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<td>Author(s)</td>
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THE SHAME OF BUTTONS: “BUTTON-LESS” METAPHORS IN CBL DESIGN

Angela F. L. Wong, Der-Thanq Chen & Jing-Fong Hsu
Nanyang Technological University, Singapore

Abstract: The mechanism for navigation and interaction in CBL programs are often facilitated by the use of buttons. Theoretically, these buttons should be compatible with the metaphor that is being presented in the design. However, based on our observations, these buttons are often not consistent within a CBL package itself and often do not match the content that they are intended to present. For example, navigational buttons, such as “next” and “previous” are compatible with the “Book” or “Stack” metaphors, because in such metaphors, these relationships exist. However, if a house metaphor is used to connote different topic areas behind different rooms, “next” and “previous” becomes meaningless. It would be more metaphorically appropriate, if they are replaced by doors leading to rooms in the scene. Hence, it is our contention that these distinct “buttons” can easily be made “button-less” by replacing them with objects in the scene. To illustrate these points, we use different versions of student CBL projects to show how designs based on the button metaphor can be easily converted into “button-less” design formats. Finally, we highlight the importance of using appropriate and consistent metaphors in CBL design and suggest some ways to help identify discrepancies in the choice of metaphors.

Introduction

In this paper, we focus on one of the most common mistakes made by beginning CBL designers, the use of buttons, and suggest how it can be made “button-less.” What we are arguing against are those rectangular, round or other shapes (with or without icons or text in them) placed at different corners or in a palette on the screen. We suggest that instead of using these distinctive shapes, we should use objects in the scene. For example, use books on a bookshelf, or doors in a house. Because these objects are seemingly integrated with the scene and even though they functionally act as buttons, they are no longer perceived by users as buttons per se. Rather they are perceived as activators for navigation or interaction. We term these metaphorically appropriate buttons “button-less.”

It is our contention that distinct “buttons” can easily be made “button-less” by replacing them with more meaningful objects in the scene. This is illustrated through the use of student CBL projects. We conclude this paper by highlighting the importance of using appropriate and consistent metaphors in CBL design.

Buttons in Metaphors

An essential element of a well-designed user-interface is the presentation of a clear conceptual model. According to Galitz (1993), “a conceptual or mental model of a system is what a person gradually develops in order to understand, explain, and interact with the computer.” “A well-established mental model of a system enables a person to predict the necessary actions to do things if the necessary action has been forgotten or has not yet been encountered” (p22). The conceptual model for a more complicated system such as a wordprocessor could be quite complex and would require a more elaborate approach to the design. On the contrary, in the design of simple systems such as CBL programs, the operation of the system is relatively simple and the focus usually is on
the contents. Therefore, a simpler approach may be employed. One of the simpler approaches in designing CBL interfaces is the use of metaphors.

The essence of metaphor is, as defined by Lakoff and Johnson (1980) as, “understanding and experiencing one kind of thing in terms of another” (p5). A well-designed metaphor presents the conceptual model in a way that is familiar to the user’s real life experience, and thus eases the operation of use. A well-designed metaphor is intuitive and it lessens users’ cognitive load so that they may easily reason out the operation instead of remembering arbitrarily defined procedures. Consequently, a good metaphor maintains the user’s interest to explore further.

Unfortunately, metaphors have problems in mapping the computer function exactly with the real life experience (Nielsen, 1993). For example, the desktop metaphor of the computer system does not completely map the real desktop, because in real life, one does not put a trash bin on top of the desk (Vertelney, Arent, & Lieberman, 1990). To minimize this problem, extra care should be taken to present the metaphor as a simplified model of a more detailed conceptual model of the system (Nielsen, 1990). Among the concerns to be taken into consideration is the assurance of consistency of different metaphors in a CBL program itself.

One specific problem area in CBL design is the use of the button metaphor. Buttons in CBL programs are mostly used in activating interaction or for navigation. For example, by clicking a “question” button, the user is asked to supply answers to a question. By clicking an “arrow” button pointing to the right, the user is taken to the next page of the information under study. That is, the mechanism for navigation and interaction in CBL programs are often facilitated by the use of buttons.

Theoretically, these buttons should be compatible with the metaphor that is being presented in the design. However, based on our observations, these button metaphors are often not consistent within a CBL package itself and often do not match the content that they are intended to present.

