

# a is for APPLE, b is for BROWSER



## Educational Websites That Satisfy Both Students & Teachers

BY PATRICK OLIVARES

**W**hen the World Wide Web began to gain acceptance in the last decade, many people thought that this new tool would transform the way that information is shared across the global community. Early champions of the Web styled it as the potential virtual library of human knowledge, with the ability to free the exchange of information from geographic and social constraints. Perhaps building on the early uses of the Web, many thought it would blossom into an educational warehouse, where remote villages far from the urban thought centers would be able to access the latest scientific abstracts using only a browser.

More than a decade later, much of this potential has—in theory—been realized. Information on everything from entertainment to science is readily available to even the most casual user. But the Web is less like a library than it is like a marketplace. The focus of many usability and ethnographic studies has been to gain even the slightest edge in making a quick buck. Sadly, the needs of the student and educator have become sidelined, and user-centered design methods and usability testing have not been applied to developing websites for these users. In this article, I hope to shed some light on the development of educational websites and begin building a dialogue between educators and usability practitioners.

### The Challenges of Building Educational Websites

The variety of end users who access educational websites poses development challenges. Users generally fall into three categories: the educator, who may use a site to engage students in a particular topic, the student who uses a site to find specific information, and the casual user guided by curiosity and interest.

### Users of Different Age Groups and Experience

Since the way that we perceive information changes with age and experience, it is important to recognize that the potential user can be anyone from a primary school student to a college professor.

In general, children and novices are

more intuitive and rely more on parallels to the real world rather than on conventions familiar to practiced users. Educators who are conscious of this difference use simple mnemonic devices when teaching their students, often using flash cards and other visually descriptive means of memorization.



This screenshot from National Geographic's "Egypt: Secrets of an Ancient World" exhibit (<http://www.nationalgeographic.com/pyramids/pyramids.html>) demonstrates how common navigation elements (sections A and C) are combined with more visual and narrative navigation elements (section B), which are more engaging for children. While young children may not be concerned with, or understand conventions such as localized or global navigation, they may intuitively understand that by hovering over the pyramids or map, they can be led to more about these two content areas.

The same considerations must be made when developing educational websites—the developer must learn to think like a teacher and present content in simple, expressive ways. Adults, on the other hand, easily process information presented in complex terms using graphs, statistical models, and other methods of visual representation. Reconciling these two different ways of presenting content is difficult, but must be part of the overall plan of any website geared to both age groups.

### Diverse Levels of Interest

No single educational website is going to satisfy all potential users. The most successful educational websites are not the ones that offer all the resources under the sun, but the ones that are so engaging that they inspire a deeper interest in the material being presented.

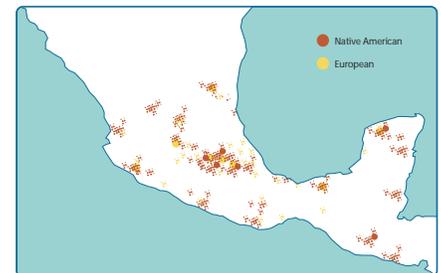
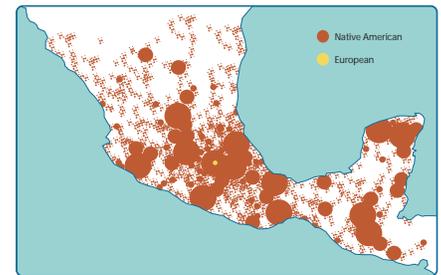
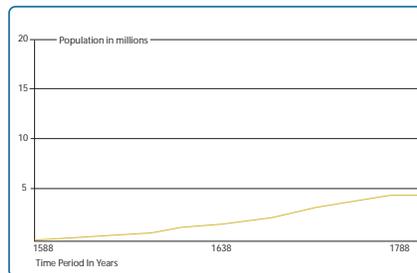
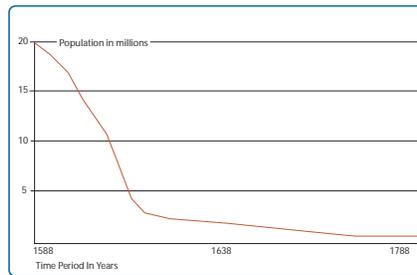
### Information Design

The architecture of educational websites has to accommodate the needs of these three user groups. Navigation elements have to work seamlessly for each type of user, and content has to be geared to the level of understanding of these groups. The responsiveness of children to imagery and color also means that design and layout play an increased role in this type of website. Educational websites are not just alternatives to published materials like books and periodicals—they can be more dynamic and accessible.

