



Developing an Inclusive AI Tool

Mondly Digital Tutor by Pearson

by John Walker

Project Overview: Launch an AI Tutor

I spearheaded the development of an accessible, AI-driven digital tutor aimed at engaging language learners in spoken conversations.

My approach:

- Conducted thorough research on competitive and comparative chatbots.
- Identified and addressed accessibility issues in chatbot design.
- Performed manual screen reader testing to evaluate the accessibility of existing solutions.
- Collaborated with a visual designer to create and implement accessible design patterns.
- Annotated designs for desktop and mobile, offering guidance on implementations based on React Native and HTML.
- Oversaw quality assurance testing, logged feedback, and approved user flows.

The AI tutor was successfully launched in December 2024, following a streamlined three-month development period.

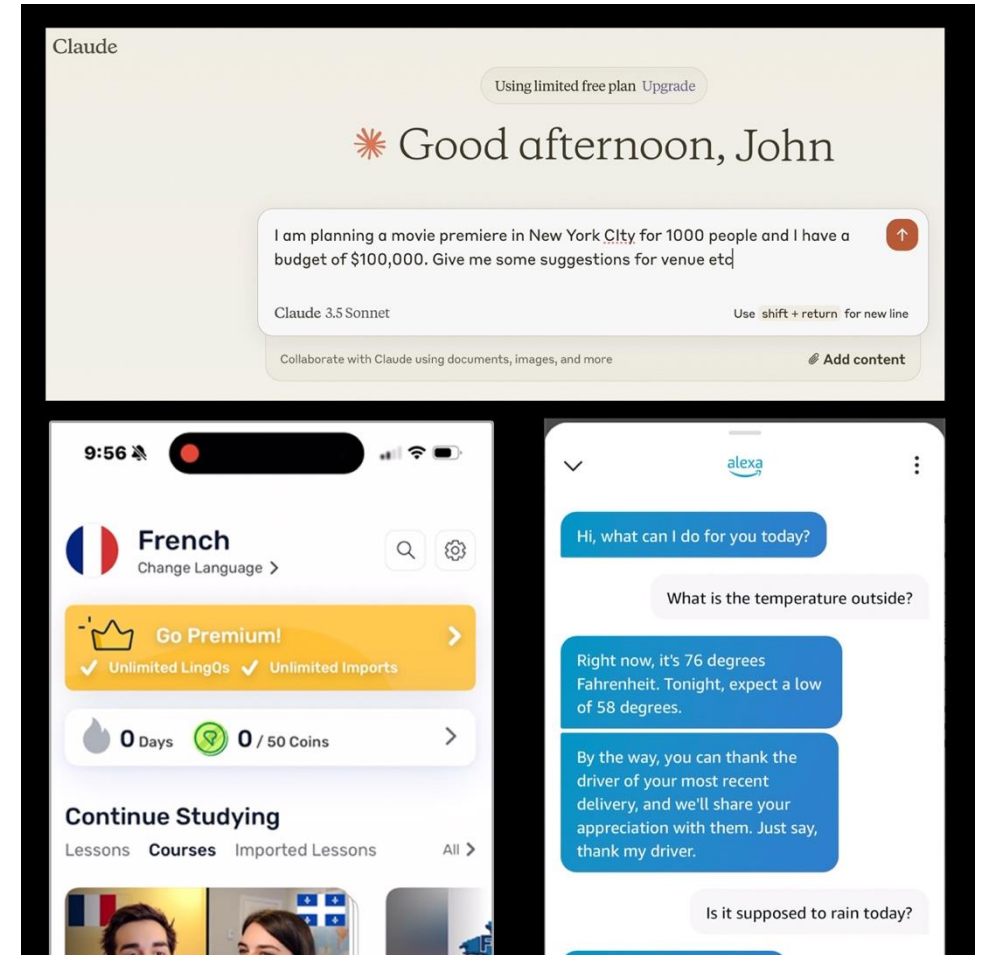
MY PROCESS

Step 1

Competitive/comparative research

I tested apps from various categories to get familiar with the current trends and implementations.

