

# Accessible Components: Dropdown Menus

On this page we will be discussing the strengths and pitfalls of dropdown menus in terms of accessibility.

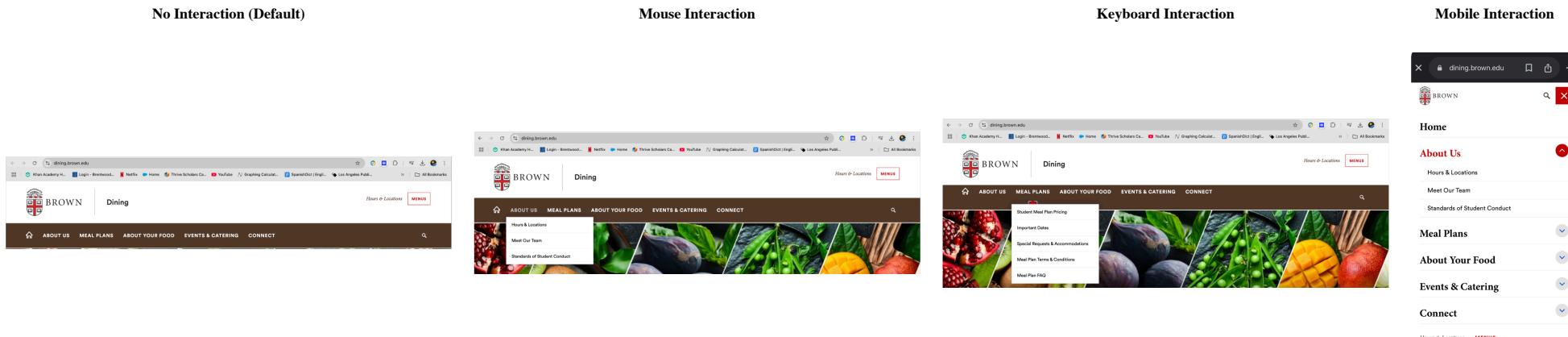
The sites I looked at for my analysis are below:

CNN ▾

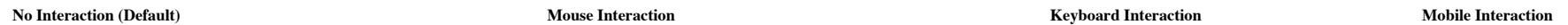
Interact with the sites above! I know I will!

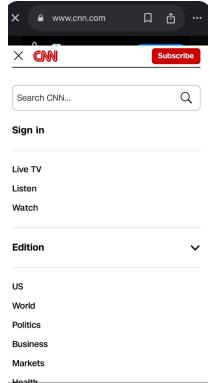
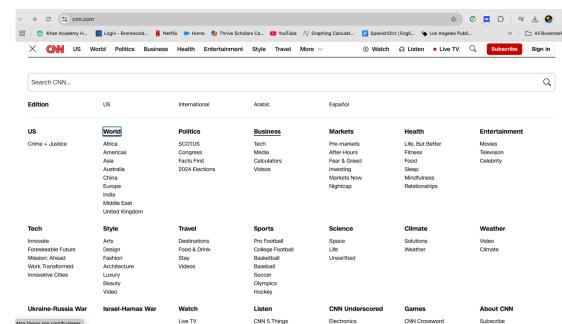
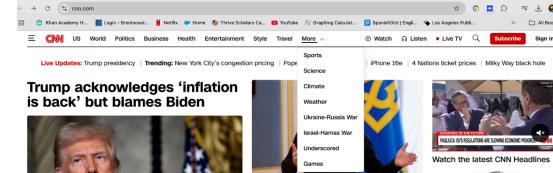
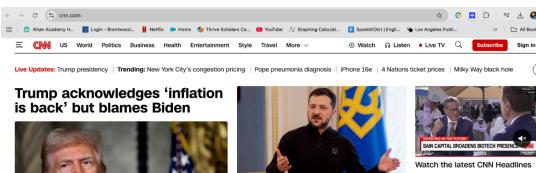
Now below we will examine images of how these websites present dropdown menus via different forms of interaction with the site:

**Brown University Dining Images:**



**CNN Images:**



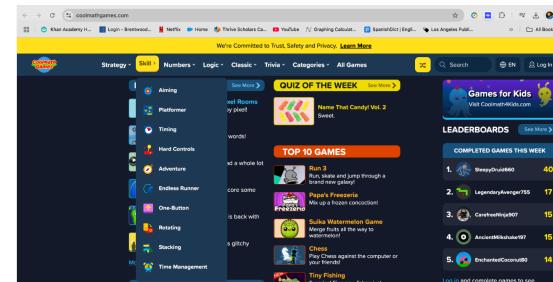


## Cool Math Games Images:

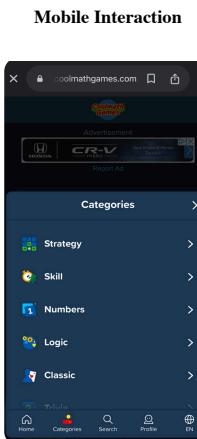
No Interaction (Default)