## Educational Web Sites from an End-User Perspective

### Teachers and Educators

We all remember the welcome sight of that old movie projector being wheeled into class on a monotonous school day. Most educators will agree that classroom boredom is one of the largest difficulties they face. Websites have become increasingly popular with young students, and, according to the Pew Internet and American Life Project Report, 94 percent of children supplement their studies with time online. Teachers also spend more time online searching for resources that can spark student involvement. From an educator's perspective, a successful website is one that can quickly tie into his or her curriculum, and, at the same time, be general enough to warrant expansion in the classroom. Furthermore, teachers want educational websites to provide students with a learning resource long after they leave the classroom.

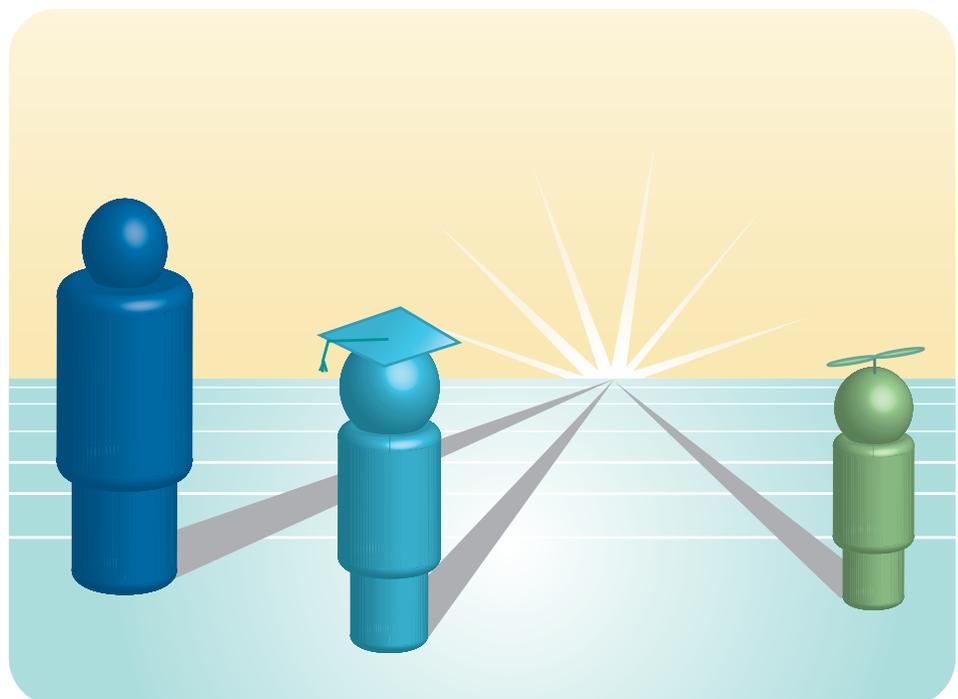


These illustrations show two different types of statistical images used on [www.ancientmexico.com](http://www.ancientmexico.com). The left-hand column shows the initial view prior to the redesign, which is shown in the right-hand column. The statistical maps speak clearly to younger students by using visual representations of information rather than statistical charts. An audience not yet familiar with population demographics can use shape and color to quickly understand the impact that the arrival of Europeans had on the native populations of Mexico.

### Students and Children

According to a recent study from the Nielsen Norman Group, "Usability of Web Sites for Children: 70 Design Guidelines Based on Usability Studies with Kids," children and teenagers prefer visually stimulating content to more in-depth information. Consequently, it's not surprising that the Nielsen Norman Group found that 74 percent of teenagers use the Web to supplement their homework, in part because the

Web is more visually enthralling than textbooks. The shift from traditional material to online content has both positive and negative impacts on student's educational needs. Though arguably more visually engaging and readily available, the reality is that much of the content on the Web does not go through the rigorous scrutiny of subject-matter experts. Young children are especially apt to believe any information that is tailored to their age group. Advertisers have been



aware of this for decades and use this kind of visceral approach to push their products.

As children develop into college students, they will invariably shed some of their inexperience and become more critical of the information sources they use. With this intellectual development, however, comes the need to experiment more in the social aspects of life, and college students increasingly use technology to satisfy their needs socially. It's not surprising that college students stay online long after their chat discussions are over, using the Internet as their primary source of information. Latest statistics suggest that 73 percent of college students, though presumably more critical of the sources, use the Web instead of the library to fulfill their research needs. Educational institutions have become increasingly aware of this trend and, rather than fight a losing battle, they have made their archives available in digital format while providing new Web-based supplements to traditional research and academic debate.