- I tested ten apps, ranging from generative AI models to language instruction and digital assistants.
- I uncovered several issues, including inaccessible functionalities, incorrect reading orders, navigation challenges, and failure to announce dynamic content.
- Few of the apps would pass an accessibility review.



MY PROCESS

Step 2

Accessibility coding challenges

I researched chatbot coding patterns to anticipate and prepare for existing challenges.

Code challenges include:

- UI consistency and predictability
- Timeout periods
- Dynamic content areas
- Inaccessible interactive elements
- Issues related to differing vocalizations and accents

Chatbot Research Summary

General Considerations

- Make it clear this is a chatbot and not a human—some may be confused and feel deceived
- Ensure visual design is accessible
- Ensure everything is navigable with a keyboard
- Out-of-the-box solutions often promise to meet standards but don't—especially around tags and markers
 - Request a11y documentation from third parties and get information on testing procedures, future updates etc.
- Page updates change focus unexpectedly
- Carefully map and signpost complicated dialogs
- Look into differences in EU data storage rules and ensure compliance by country
- Test with a variety of folks from different categories of ability

Challenges

- UI/content consistency and predictability
- Timeout periods
- New messages interrupt announcements
- Interactive elements not accessible via keyboard
- Folks with vocalization issues may not be understood
- Options for voice control or sign language?

Considerations

- Identifiers for current author should be emphasized with color differences, labels, avatars etc
- Utilize sound/haptic cues for sending and receiving messages
- Allow 24 px margins from device edge to allow for proper magnification
- Use HTML roles to improve ease of navigation
- Make sure focus is highly visible
- Utilize tab index if needed to make items focusable

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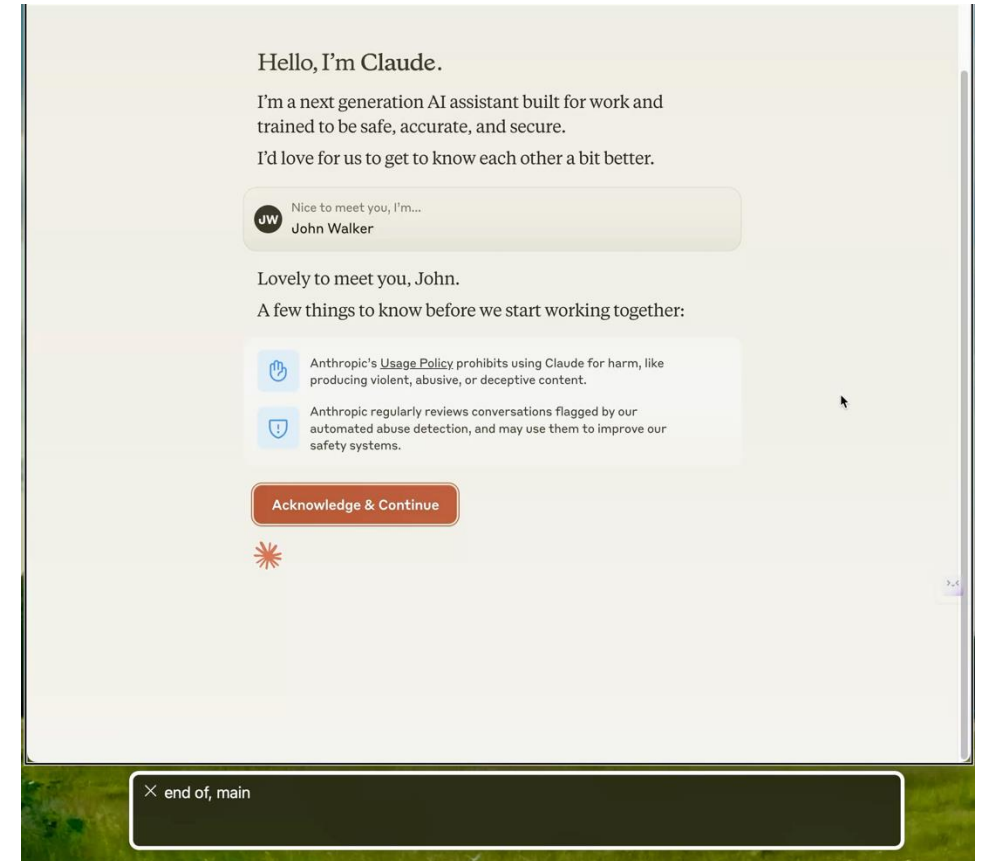
Step 3

Accessibility surveys

I examined both websites and native apps for accessibility.

