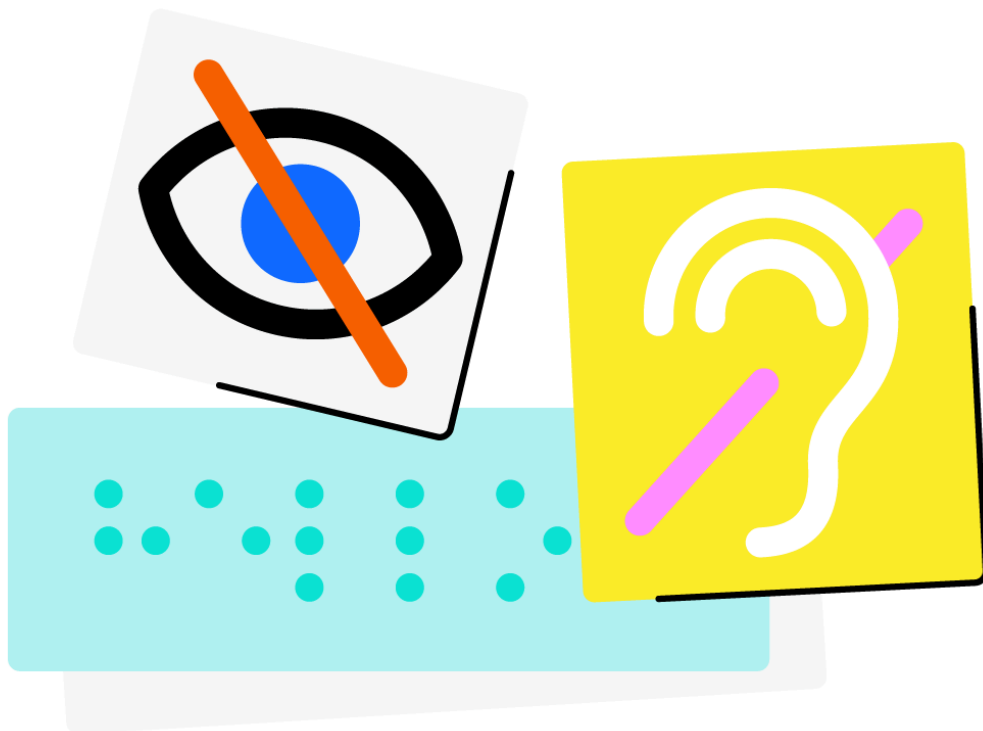


Designing Fair Technology

Textbook

Accessibility



Accessibility in technology means designing digital products so they can be used by all individuals, including those with disabilities. It involves building features that allow users to access content and functionality regardless of their specific needs.

Features of Accessible Programs

Various features can be integrated into programs to improve accessibility. These features focus on providing alternative ways for users to interact with technology.

- **Visual Design:** Program interfaces can be made more accessible through specific design choices. This includes using **high-contrast color schemes** and clear, readable fonts to assist users with visual impairments.
- **Alternative Inputs:** Programs should be functional without a mouse. **Keyboard navigation** allows users to control the program using only a keyboard.
- **Alternative Media:** When content includes audio or video, providing alternative formats is crucial. **Closed captions** and transcripts make audio content accessible to individuals with hearing impairments, while **audio descriptions** narrate visual content for those with visual impairments.

Adaptive Technologies

Adaptive technologies are specialized tools that provide a different way to interact with a computer or device.

- **Screen Readers:** These programs convert on-screen text into synthesized speech, allowing individuals with visual impairments to hear the content.
- **Voice Recognition:** This technology allows users to control a computer or create text using voice commands, which can assist those with physical disabilities.
- **Specialized Hardware:** Adaptive devices include specialized hardware such as **braille keyboards** and **adaptive switches** that replace a standard mouse or keyboard.

Development of Adaptive Technology

Adaptive technology has evolved from expensive, separate hardware to integrated software features. Modern operating systems and applications often include built-in accessibility features like screen readers and voice controls. This integration has made these tools more widely available and easier to use. As technology continues to advance, so does the functionality and availability of these adaptive tools.

Critical Thinking Questions

1. How does the use of keyboard navigation make a program's interface more functional for a wider range of users?
2. What is the purpose of a screen reader, and how does it change the way information is presented to the user?

Questions (5)

1. What does it mean for something to be accessible online?

MULTIPLE CHOICE

Choose the correct answer:

- A. Technology is made so some people can't use it.
- B. Websites, apps, and online content is made for everyone to use.
- C. Websites and apps are designed to require a keyboard and mouse.

2. How can programs be made more accessible?

MULTIPLE CHOICE

Choose the correct answer:

- A. By using complex colors and fonts
- B. By using easy-to-read colors and fonts and including captions on videos
- C. By removing captions on videos

3. Click the 3 examples of adaptive technologies.

SELECT MULTIPLE

Select all that apply:

- A. Screen Reader
- B. Voice Recognition
- C. Braille Keyboards
- D. No Captioning

4. What do closed captions do to help users?

MULTIPLE CHOICE

Choose the correct answer:

- A. They describe images on the screen for visually impaired users
- B. They provide audio descriptions of videos
- C. They show text of spoken words for users who are deaf or hard of hearing
- D. They convert text to braille for users with visual impairments

5. Which technology helps people with visual impairments by reading text aloud?

MULTIPLE CHOICE

Choose the correct answer:

- A. Closed captions
- B. Assistive devices
- C. Voice recognition
- D. Screen readers

Games (3)

1. Accessibility Typing Game


Full Screen

Audio

Instructions

Restart

Pause



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T

here are different featu

2. Accessibility Category Game

Full Screen

Audio

Instructions

Answer Key

Pause

Clear All

Check Order

Attempts: 0

Choose colors and fonts that are easy to read and have good color contrast, like black and white.

