

Information Architecture and the Design and Development of eLearning

“The best kind of integration between the user interface and the site architecture occurs when the user is completely unaware of anything other than a smooth experience on the site – the user experience should be seamless” (SitePoint).

Goals of this Paper

The goal of this white paper is to provide a resource for eLearning designers to create training modules like the one described above. In carrying out this goal, this paper will provide a thorough examination and discussion of the concept and application of information architecture (IA); particularly how IA intersects with the creation and development of eLearning. This discussion will focus on defining IA, the benefits of proper IA to an eLearning module and the critical IA components required for successful eLearning. Additionally, suggestions will be made regarding what IA elements should be considered when creating training modules. This paper is designed to act as a resource for instructional and graphic designers presenting composite research, and trends and experiences in the field of IA and eLearning.

Furthermore, a case will be made for the “why” and “how” of IA in terms of design, development, implementation and successful usability. Why is IA important to the success of an eLearning module? How does a designer advance through the steps of project development with IA in mind. I will also examine the general notion of how effective IA can produce a successful eLearning module, positive user experience and overall effective learning.

Who Can Benefit from This paper?

The paper will provide basic definitions, examples and uses for IA; therefore, a beginner in the field of instructional design or graphic design could benefit from this paper. Additionally, anyone on any level creating a digital interface, particularly concerning eLearning will find this paper useful.

Why is this Paper Needed?

With the omnipresence of the internet and related technologies, the amount of information available to the average human being is more than it has even been (Wolf & Bloss, 2000). The task of organizing and presenting this information will become increasingly critical to effective communication for educators, organizations, employers, individuals and academics. Remaining cognizant of ways to effectively package information and share knowledge to one's constituents and clients will keep the knowledge-sharing parties competitive and competent in their fields.

Information Architecture Defined

Definitions for IA range from the academic to the mundane. Exploring these definitions can provide us with a well-rounded understanding of what IA is, what its purpose is and perhaps just as important, what it *isn't*. Here are some examples of the available definitions of IA:

- Information architecture is the art and science of organizing information so that it is findable, manageable and useful including the development of classification schemes, organization structures, navigation schemes, labeling systems, supplementary navigation systems and search capabilities for a website or [digital document] (InsideKnowledge).

- How the information (text, images, menus etc) is structured on a [document] and if it flows and reads nicely (Germworks).
- Information Architecture is a field and approach to designing clear, understandable communications by giving care to structure, context, and presentation of data and information (Nathan).
- The organization of information, in terms of: navigation, layout and search functionality. The goal is to enable users to find the information they are seeking in a clear manner. (Aarvark Media)
- The design, including organization, labeling, and navigation, of systems that help people share information (Microsoft Developer Network).
- Graphic design is concerned with how a page looks. Information architecture design is concerned with how a page reads (Gerry McGovern).

In reviewing the definitions presented, a number of themes are clear: Information Architecture is concerned with:

- Presentation of information in a functional and intuitive manner
- Navigation tools that are intuitive, clear and seamless
- The organization of information as understandable and intuitive
- Facilitating clear communication of knowledge and data
- Contributing to a seamless user experience

Although these definitions are concerned with IA in general, they can easily be applied to eLearning information design. eLearning modules contain, if nothing else, information - the foundation of its core, a knowledge-base of content. Designers of eLearning modules should be concerned with designing easy-to-read layouts, intuitive navigation, and well-organized, aptly formatted and presented content. When planning, designing and developing for eLearning the above factors must be adhered to and used as a guideline for the quality of their work.

Usability

Information architecture is a vital component of defining the user experience.

Considered architecture and sound planning improve the overall usability of a [training module]. There are several things to consider with regard to usability, but it all begins with well-structured information. Usability involves ease of navigation and the ability to find information quickly and easily among other areas/elements of the site.

Information architecture solves these problems at the root instead of at a superficial level. However, the interface that's presented to the user should itself be intuitive and take advantage of the improved site structure if the site is to be usable (Site Point).

Planning for Good Information Architecture

The question remains, how does one plan, and ultimately implement effective information architecture? The literature cites two core procedures for ensuring that your digital product possesses an ease of navigation, intuitive design and smooth user experience: **wireframing** and **storyboarding**. Although these terms are commonly applied to creating and designing websites, they can certainly be used to plan an eLearning module in terms of user interface, navigation, resources, button positions, site maps, and even content.