There are many poor examples out there! Take Claude, for instance:

- The screen reader accurately announces the "Acknowledge & Continue" button.
- However, when the content is updated, it isn't announced.
- Instead, the screen reader announces an unhelpful "item is dimmed" statement, leaving the user unsure of how to proceed.



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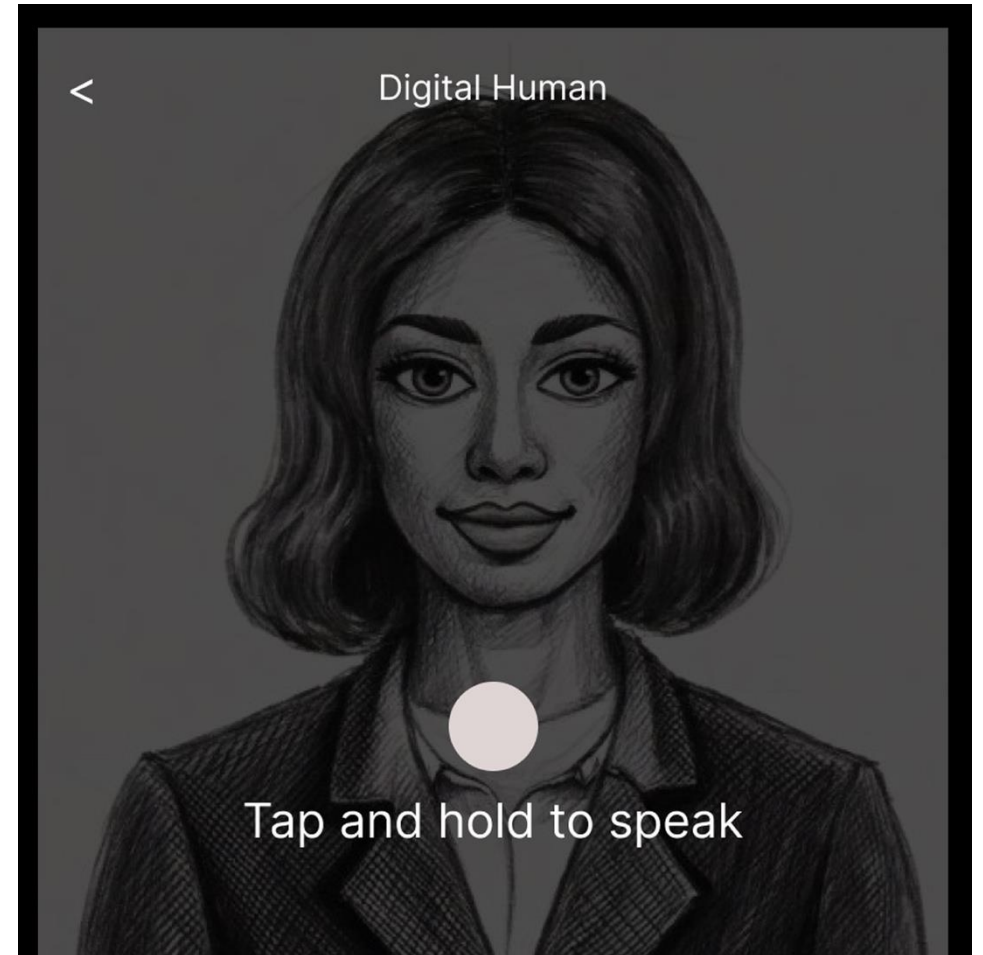
Step 4

Initial visual design review

I collaborated with the visual designer on appropriate component patterns.

Based on my specialized knowledge and new research, I worked with the designer to address some issues in his wireframes:

- Tap and hold is not a valid interaction for mobile devices or screen readers.
- Each screen must have a unique title (not a generic “Digital Human”).
- Users need ways to display learning targets and enable captions if necessary.



