Team Accessibility: Supporting Real-World Accessibility with Games

Emily Amspoker, Li Fan, Sarah Jiang, Abigail Marks, Anshika Nichani, Seik Oh

OVERVIEW

Understanding best practices in terms of web accessibility is key for developing inclusive technologies. Accessibility, however, is often underemphasized in computer science and design programs.

Our system intends to support **college-aged students at Georgia Tech** who are working on a long-term web-based project in understanding and applying accessibility concepts.

LEARNING OBJECTIVES

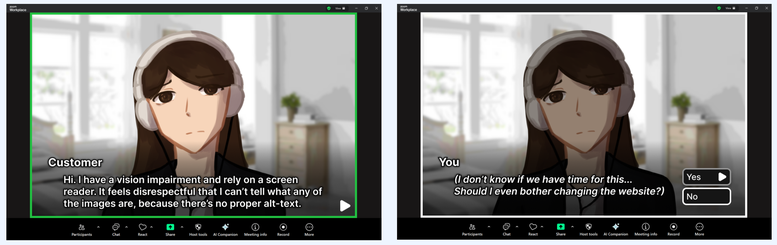
After interacting with our system, students will be able to:

- **Explain** web content accessibility guidelines (WCAG) and their importance in the development of inclusive technologies.
- **Apply WCAG** to evaluate and design and digital learning materials.

DESIGN REQUIREMENTS

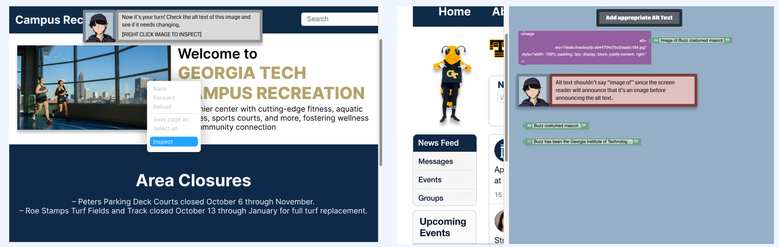
Feature	Justification
Learners choose different issues to solve around Web Content Accessibility Guidelines topics (alt text, color contrast, aria-labels, etc.) from the forum for their fictional app.	The topics and forum (which mirrors real-world user-developer interaction) support an environment where learners can create a deeper understanding with authentic simulations that transfer knowledge with real-life scenarios.
Learners start solving their chosen issue by playing through an interactive narrative where they speak with a fictional user.	The interactive narrative supports meaningful gamification by giving learners important choices and information about real-world barriers
Learners complete mini-game block-based programming puzzles based on real HTML syntax to fix the issue for that	The mini-game acts as a formative assessment and supports reflection on misconceptions through timely feedback.
Based on their narrative choices and success in the puzzles, learners see the impact of accessibility (and inaccessibility) through fictional user reviews and ratings.	This kind of scoring might provide extrinsic motivation for initial engagement while still staying true to real-world software development processes.

FINAL DESIGN

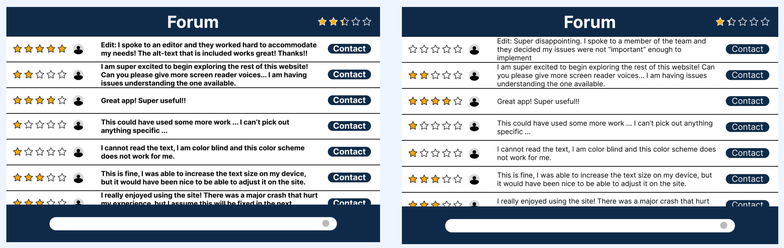


Learners begin a task by talking to a fictional user with accessibility needs and deciding whether or not to fix their issue.

They can receive more scaffolding from interactive dialogue from other developers.



Learners solve block-based programming puzzles based on real HTML syntax, where they are given formative feedback.



Learners receive updated reviews (summative feedback) and increases or decreases in app rating (in-game rewards for extrinsic motivation) based on their choices.

FINDINGS

Participants (N=6) understood accessibility only at a general level (e.g., colorblindness, physical disabilities) and were unfamiliar with key concepts such as alt text, accessibility categories, and how assistive tools function.

- **Conceptual learning increase:** All learners reported clearer understanding of alt text, how screen readers work, and why specific syntax rules matter.
- **Value of categorization**: Learners were very interested in seeing accessibility broken down into more clearer categories.
- **Usability challenges:** Confusions were found with block based interaction, unclear instructions on early pages, and frustration with the typing interactions.
- **Engagement:** Learners were able to immerse themselves in a product team and liked receiving immediate feedback on their decisions.
- **Call for refinement:** Participants wanted clearer guidance, less text-heavy onboarding, and more interaction options.

KEY TAKEAWAYS

Through this project, we learned how to design a meaningful game for accessibility education. In particular, we combined aspects of meaningful gamification (such as a focus on giving players important choices and an emphasis on real-world context) with assessment-centered (e.g. immediate feedback), knowledge-centered (e.g. core principles of accessibility), and learner-centered (e.g. choice-based interaction).

FUTURE ITERATIONS

- Restructure for clearer guidance during tasks.
- Redesign typing interactions for better flow.
- Reduce color dependence.
- Community-centered learning environment integration.