Wireframing

According to Grokdotcom,

Wireframing is a skeletal rendering of every click-through possibility on your site - a text-only "action," "decision" or "experience" model. Its purpose is to maintain the flow of your specific logical and business functions by identifying all the entry and exit points your users will experience on every page of your site. The wireframe provides the outline for your storyboard, which easily can be fleshed-out after all iterations of the wireframe are complete...the wireframe guides every design, information architecture, navigation, usability and content consideration.

The value of wireframing described here is undoubtedly evident in designing eLearning. Factors like predicting “every possible click-through” of your user, prevents a learner from hitting a brick wall in their navigation, which can preclude user dissatisfaction and possible attrition. Furthermore, creating a logical “flow” to and from the page is critical to a sound user experience, lest the user become confused, frustrated or bored. Additionally, identifying and specifying “entry and exit points” for every page on the site is critical. For example, graphics, buttons or text which directs the user on what action to take once a task is complete is crucial to a good user experience. This could be in the form of a “next arrow”, a “home” icon, “chapter” buttons (see chunking for more on this), etc. And the placement of these items, of course, is critical, where these exit signs are easily visible. Moreover, referring back to the elements of good IA suggested in the definitions above, wireframing allows designers to plan for organization structures of the information, menu considerations and text/image placement on the page.

Wireframing is part of the planning stage that outlines and designs these elements before development begins, in real text language, preventing user dead ends before they happen.

Chunking and Organizing of Information

In the wireframing phase of the planning process, an identification of how the content can be “chunked” should occur. Chunking information means to organize the large content that will be taught into smaller containers of information. This style of content presentation has a number of benefits including: making the information easier to navigate through, easier to remember (Miller, 1956), and providing a sound

platform for general organization and placement. Additionally, segmenting the information into categories that make sense to the user is important (University of Sydney). For example, if creating an eLearning module for new students of auto mechanics, then the language and categories should be reflective of these users vocabulary and aptitude.

Deciding what and how to organize the content of your module is a key component of your wireframing procedure, as it will allow for a more smooth and effective experience for your learners. Due to the information architecture of your subsequent categories, learners will become more aware of where to find the relevant information as well as identify any hierarchy or priority within these segmented containers of information (University of Sydney).

Storyboarding

The distinction between a wireframe and storyboard is critical, and the two cannot be merged: wireframing defines the "what" of the creative process while storyboarding tackles the "how." The importance of maintaining distinct roles for phases of an undertaking is not a new idea, and Richard Wurman reiterates, "The resulting storyboard represents all the subsequent decisions pertaining to development and design, grounded in the structure of the wireframe" (as quoted from Grokdotcom). With regard to storyboarding, the "how" determines *how* the information and content will be structured, *how* will the content be communicated, and *how* will the elements of the page be presented. The storyboard uses the outline provided in the wireframe to progress the design to the next level, making it the creation more "three-dimensional" where the actions prescribed, the elements shown and the content

proposed is flushed out to describe how these elements will interact with each other and form a complete product.

Planning and Preparation Criteria

The Australian Information Management has created a checklist for good planning when creating a digital document. These items can be referred to before, during and after designing your wireframe, storyboard and your final product:

- Identify the [learning] goals of the [module]
- Identify the target audience and their needs
- Determine what services, functionality or information will be provided via the [module]
- Describe how users will interact with the [module] to meet their needs
- Consider what type of structure will be appropriate

Navigation and Information Architecture Design

When designing a storyboard or wireframe for your IA, an eLearning designer should carefully consider their navigational design. Sound navigational elements will ensure that users of the training will have a learning experience that is seamless for finding and accessing information, navigating from page to page and easily identifying relevant elements of the module.

The navigational elements of IA design that I will discuss are:

1. Navigation: Defined and deconstructed.
 - a. Global Navigation

- b. Placement of Navigation
 - c. Supplemental Navigation
2. Site Maps
 3. Guides

Navigation

According to the Australian Information Management Office, navigation is both the representation of the information architecture (the structure) of a site, and the mechanism by which users move around the site. Good navigation allows users to easily answer the following questions for every page of the site:

- What page am I on?
- Where am I in the module?
- What can I do here?
- Where can I go to from here?
- Where is the information I'm looking for?

Site navigation, the [digital] equivalent of a "table of contents", should help users quickly get to where they want to go (University of Melbourne). The chunking described in the earlier section will dictate what navigational "chapters" could go into your navigational buttons. This segmenting of the content will prove useful in creating your navigation (and supplemental) navigation buttons.