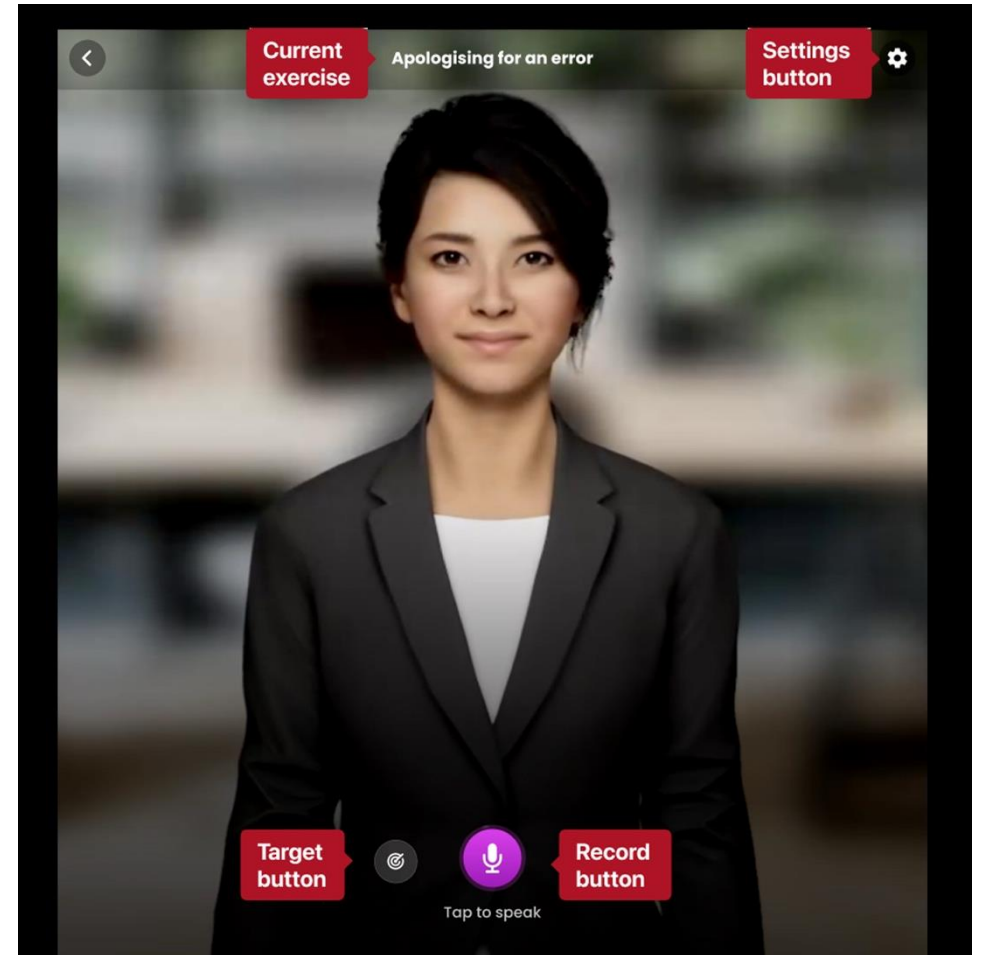
MY PROCESS

Step 5

Revised visual design

The final design included my guidance.

- The record button functions with a single action.
- The title on the screen indicates the current exercise.
- The settings button shows caption and other options.
- The target button opens a modal that explains the targeted response.