Mouse Interaction



Keyboard Interaction



Now, let's get into a quick analysis of possible forms of interaction and input from the user and how successful they were across the 3 sites:

Inputs	Brown University Dining	CNN	Cool Math Games
Mouse/Touchpad	<ul style="list-style-type: none"> <li>Hovering over a button reveals the dropdown menu.</li> <li>Turns button text to a darker color.</li> </ul>	<ul style="list-style-type: none"> <li>Hovering over the "More" reveals the dropdown menu.</li> <li>Text gains an underline.</li> </ul>	<ul style="list-style-type: none"> <li>Hovering over a button reveals the dropdown menu.</li> <li>The button gains a yellow background.</li> </ul>
Keyboard	<ul style="list-style-type: none"> <li>Focusing on the keyboard gives the button a blue outline.</li> <li>A separate arrow button is revealed per button to open its dropdown.</li> </ul>	<ul style="list-style-type: none"> <li>Focusing on the keyboard gives the button a blue outline.</li> <li>The keyboard skips over the "More" button completely.</li> <li>You must find an alternate way to access the dropdown (the lines in the upper right corner).</li> </ul>	<ul style="list-style-type: none"> <li>Focusing on the keyboard gives the button a white outline.</li> </ul>
Touch (if available)	<ul style="list-style-type: none"> <li>The dropdown list is a bit hidden behind another button.</li> <li>It functions like a dropdown within a dropdown.</li> </ul>	<ul style="list-style-type: none"> <li>The lines in the upper right corner are the only dropdown option.</li> <li>"More" button does not exist.</li> </ul>	<ul style="list-style-type: none"> <li>The dropdown menu is at the bottom of the UI.</li> <li>Functions more as a drop-up as items are populated above.</li> </ul>

Inputs	Brown University Dining	CNN	Cool Math Games
Accessibility for input	<ul style="list-style-type: none"> <li>2nd most accessible and straightforward.</li> <li>Keyboard navigation is less straightforward due to hidden components.</li> <li>All functionality is transferred.</li> <li>UI is stylish, consistent, and intuitive.</li> </ul>	<ul style="list-style-type: none"> <li>Least accessible and a bit confusing.</li> <li>Inconsistent pattern of dropdown functionality.</li> <li>Mouse functionality doesn't fully transfer to mobile.</li> <li>UI is plain and uninspired.</li> </ul>	<ul style="list-style-type: none"> <li>Most accessible and straightforward across all mediums.</li> <li>All functionality transfers seamlessly.</li> <li>UI is stylish, consistent, and intuitive.</li> </ul>

One of the most important considerations to think about whenever you implement a new component or modify an existing one is how your component will perform in terms of learnability, memorability, and efficiency.

Learnability refers to how learnable an element/component is for a new user who may not have any prior experience with it. Memorability refers to how easy it is for user to remember how to use and navigate the element at hand. For both of these considerations, the intuitive nature and universal recognition of the component and its function play a big role. Lastly, efficiency refers to how quickly and easily a component can complete its function once the user interacts with it.

Let's see how the dropdown menus on the 3 websites do in terms of these considerations:

Let Learnable, Memorable, and Efficient be represented by (L), (M), and (E) respectively.	Brown University Dining	CNN	Cool Math Games
<b>What can the dropdown do?</b>	<ul style="list-style-type: none"> <li>Displays a list of options to the user (L, M, E)</li> <li>Hides features until the user deems them necessary (saving space) (E)</li> <li>Provides visual cues via arrows (M, L, E)</li> <li>Modifies the list of options to appear in the same scheme as UI (M, L, E)</li> </ul>	<ul style="list-style-type: none"> <li>Displays a list of options to the user (L, M, E)</li> <li>Hides features until the user deems them necessary (saving space) (E)</li> <li>Modifies the list of options to appear in the same scheme as UI (M, L, E)</li> </ul>	<ul style="list-style-type: none"> <li>Displays a list of options to the user (L, M, E)</li> <li>Hides features until the user deems them necessary (saving space) (E)</li> <li>Provides visual cues via arrows (M, L, E)</li> <li>Modifies the list of options to appear in the same scheme as UI (M, L, E)</li> </ul>
<b>What can't the dropdown do?</b>	<ul style="list-style-type: none"> <li>Create new options on the fly for user preference or activity</li> <li>Do complex calculations</li> <li>Directly access external data</li> <li>Handle complex user actions</li> </ul>	<ul style="list-style-type: none"> <li>Create new options on the fly for user preference or activity</li> <li>Do complex calculations</li> <li>Directly access external data</li> <li>Handle complex user actions</li> </ul>	<ul style="list-style-type: none"> <li>Create new options on the fly for user preference or activity</li> <li>Do complex calculations</li> <li>Directly access external data</li> <li>Handle complex user actions</li> </ul>