Placement

Moreover, the placement of your navigation is important. An “intuitive” placement of your navigation can mean different things to different users. It has become common practice to place global navigation in one of two places: at the top of the page, at eye level, or on the left pane of the window. With regard to the eye level factor, if positioned at eye level, our eyes and minds do not have to work to find the navigation and we do not have to crane our necks to find the most common tasks (University of Sydney). New and experienced users can find this an intuitive location for navigation. With respect to the left pane, since we are English speakers that read from left to right, having the navigation pane on the left makes more sense to our brains since we will be reading from that direction anyway. Other navigation items (see supplemental navigation below) such as help menus or less commonly used tasks should be placed in less “central” areas such as the lower left or right pane (see Figure 1, blue box, for an example).

The Australian Information Management Office has created a checklist of key things to consider in your navigation including:

- Ensure that users can tell where to go next
- Provide several options for finding information
- Use text rather than graphics for navigation elements
- Apply consistent navigation methods throughout the site
- Ensure that navigational schemes and elements are accessible to people with disabilities and people from culturally and linguistically diverse backgrounds

A good example of an eLearning module that comprises most of these elements is shown below (Figure 1) from Option Six’s VBS Training module. The red box outlines the global navigation structure of this module. The *global navigation* is persistent across the entire site and usually allows easy access to major parts of the site (Australian Information Management Office). The navigation structure shown on this module is easy to find, clearly marked (with text) and indicates to the user what page they are currently on. There are also numerous ways to access other information and perform different tasks, and these elements remain on the page all throughout (see blue box).

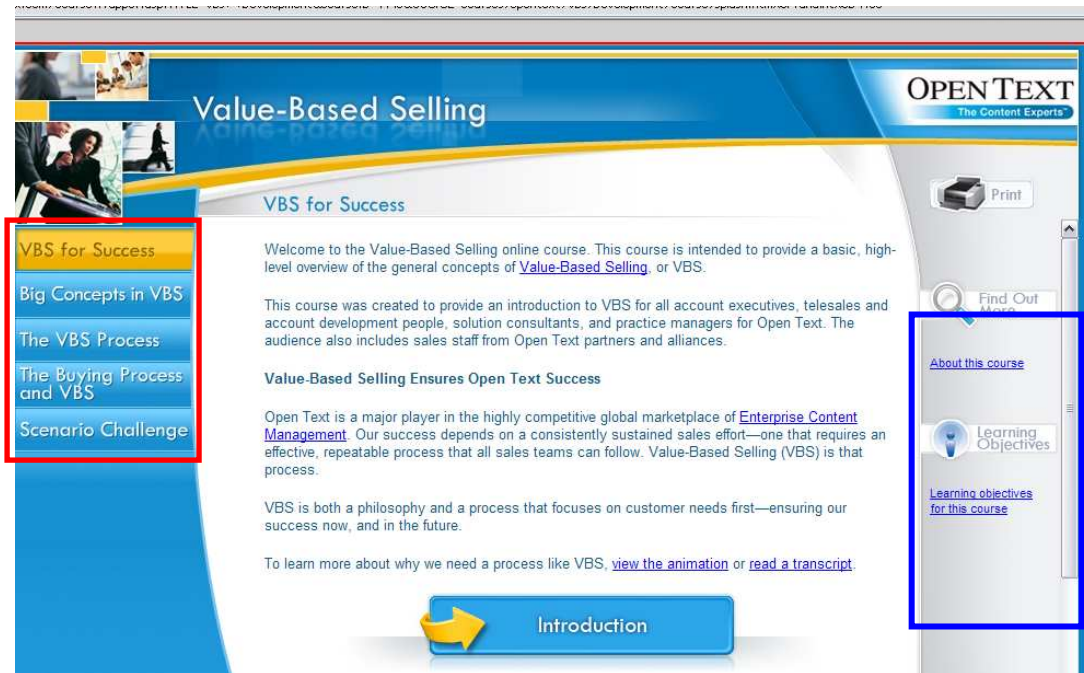


FIGURE 1

Supplemental navigation, by definition, enhances the primary navigation structure (D. Keith Robertson Production). Supplemental navigation techniques provide an alternative, complementary or adjunct view to seeking out information. Using this same module as an example, see Figure 2 for an example of supplemental navigation

components. These include submenus (red box), glossary, help and resources (yellow box) and items that allow the user to easily move to the next page (blue box).