Design websites to require a mouse to navigate.

Choose colors and fonts that have low color contrast, like blue and grey.




Include captions and audio on videos to help people with hearing impairments.

Design websites to be keyboard accessible so users can navigate using the keys instead of a mouse.

Add videos without captions.

Ways to make programs more accessible.

Ways to make programs less accessible.



3. Accessibility Matching Game

Full Screen

Audio

Instructions

Answer Key

Pause

Clear All

Check Matches

Attempts: 0

Screen Readers

Closed Captions

Assistive Devices

These show the text being listened to for those with hearing impairments.



Some examples of these are braille keyboards and adaptive switches

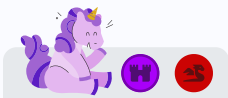


These read text on a screen aloud for those with visual impairments.



Voice Recognition

These controls the computer with voice to help those with physical disabilities.



Blocks Pro Challenges (1)

1. Keyboard-Only Maze

Keyboard-Only Maze

Design a simple maze using the drawing tool. Create a game where your sprite must move through the maze.

Make the game accessible for those who may have a hard time using a mouse, by programming your sprite to respond to all keyboard arrow controls (up, down, right, left). This is so players can move and play the game using only the keyboard.

Be sure to test your game by only using the keyboard arrows. Make any changes you need so it is a smooth and good experience!

Requirements

0/2

4 Motion

4 Event

Blocks must be connected to an Event block in order to pass.

The image shows the Scratch code editor interface. The 'Code' tab is selected, displaying a script for a maze game. The script is as follows:

```
when green flag clicked
  move 10 steps
  turn 15 degrees
  turn 15 degrees
  go to random position
  go to x: 0 y: 0
  glide 1 secs to random position
  glide 1 secs to x: 0 y: 0
  point in direction 90
  point towards mouse-pointer
  change x by 10
  set x to 0
  change y by 10
  set y to 0
  if on edge, bounce
  set rotation style left-right
```

The 'Motion' category is selected in the left sidebar. The 'Sprite' panel on the right shows a cat sprite named 'Sprite1' with a size of 100 and a direction of 90. The 'Stage' panel shows a single backdrop named '1'.

Answer Keys & Solutions

Questions

1. What does it mean for something to be accessible online?

MULTIPLE CHOICE

Correct Answer:

- A. Technology is made so some people can't use it. ✗ Incorrect
- B. Websites, apps, and online content is made for everyone to use. ✓ Correct
- C. Websites and apps are designed to require a keyboard and mouse. ✗ Incorrect

Explanation:

Accessible resources can be used by everyone, including those with disabilities.

2. How can programs be made more accessible?

MULTIPLE CHOICE

Correct Answer:

- A. By using complex colors and fonts ✗ Incorrect
- B. By using easy-to-read colors and fonts and including captions on videos ✓ Correct
- C. By removing captions on videos ✗ Incorrect

Explanation:

Using simple colors, fonts, and captions makes a website more accessible.

3. Click the 3 examples of adaptive technologies.

SELECT MULTIPLE

Correct Answers:

- A. Screen Reader ✓ Correct
- B. Voice Recognition ✓ Correct
- C. Braille Keyboards ✓ Correct

D. No Captioning

✗ Incorrect

Explanation:

Captions are required for an accessible online resource.

4. What do closed captions do to help users?

MULTIPLE CHOICE

Correct Answer:

A. They describe images on the screen for visually impaired users

✗ Incorrect

B. They provide audio descriptions of videos

✗ Incorrect

C. They show text of spoken words for users who are deaf or hard of hearing

✓ Correct

D. They convert text to braille for users with visual impairments

✗ Incorrect

Explanation:

Think about the function described for closed captions.

5. Which technology helps people with visual impairments by reading text aloud?

MULTIPLE CHOICE

Correct Answer:

A. Closed captions

✗ Incorrect

B. Assistive devices

✗ Incorrect

C. Voice recognition

✗ Incorrect

D. Screen readers

✓ Correct

Explanation:

Consider the examples provided under adaptive technologies.

Games

1. Accessibility Typing Game

Typing game - no answer key needed. Students practice typing the provided content.

2. Accessibility Category Game

Category Solutions:

Category 1: Ways to make programs more accessible.

- Choose colors and fonts that are easy to read and have good color contrast, like black and white.
- Include captions and audio on videos to help people with hearing impairments.
- Design websites to be keyboard accessible so users can navigate using the keys instead of a mouse.

Category 2: Ways to make programs less accessible.

- Choose colors and fonts that have low color contrast, like blue and grey.
- Add videos without captions.
- Design websites to require a mouse to navigate.

Scoring:

- Gold: 1 attempts or fewer
- Silver: 2 attempts or fewer
- Bronze: 3 attempts or fewer

Students must sort items into their correct categories.

3. Accessibility Matching Game

Matching Game Solutions:

1. →
2. →
3. →
4. →

Students must drag items from the left to match with corresponding items on the right.