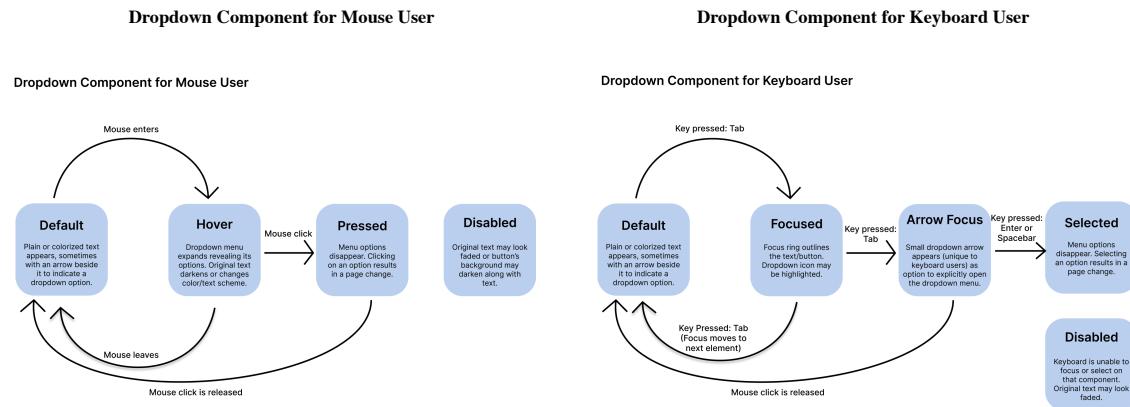
Now, let's get into a quick analysis of the results of interaction and outputs the user receives and how successful they were across the 3 sites:

Outputs	Brown University Dining	CNN	Cool Math Games
<b>Visual</b>	<ul style="list-style-type: none"> <li>The component changes to a darker shade when focused on.</li> <li>The items in the list turn red when focused on.</li> <li>The contrast with a white background works well for the lists.</li> <li>When the brown background meshes with the darkened text, contrast isn't very significant, which can be a concern.</li> <li>When an item in a list is clicked, it opens a new page.</li> <li>The base state is white text on a brown background, which works well.</li> <li>The focus starts with headers and titles before going toward the smaller text and is fairly intuitive.</li> </ul>	<ul style="list-style-type: none"> <li>The base state is black text on a white background, which contrasts well but is a bit plain.</li> <li>When hovering over "More," the text is underlined and the menu opens.</li> <li>The items listed contrast well.</li> <li>When hovered over, the background and text switch palettes and contrast well.</li> <li>Clicking on a list item goes to a new page.</li> <li>The focus starts with headers and titles before going toward the smaller text and is fairly intuitive.</li> </ul>	<ul style="list-style-type: none"> <li>The base state is white text on a blue background, which contrasts well.</li> <li>When hovered over, the background becomes yellow and the text gets dark so the contrast still works.</li> <li>Clicking on a list item goes to a new page.</li> <li>List items pop out when hovered over.</li> <li>The focus starts with headers and titles before going toward the smaller text and is fairly intuitive.</li> </ul>
<b>Audio</b>	<ul style="list-style-type: none"> <li>VoiceOver does a good job of describing the content and giving positional cues.</li> <li>It seems a bit abrupt and the focus order started from a higher level than with keyboard inputs.</li> </ul>	<ul style="list-style-type: none"> <li>The "More" button is ignored by the VoiceOver function, just like with the keyboard functions.</li> <li>It's hard to select text to be read if it was also a link, as the linked URL would open.</li> </ul>	<ul style="list-style-type: none"> <li>VoiceOver can get stuck in certain windows of the site when using tabs to navigate.</li> <li>Some sliding windows with multiple games require continuously clicking to exit.</li> </ul>