FIGURE 2

These elements allow users to move through the module with ease without any confusion of where to go, or without leaving the user to feel that resources and content is unavailable to them.

Referring back to the “table of contents’ analogy, two commonly used supplemental techniques are **sitemaps** and **guides** that provide such as service. Site maps and guides give users a way to navigate through a site without having to use the global navigation (Boxes and Arrows).

A **site map** is a single page of hyperlinks that lists all the pages of a module, allowing for easy and instant access to the rest of module with a just the click of a mouse. By providing a way to visualize and understand the layout and structure of the site, a site map can help a lost or confused user find their way.

A **guide** is a tool for orienting new (or confused) users as to what the module has to offer and where to find things. Like other navigation tools, the goal here is to prevent users from getting lost, frustrated or confused. Using the Option Six example (Figure 3), the module starts off with a tour of where to find the key elements of the page. They are aptly numbered, while voice narration leads the tour.

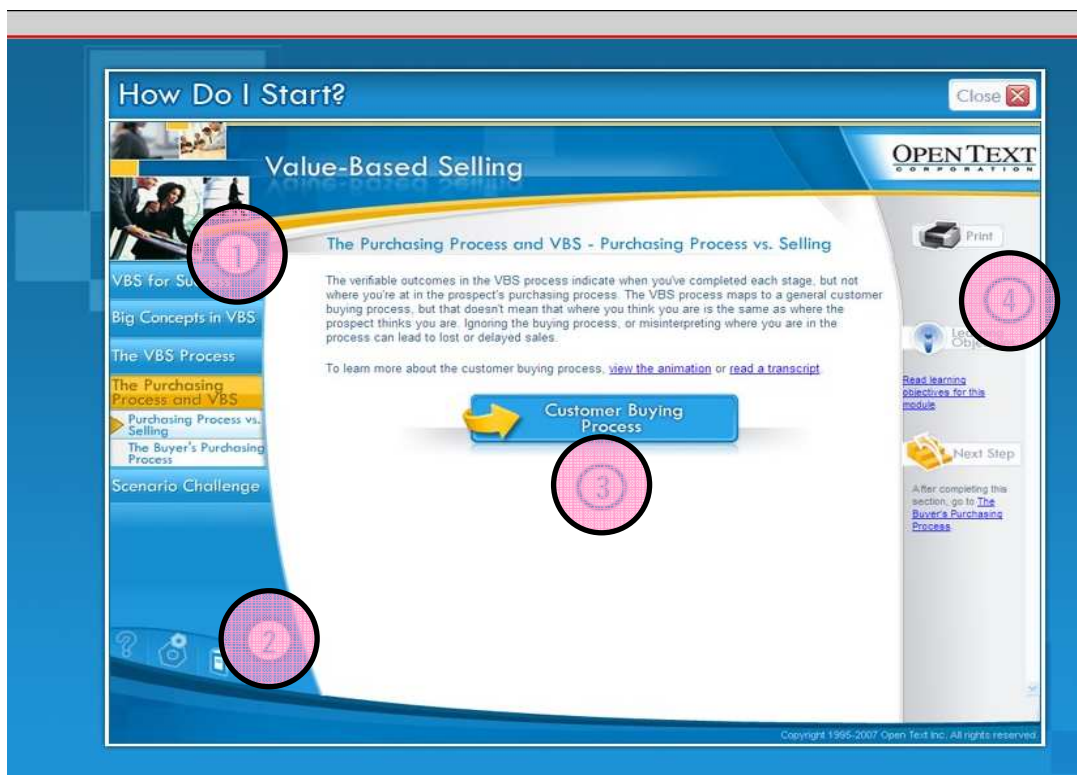


FIGURE 3

Concluding Remarks

Information architecture is the organization and presentation of content on a page. This structuring of content is critical to the quality of a user's experience, particularly in eLearning. As eLearning designers, we must pay heed not only to the content and interactive elements of a module, but we must also recognize the importance of *how* information is presented. Thorough planning of a module's content and how users will interact with it is vital to a successful user experience. Creating an intuitive layout prevents issues like user frustration, confusion or attrition. Navigation structure, categories of content and placement of content are all critical to the information architecture design within eLearning. Sound planning promises for a more seamless user experience which ultimately leads to better quality instruction and a more positive user experience.

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