The paradox is that school teachers want educational websites to be jumping off points for studies, while college professors want them to be on par with the information available in libraries. This conflict of needs makes developing these types of sites difficult to manage. The next section provides some quick tips on what I



This screenshot from Wikipedia (<http://en.wikipedia.org>) depicts content in several ways, so it is easy for students and educators to use it. Global navigation (section A) and the left navigation are more adult means of navigation, but do not detract from the body content (section B), which shows links that can be used organically as one peruses information. The Contents (section C), is an interesting way to highlight additional information such as study aids and questions.



have found are successful ways of fulfilling the needs of both groups of users.

### Tips for Developing Educational Websites

The information architecture of an educational website depends on demonstrations and visuals but cannot hinder the ability of more savvy users to access additional content. These users need more complex forms of navigation.

**Use both complex and more graphical navigation within the same site.** Children are more apt to use design elements that represent simple geographic or illustrative notions of navigation. But that is not to say that children do not learn these conventions quickly. I've been shocked more than once by my three-year-old's ability to operate the various interfaces of my household appliances. When you are laying out pages, I suggest that you

include graphical navigation with more common navigation strategies like breadcrumbs and tabs. National Geographic ([www.nationalgeographic.com](http://www.nationalgeographic.com)) frequently uses illustrational navigation to make content come alive for their end-users. This enables children to access content without necessarily needing to understand common web-based conventions.

**Make content engaging for both adults and children, but clearly indicate the intended audience of each type of content.** If there were a simple way to make content engaging for everyone, then I would have found usability's Holy Grail. But one clue is that children are more apt to be interested in narrative imagery and repetition. According to the National Center of Education Statistics (NCES), 90 percent of children between the ages of eleven and seventeen use computers to play games or engage in some other form of entertainment. This probably explains why many children's websites wrap informative content into games and interactive devices. By incorporating your educational needs into games, you can take advantage of a child's natural proclivity for play.

Children process information more slowly than adults, but that doesn't mean that the same website cannot be useful for adults as well. By adding additional content that is designed for an older audience, you can keep both sets of users satisfied. What becomes important, then, is that you clearly identify which areas of your site are designed for younger audiences and which for older audiences.

**Information on any website will grow over time, so create a scalable framework for organizing this content.** The organic quality of an educational website makes it difficult to categorize new areas of content while still making it accessible to the younger audience. Since children are more apt to follow a path through content that strikes them as interesting, it is important that you cross-reference as much content as possible. At the same time, you need to organize your site into content areas that make sense from an older student's perspective as well. Just don't fight the need for the content to exist organically throughout the site.

After you archive a piece of content, refer to it from new content where relevant, but still rely on standard ways of archiving, like search and directory indexes. Wikipedia uses this method perfectly when displaying content for its end users (<http://en.wikipedia.org>).

**Use the public to develop educational site content over time, while remaining true to the goals and functions of the site.** For students, you should add content that brings to the surface more aspects of the content you are presenting. For educators, you should add content that helps them use the site in the classroom. Two of the most constant requests I get from teachers is to post short exams they have found effective with their students and to post articles written by specialists in the field. By adding these items to your site, you allow educators' understanding to influence the overall effectiveness of your site. This provides the benefit of a new source of relevant content, while ensuring that educators are committed to your website through open sharing of information.

**By adding references to all of the resources you use, you will guarantee institutional acceptance.** Numerous educators have contacted me saying that my expansive bibliography was a chief reason that they incorporated my site into their school curriculums. A superintendent of a school system in California once wrote me that although she had found websites with more content, mine was the only one that cited accredited sources. She also mentioned that this helped her students feel more confident that the material they were reading was sound and not motivated by political or commercial interests. Ultimately, the goal of any website is to be seen. By properly crediting sources, you guarantee the success of your educational website while supporting the academic resources that are intrinsic to the content you value. **UX**

### ABOUT PATRIC OLIVARES



**Patrick Olivares** has over a decade of experience developing user interfaces and Web-based applications as a consultant for large corporations. His interest in educational websites began in 1999 when he launched Ancientmexico (<http://www.ancientmexico.com>) as a resource for people interested in Mesoamerican art and archeology. The site has grown steadily since then, becoming a staple for many colleges and universities as well as for primary and high schools. Mr. Olivares has recently abandoned the hectic corporate world of New York City to become the art director and senior usability analyst for E-Tech Solutions in West Chester, PA.

Whether you're writing a product instruction manual or creating a corporate website, you must consider how the end-user will interpret it. After all, how effective is your work if your audience can't understand or use it?

Texas Tech University now offers two online graduate degrees that focus on writing and Web design from the user's perspective: A Master of Arts in Technical Communication and a PhD in Technical Communication and Rhetoric. Discover effective strategies and explore theories in Interface Design, Interactive Design, Usability Testing, and Intercultural Communication. Best of all, both degrees are online, making it easy for you to pursue a degree from wherever you are.

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