	<ul style="list-style-type: none"> <li>Hard to gain contextual cues of location from just the audio.</li> </ul>	<b>Accessible Components: Dropdown Menus</b> <ul style="list-style-type: none"> <li>Navigation from link to link is difficult when trying to get to a target location.</li> <li>VoiceOver immediately starts talking again before you're ready to be oriented with the new page.</li> </ul>	
<b>Tactile (if available)</b>	N/A	N/A	N/A
<b>Accessibility for Output</b>	Output is fairly accessible.	Output is fairly accessible.	Output is fairly accessible.

Now, here is my interpretation of the possible states of the dropdown menu when accessed through mouse and Keyboard interaction.

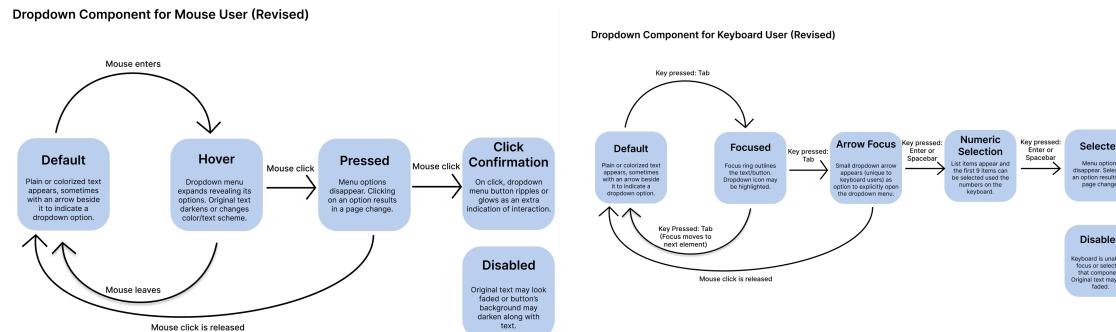
For ease of viewing, I'll use a state diagram to showcase this:



Now, that we have reviewed the state diagrams, here is what I'd to improve the current function of these diagrams:

Dropdown Component for Mouse User (Revised)

Dropdown Component for Keyboard User (Revised)



### Dropdown Component for Mouse User (Revised)

- The main purpose of this component is to improve its accessibility.
- An extra click confirmation state would allow those with low vision and cognitive disabilities to receive extra feedback to indicate the state change.
- This feature is fairly intuitive, so its learnability would be quite high as users use this new system.
- Its intuitive nature would also increase memorability, as ripple confirmation of interaction is small but memorable.
- Efficiency would remain unaffected by this change.

### Dropdown Component for Keyboard User (Revised)

- The main purpose of this component is to improve its efficiency.
- By offering a quicker way to the preferred menu item, you greatly decrease the time it takes to navigate the web page to the dropdown destination in mind.
- This feature is quite intuitive which means that learnability would be high.
- It's useful in almost all scenarios involving a dropdown menu, making it memorable.

## Final Reflection on Dropdown Menu Usability Accessibility

- The dropdown menu component's strengths come from its universal familiarity and recognition that it's gained from consistent use throughout the internet. It's very space-efficient and only expands its menu options when needed. Keyboard access is easy to implement and screen reader support works well for this component.
- Adding the click confirmation state enhances accessibility via the immediate feedback the user is given when clicking on the menu. From the visual ripple to a possible auditory cue to confirm the user's actions, the usability of the component improves greatly.
- This resolves the "mismatch" between how those with motor and/or visual impairments can interact with technology and how they are expected to interact by developers. Now they can rest easy knowing that their click was successful rather than second-guessing their actions if the dropdown menu is slow to render.

Today, using a mouse to navigate buttons and components on the internet has become standard practice. As a result, when we think of maximizing accessibility a lot of the effort UX engineers put into making progress in this area goes towards that form of interaction, leaving others neglected. An example of this can be seen in the universal design of the mouse and contrast considerations for aesthetic purposes and those with impaired vision. The black center with a white outline with a thick yet subtle shadow points to the developers considering how the mouse would look as it traversed a page with any combination of colors. Another example that showcases other neglected components can be seen with keyboard interaction and how certain components aren't accessible the way they would be via mouse. This can be seen in an unintuitive focus order of elements or in some clickable elements being skipped entirely by the keyboard, leaving fewer options for those who can't rely on other forms of interaction.