MY PROCESS

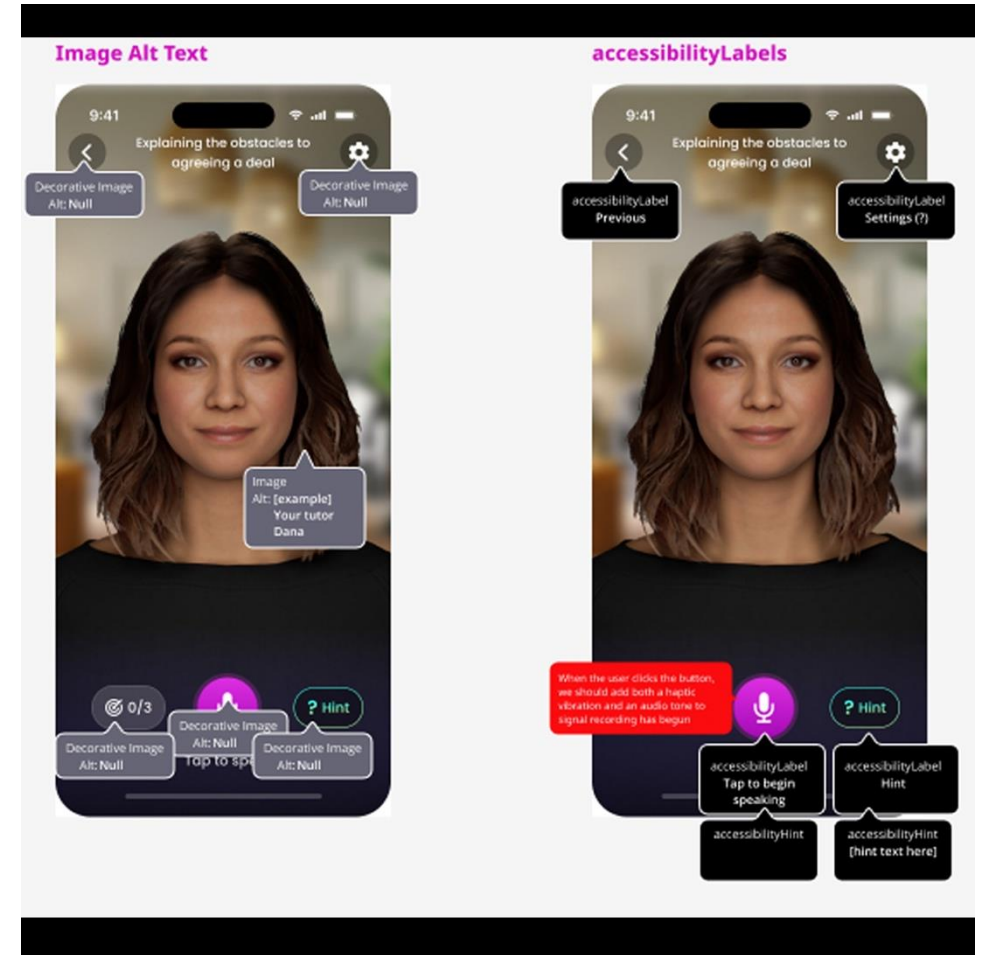
Step 6

Developer annotations

I provided accessibility guidance to the developers.

For example, the Native React guidance for the mobile version includes:

- Reading order
- Tab stops
- Expected interactions
- Image alt text
- Accessibility labels
- Views
- Red alerts for any potential issues



MY PROCESS

Step 7

Implementation and Quality Assurance

Accessibility sign-off has been integrated into the software development lifecycle.

I documented issues in an Excel file.

- Issues were color-coded by priority.
- I provided guidance for code-level remediation.
- I included screencast videos to clarify the issues.

	A	B	H	
1	Accessibility Defects List			
2	#	Use Case Description	Issue Description	Issue
3	1	APP		
4		All	Back arrows are announced as "close"	Critical
5		Heading implementation inconsistent	Explore and Map pages lack headings, while Statistics and Leaderboard have them	Critical
6		Page load focus from tabs incorrect	When users select a tab, the focus remains on the tab bar	Critical
7		App launch	On app launch, the focus should be on Explore (the first tab). But after the initial use, when I close and relaunch the app, the focus for me is always on Map	High
8				
9	DASHBOARD			
10		Premuim icon	Announced as "Premium" ("button" added automatically)	Medium
11		Language selector	Not always announced as a button	Critical
12		Daily lesson	Not announced as a button	Critical
13		Daily lesson	Timer not updating in real time	Medium
14		Chatbot	While not strictly required, a best practice on the slide bar would have the screen reader announce the total number of cards, and which card currently has focus	Medium

