Navigation in User Interface Design:

Enhancing the Users Navigation Experience in e-learning

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Abstract

Some components of user interface design consist of content, input controls, navigation, graphics, and animation. Based on these components, navigation can be identified as one of the most important components and should be well thought out. Navigation in user interface design can be broken down into its own components. The components of navigation in user interface design consist of navigation layout, navigation skills, navigation path, navigation mode, navigation aids, and navigation styles. I am going to examine each of these components further to uncover what needs to be addressed in each area of navigation to properly enhance the users' navigation experience as it relates to eLearning.

Navigation Layout

The first component of navigation I addressed was navigation layout. When designing the navigation layout in user interface design, the designer must consider the following aspects; button locations, color scheme, and size. A study was done to survey students using graduate level modules based on the navigation layout. For this study, the navigation menu and layout was designed to resemble the popular Microsoft Outlook, and the color scheme was chosen to achieve a professional look. The button locations were based on popularity with the "home" button first, followed by other buttons. The results of this survey stated that the navigation of this module was made easy since it resembled Microsoft Outlook, as well as allowing students to access the information they wanted by clicking the respective buttons. (Ong,2006) This study was beneficial, because it shows the logic of familiarity. When people are used to a certain program layout and user interface design, then if they are introduced to a new program similar to the one they are used to, they are going to be more successful at navigating it. Users will feel

more confident diving into learning a new program if it has similar characteristics, rather than learning the basics of something new on top of learning how to navigate it. This logic also applies to e-learning. When an instructional designer is designing e-learning, their main goal is to deliver a lesson to the learner. Introducing the information to the learner, and allowing the learner to properly retain the information should be done by designing a user friendly user interface. A user friendly interface should consist of an easy to read font, an ascetically pleasing color scheme, and a navigation pattern that will not confuse the learner. (Hui, 2015) A navigation pattern that would not confuse the learner should include button locations that are not out of the ordinary. For example, the learner should be able to exit at any time, and not have to search for the exit button. There should also be buttons to return to the last location, move forward, and main menu. These buttons should also be labeled straightforward and not disguised as another button, for example to return to the previous screen should be labeled as 'back' or 'previous', whereas advancing to the next slide should be labeled as 'next' or 'continue'. (Dikbas, 2014) These labels should also be clear and easy to read and identify to the user. Therefore, with all things considered, the designer should keep similar layouts to programs already used by the learner, as well as keep the navigation patterns simple and easy to follow.

Navigation Skills

When considering the targeted learner when designing user interface, it is important to consider the navigation skill level of the learner, especially when designing for e-learning. To examine this thought further, a study was done, this study examined how knowledge of metacognitive strategies and navigation skills mediate the relationship between online reading activities and printed reading assessment (PRA) and electronic reading assessment (ERA) across 19 countries using the PISA (Programme for International Student Assessment) 2009 database.

(Wu, 2014) It is important to consider the navigation skills of the learner because navigation skills are pivotal to e-learning reading because hyperlinks and search functions are the unique features of reading in a digital environment. An instructional designer should consider the navigation skills when designing the user interface, because there are often links that need to be clicked in order to get to another location, or to learn further information. The study results demonstrated that it is essential to provide ample opportunities for students to perform information-seeking reading activities, which is an incubator for nurturing metacognitive strategy awareness and navigation skills. It is best to create the e-learning navigation based on the skills of the learner, therefore some e-learning may need to have more complexity for the targeted learner, where other e-learning may need to be very basic geared towards a different targeted learner. Therefore, the instructional designer should consider the learners navigation skills before they generate the user interface design.

<center>Navigation Path</center>

Navigation paths can be classified as simple and complex. Several studies have shown that simple hierarchical structures facilitate information retrieval in comparison with more complex network structures because hierarchical organizations seem to facilitate the construction of a mental map of the hypertext. (Puerta, 2012). The more complex navigation path consists of the path length and the path relevance. The navigation path consists of navigation tasks, navigation tasks have been defined as the sequences of actions performed by the searcher in the process of looking for information to satisfy a current information need. (Puerta, 2012) When instructional designers are designing e-learning, they need to consider the complexity of the navigation path, based on tasks. The designer must account for the end result being meaningful for the learner, so they know when the learning is over and has run its course, rather than being

led on a path that has no necessary relation to the learning itself. The navigation path needs to be well thought out to complete the e-learning course, so learners are sent in a correct sequence throughout the learning.

Navigation Mode

When considering navigation mode in user interface design, there are two different options, linear navigation and nonlinear navigation. Linear navigation ensures that the decision relative to information processing is in the hands of the instructional designer rather than the learners, whereas nonlinear navigation is believed to provide individuals with learning decisions that allow them to control their sequence and pace while learning the target material. A study focused on examining whether matching navigation mode of the learning environment with learners' preferred navigation mode would facilitate their learning in a web environment. (Hsu, 2009) This study revealed that linear and nonlinear navigation modes had equal effects on learning outcomes. With that being said, navigation mode is not necessarily a critical consideration when designing a user interface for e-learning, but it is important that the instructional designer understand the two modes, and know how to properly execute each.

