significado de los volcanes donde vivimos antes? (What is the significance of volcanoes where we lived before?)
Task 3

Send student progress report to relevant contacts
**AI Incorporation**

**Class Progress**
Analyzes trends across student data for overall class progress

**Lesson Material Analysis**
Extracts difficult terms and provides potential cultural connections from lesson materials

**Student Progress**
Recognizes patterns in student work and outputs strengths/weaknesses

**Teaching Recommendations**
Recommends teaching strategies and resources based on lesson content
Prototype Demo
Overview

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Next Steps

- Add ability to customize lesson analysis
- Pilot MVP with a real class of students
- Increase user control on platform
- Enable upload of student data for AI analysis
- Explore partnerships with class management platforms
Summary

- AI-powered website that helps teachers support ESL students
- Enrich teacher understanding and resources by bridging academics with culture and language
- Remove ESL educational barriers for accessible and impactful learning for all students
eduCulture

Bridging academics with culture and language for ESL students

http://tinyurl.com/educulture-website