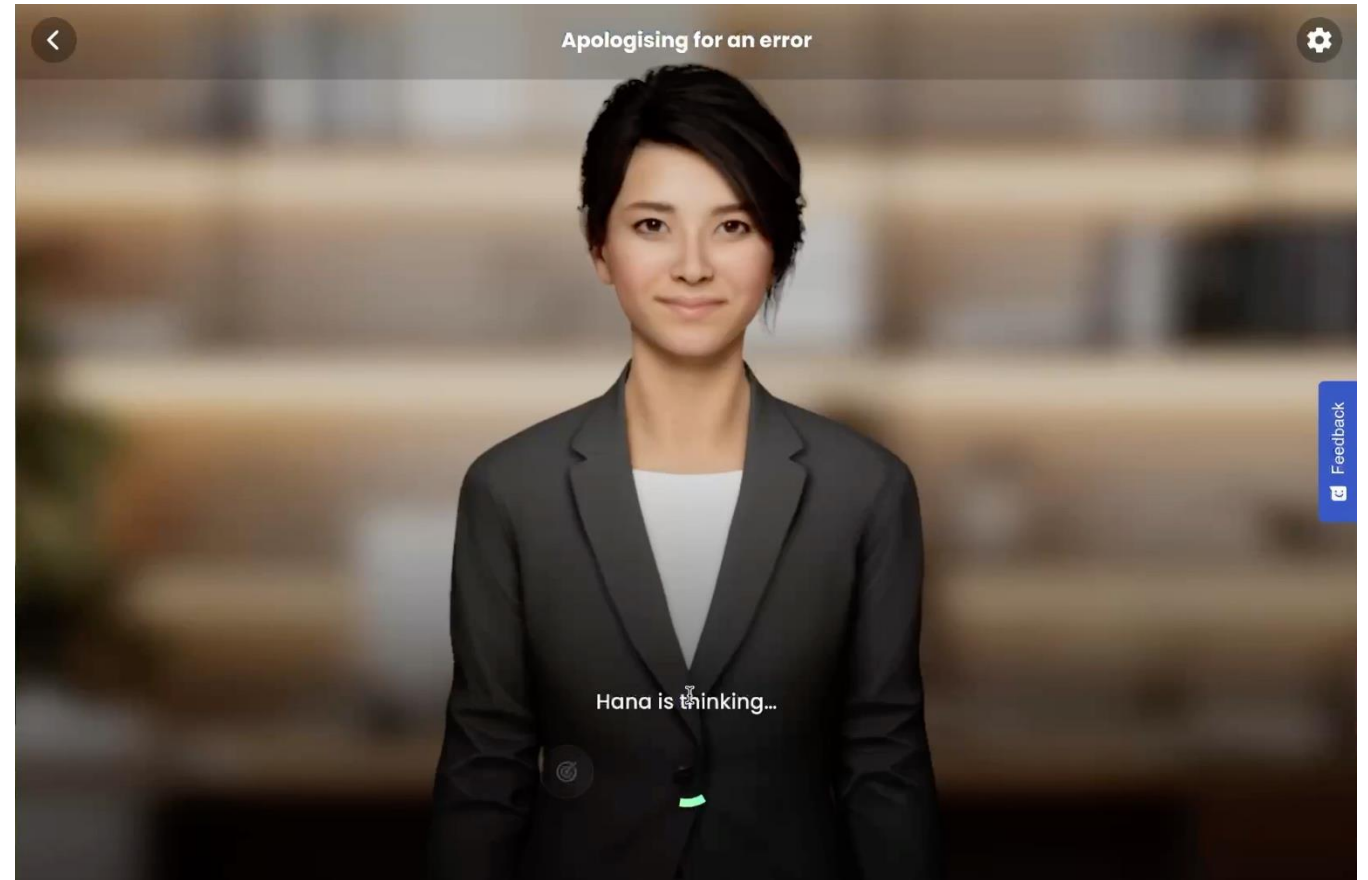
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Step 8

Launch!

The beta version of the tutor tool was launched for English language learners.

- All issues and bugs will be documented and resolved before expanding the tool to other languages.



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