In the following section we introduce characteristics of good “button-less” metaphors. Under each characteristic we use different versions of student CBL projects to show some of the commonly observed problems in the use of buttons and suggest how they can be easily revised and converted into “button-less” design formats.

**Characteristics of good “button-less” metaphors**

Characteristics of good conceptual models and metaphors have been suggested by various researchers. For example, Galitz (1993) suggests that a good conceptual model can be achieved by (a) providing design consistency, (b) drawing physical analogies, (c) complying with expectancies and stereotypes, (d) providing action-response compatibility, and (e) providing necessary and proper feedback. Because the focus of this paper is on the design of buttons, we confine the discussion to two of the most common mistakes made by beginning CBL designers. They are ensuring consistency and complying with prior experience.

**Ensuring consistency**

In CBL metaphor design, we suggest different metaphors in the same CBL package should be consistent with one another. The following example will illustrate this point.

The “next,” “previous” and “home” metaphors are widely used by CBL designers. Usually these buttons are illustrated as an arrow pointing to the right, an arrow to the left, and an icon of a house,
respectively. Functionally, these navigational buttons are compatible with the “book” metaphor, because in such a metaphor, these relationships exist. However, these buttons are metaphorically confusing, because in real life one does not click the arrow to turn a page of a book or click the house to go to the contents page (Figure 1).

Figure 1: A book with arrows

![Figure 1: A book with arrows](image)

We recommend the arrows be replaced by “flips” at corners of the book. The user may click the “flip” on the right to go to the next page and the “flip” on the left to go to the previous page. However, if the next and previous design are not sufficient to help the user to move around the CBL package, a “tab” metaphor may be used to enhance the “flip” metaphor. In the tab metaphor, the user may click the tabs on the margin to go to different sections of the book (Figure 2).

Figure 2: A revised “next” & “previous” metaphor using “flips” and “tabs”

![Figure 2: A revised “next” & “previous” metaphor using “flips” and “tabs”](image)

Note that the “book” metaphor is appropriate if topics are arranged in a sequential manner. However, if a house metaphor is used to connote different topic areas behind different rooms, “next” and “previous” becomes meaningless. In such case, it would be more metaphorically appropriate, if they are replaced by doors leading to rooms in the scene.

To reiterate, the spirit of the above example is to ensure consistency. If metaphors in the same package do not match with one another, they will give the user confusing messages and thus may mislead the user to make decisions not according to what the designer originally intended.
Complying with prior experience

Buttons should also comply with the users’ prior experience. Consider the following design seen commonly in an electronic book. The right-hand side is the text and the left-hand side is the illustration. Usually when the user turns to a particular page, the text will be automatically read aloud. After which, the user may start interacting with the illustration or require the computer to read the text again. In most design, the repeat function is presented using a speaker by the side of the first sentence of the text. If users wish to listen to the text again, they simply click the speaker (Figure 3).

![Figure 3: A common way to use the speaker to repeat the sound](image)

We contend that the speaker is metaphorically inappropriate. The problem is that not only the speaker metaphor is not compatible with the book metaphor, but also incompatible with the user’s prior experience. In real life there is no speaker in a book and the speaker does not read to the child. In real life, if a child is reading a book and he/she wants somebody to read the text, he/she calls the person (e.g., the mother) to do so. Therefore, we suggest that the speaker be taken out from the book. Instead, a mother (or a father) is by the side of the book. When the child feels the need for someone to read the text to him/her again, he/she simply clicks the mother, not just an icon, but a mother in the screen (Figure 4).

![Figure 4: A revised design for the “mother” to read to the child](image)
Conclusion

In short, we have argued not to use buttons with distinct shapes or icons to activate navigation or interaction. We have showed examples of how a design based on the button metaphor, can be improved by incorporating the “button-less” design format.

Finally, we would like to point out one possible criticism of the “button-less” fully “immersion” design format. That is, because of the integration of active objects into the scene, the user may not be able to discern hot (clickable) spots from other contextual objects on the screen. In this case, extra care should be taken into consideration. For example, the hot spots should be highlighted or made salient, and when the mouse is moved over them, there should be some sort of indication to the user that it is a “button.” This may suggest further investigation into the issue of how to strike a balance between being too explicit or too implicit in the design of “button-less” metaphors.

References