Navigation Aids

Another navigation factor to consider integrating into user interface design are navigation aids. Navigation aids concern both physical and conceptual mapping of learning paths and resources in a program. Some types of navigation aids consist of timelines, graphs, maps, sequence, and program control. Timelines as related to navigation aids in user interface design for e-learning can be a helpful tool for instructional designers to integrate. When a learner has a timeline of navigation time, and they are able to track their sequence in e-learning, it can relieve stress, and make the learner feel more comfortable knowing exactly where they are at, and what

they still need to complete. Program control is an important navigation aid, because it can allow

users to either speed up, or slow down a program based on pace control, with pace control, the

user would also be able to pause or repeat a certain area. A study was done to research whether

or not more user control in online learning could motivate learners and potentially improve

learning effectiveness. The study results revealed that navigation aids can reduce the cognitive

load of a learner when they uses the program, they can potentially allow learners more control

while not creating learning disorientation. (Leung, 2003)

Navigation Style

Focusing specifically on navigation of user interface design as it relates to e-learning,

there are a few options when choosing a navigation style. The first option is a navigation based

tour. This is one of the more popular navigation styles, especially to learners that are not very

familiar with navigation e-learning. This style guides the learner through the navigation and

buttons from the start with very detailed directions. The second style of e-learning navigation is

no directions based. This style allows learners to navigate by offering cues such as blinking

buttons, assuming that the learner would click it when they are ready to advance to the next slide.

The third e-learning navigation style is called the get started method. This style offers no real

instruction, because it is mostly auto advance based. The first direction is just for the learner to

get started, then the learner is directed to another screen with options that can be navigated

without and real directions or additional help. Another navigation style is simple directions. It is

never a good idea to include no directions for navigation what so ever, because you can never be

sure of who is viewing the e-learning, so it is not safe to assume that they will be able to navigate

on their own (Marković, 2012) Simple navigation directions can consist of text that says to click

next, arrows pointing the next direction, or progressively revealing instructions as they are

needed.

<div align="center">Conclusion</div>

In conclusion, instructional designers need to consider as aspects of navigation in order to

correctly enhance the learners navigation experience while using their e-learning. When

considering the aspects of navigation style, designers must take the factors of similarity related to

other popular programs, aesthetic features, and navigation patterns. Similarity to other programs

is important because learners will be able to navigate most of the e-learning on their own without

added direction or insight, because they are familiar with similar e-learning. Aesthetic features

are important, because the designer should choose a friendly color scheme based on the content,

as well as a font that is easy to read, and appropriate in size. When the font is easy to read, they

will make the navigation buttons easier to locate and from there on navigate. Navigation patterns

are also important, because the designer ultimately wants to learner to be successful and not

confused, which can be achieved by proper navigation layout patterns of sending the learner to

the next slide, or previous slide and not advancing the user to the middle of a program. The

navigation skills of the targeted learner is another aspect that must be thoughtfully put together in

order for the targeted learning to achieve success while navigation their e-learning. That can best

be achieved by the designer by deciding on the simplicity or the complexity of the e-learning

activity, and then adjusting based on the targeted learner. Navigation mode also must be thought

out to enhance the navigation experience of the respective learner. The instructional designer

must consider the target audience, and content of the e-learning before they decide the ideal

navigation mode. Based on the target audience and content the designer must decide if

navigation in a liner or nonlinear fashion would be appropriate. Navigation path needs to be

thought out fully to be sure the learners are being sent in a meaningful path throughout the entire learning experience. Navigation aids are the next navigation factor on the list to enhance the learners' navigation experience. Navigations aid allot for a more comfortable e-learning experience by knowing how far along they are at into the e-learning at all times, also with the ability to either speed up, or slow down their learning experience. The last component of navigation in user interface design in order to enhance a learner's e-learning experience for the instructional designer to focus on is the navigation style. Navigation styles that were covered ranged from detailed navigation, to little navigation, to no navigation at all. It is important for instructional designers to decide upon these navigation styles based upon the subject content of the e-learning. Concluding, as an instructional designer if I were to create the ideal navigation experience for a learner, I would create a visually appealing and aesthetically pleasing user interface with a color scheme that properly matched the subject content. I would mirror the navigation layout to a popular program similar to a program that the target learner is familiar with that way they are not overwhelmed, and feel confident entering the e-learning experience. I would also study the target audience to properly asses their learning skills in order to decide how simple or complex to create the navigation. The navigation path I would design would take the learner to each section of the lesson appropriately and not advance them to unnecessary parts of the learning. I would prefer to create a nonlinear navigation experience, because I think that the learner should have full range of navigation in an e-learning program, except in certain situations, such as a training session where it would not be appropriate for the learner to advance without covering the proper information beforehand. I would also include a navigation bar at the bottom of the e-learning allowing the user to always know where they are in an e-learning experience, I believe that relives a lot of stress from a learner by allowing them to know how

much more content they have to complete, and they also will feel comfortable knowing they have the opportunities to speed it up and slow it down. That is a necessary feature, especially if some parts may be a review, while other parts are brand new information. The user may spend less time on something they are familiar with, but may spend double the time on the new material, so being able to go along at their own pace, and navigate back and forth to different areas of the e-learning is a beneficial feature. I also prefer the navigation style of simple directions. I think that the learner is already going to be focused on learning the content, and that they don't need to be learning how to navigate the content. Especially if it is going to be a complex topic, it is important for the simpler directions the better, otherwise the learner will be more likely to be focused on actually getting around the e-learning and not the actual content, and are more likely to become frustrated and possibly give up. Of course each e-learning is unique to the learner, and content being taught, yet I feel those guidelines are a good general rule for instructional designer to follow in order to enhance the learners' e-learning navigation experience

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