**Colors, Sounds, and Motion**

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# Colors, Sounds, and Motion

Colors and sounds can have a profound impact on a user’s experience while using an application. Colors and sounds affect a user’s perception of applications, and if not appropriately considered, they can have a lasting impact on whether users will want to use a specific application for whatever purpose it may serve. The following is an analysis of colors and sound, their importance and effects when designing user interfaces, and how this is informative to our own approach to interface design.

There are many ways that color can be used effectively in interface designs. One way is by ensuring that the text displayed by an application is an appropriate color in contrast to its background to help ensure it is legible by users (Apple Inc., 2023). How color is used can have a variety of meanings which include helping to express hierarchy, give meaning to specific elements or indicate their status, and even helps to establish a presence for a brand (Google LLC, n.d). Similarly, by limiting the use of color in an app, items that are colored receive more attention, providing specific meaning to the items that color is given (Google LLC, n.d).

The level of user engagement or interest can be changed with color in a variety of ways. Color themes can be applied to help indicate elements that have greater importance, for example, stronger color contrasts can be applied to bring attention to important events (Google LLC, n.d). Color can also be used to bring attention to or emphasize brand presence, for example, using bold colors to convey a sense of energy and excitement (Google LLC, n.d). When new features are available or have not yet been seen or utilized by users, these features can be highlighted which helps to shift or guide the users focus to the available feature(s) (Google LLC, n.d).

The use of color has been used to help users achieve goals within an app. As previously mentioned, users can be guided through an app to help them achieve specific goals by highlighting functions that the user needs to accomplish which will lead them to their desired end goal. Similarly, if for example a user is filling out a form and misses an input field and selects to submit the form, the input field missing information could be highlighted with a red border indicating that field is missing information. This will draw the attention of the user back to this text field where they can then make the appropriate changes and resubmit the form. Another way that color can be used to engage users is for example when a user selects something, the selected item changes color to indicate that the element has in fact been selected. Similarly, if a user is looking at a list of options, if there are options in a list that a user has already selected or the option is not currently available for use, the item can be greyed out indicating that the item cannot be selected compared to other options which may appear in a contrasted color to indicate they can be selected.

Research informs my approach to designing with color by helping me to understand multiple perspectives as it relates to color and interface design, how it can be used to help users navigate applications, and even alert them or guide them to important or significant information. By applying methods I have learned about through research, I will likely be able to capture the attention and engage my users in a more informative or interactive way to help users achieve their goals that the app seeks to provide. By applying best practices that I have learned, I am able to ensure I am capturing the largest number of users possible, across multiple platforms/devices, also including users who may have accessibility needs. The greater the number of people who can use the app, the better results the application will see.

While much of the information of a user interface is given visually, sound can be used to enhance or expand upon how this information is interpreted and guides users effectively through their experience. They are often thought of most when considering the aesthetics of a user experience, but they are also used to help inform users of when they have made correct or incorrect choices, to notify or inform users of specific events, play music, express emotion, or even to teach users about specific interactions (Google LLC, n.d). Music can be used to help tell a story or to express the overall mood for a specific scenario in a user interface, especially when played with specific images or motions (Google, LLC, n.d). Another great way that users can be guided through their experience is by utilizing voice to communicate information such as instructions that may help to facilitate what the user is trying to accomplish without the user having to find additional information about how to do something. There exists a large variety of devices that incorporate sound into their functionality such as personal computers, phones, tablets, or even modern vehicles such as cars equipped with voice capabilities.

Sounds are shown to work well when they are informative, honest, and reassuring (Google LLC, n.d). They can be used to help enrich the user experience and at the same time serve to inform the user of missed opportunities or when a specific event has finished such as downloading or uploading a file (Foureaux, 2023). When used appropriately, these sounds can help a user navigate an app by letting the user know if a task has been completed or not by making the appropriate sound when the user attempts to go to the next task. No matter what the sound, it should serve a purpose and the actual sound should coincide with the type of event that occurs when the sound is played. If a user tries to submit a form that is missing required information, it can play a sound that would coincide with something being wrong. Similarly, when a user accomplished tasks or goals within an app, the app can play a sound that is positive and indicative that the user has accomplished the task/goal. I believe one aspect of sound design that could be better implemented to help a user reach a goal is to include the use of voice assist, especially in circumstances where a user has multiple failed attempts when trying to complete a task. The voice assist could better explain what the user is doing wrong and provide clearer feedback for what needs to be done for the user to move forward, similar to visual aids that are provided when users have problems completing tasks/goals.

Researching about sound design helps inform my own approach to designing with sound by helping me to better understand when, how, and why sounds, if any should be utilized during UI/UX design. If I am unable to appropriately use sounds, it is likely that the user experiences I create will be negative or mislead users from accomplishing their desired tasks/goals. Additionally, it should be taken into consideration that sound can have a profound impact on users, especially for users who may be visually impaired and rely heavily on the use of sound to help them accomplish tasks. If sounds are used improperly, this could cause users to do things they may not wish to do.

When designing user interfaces and user experiences, incorporating sound and color can have their limitations. Designers must take into consideration that certain colors have specific and sometimes universal meanings such as green for go and red for stop. Similarly, a horn sound would be indicative of something bad or the need to stop or bring attention to, while a ringing or pinging sound is indicative of something good or positive happening. It is also important to note that depending on the situation, neither color, sound, or both can always convey the meaning of a message or its importance. It is essential that a designer can convey the importance of events using as many sensory applications as possible, for example visual and sound, while at the same time ensuring that the information conveyed is not an overload to the user. When considering how I will factor these limitations into consideration, and how it shifts my design approach is that I think when I begin designing, I should start off with a less is more type of approach that way I do not overwhelm the user with sounds or color that can take away from the information being presented and the overall user experience. Through testing and prototyping, I can begin to incorporate or take an iterative/agile approach to make necessary changes where needed.

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