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Foundation Stones of Prydain: A Web-Based Bridge between Welsh Mythology and Lloyd Alexander's Prydain Chronicles

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FOUNDATION STONES OF PRYDAIN: A WEB-BASED BRIDGE BETWEEN WELSH MYTHOLOGY AND LLOYD ALEXANDER'S PRYDAIN CHRONICLES

by

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http://cc.usu.edu/~bminson/foundation

Contents

Introduction

My career at Utah State University and particularly in the Professional and Technical Writing emphasis in the English Department has shown me a vast spectrum of areas within the field of technical communication. Several of the various types of work within technical communication came together for my final Honors Thesis and Project, including Web design, information architecture, and usability testing. The planning, creation, testing, and analysis of the website *Foundation Stones of Prydain* (http://cc.usu.edu/~bminson/foundation) constitute the culmination of my work at Utah State University.

Foundation Stones blends the magic of Lloyd Alexander's Prydain Chronicles and their roots in Welsh mythology with the interactivity and power of the World Wide Web. The Internet has the capability to facilitate learning in a way no other medium can. Through a Web browser, a learner can navigate quickly among and sort through pieces of information, deciding what is desirable or useful and what is not. In the hands of a skilled, deliberate communicator, interactive media can foster efficient and memorable learning experiences.

Foundation Stones stands as a bridge not only between mythology and modern fantasy fiction, but between the technical and the creative. A common stereotype placed on technical communicators is that all we do is write instruction manuals—a dry, monotonous job at best. However, technical communication, which is concerned primarily with the presentation of information in a usable, accessible fashion, requires a high degree of creativity along with practical knowledge. *Foundation Stones* is the result of my attempt to present information in an inviting, engaging, and creative way.

Overview

In the last decade, Web design has become an involved process; before that, people flocked for real estate on the World Wide Web as frontier families did for land in the Midwestern United States during the early to mid-1800s. Many sites were thrown together like so many ramshackle cabins or huts with little regard for usability, accessibility, or attractiveness. Principles of Web design

have changed significantly since those early websites as businesses and other organizations look to

their Web presentation to sell them to potential customers or supporters (it has been belatedly

predicted that such guidelines will yet become more important; see Smart 37). Testing and user input

are important considerations for any Web designer; after all, the user is the one who uses the site, and

his or her ability to find the desired information quickly is of paramount significance.

My purpose here is to discuss these ideas as they work together in the planning and

production of *Foundation Stones of Prydain*. I will do so in the following sections:

Project rationale. I will briefly explain my reasoning behind this project and how it came

about. Included is a discussion of Lloyd Alexander's value as an author for young adults and some

background of Welsh mythology as it exists today. I will argue that this website fills a void in

educational multimedia.

Web design theory and practice. I will describe in detail my considerations of current Web

design guidelines as I planned *Foundation Stones* and explain how the execution was intended to

facilitate the website's purpose. I will consider principles of instructional multimedia, and I will

include the input from my Honors committee and describe how I implemented their suggestions.

Usability testing. An abbreviated usability test report will follow a brief discussion of the

theory and purpose of usability testing. The report describes the procedures I followed to conduct the

testing and the results I obtained.

Website revisions. This section will review the testing results that prompted changes in the

design of *Foundation Stones*. I will discuss the changes I made to the website in order to satisfy

users' judgment of usability.

From beginning to end, the building of *Foundation Stones of Prydain* combines the

knowledge and skills I have gained as an Honors student in professional and technical writing. It

gives tribute to a unique author, delves into a fascinating mythology, and takes a place in educational

multimedia that has until now remained vacant.

Project Rationale

Because my interest in Web design developed during my work in the technical writing program at Utah State, I knew my Senior Honors Thesis must involve a Web project. Originally, I wanted to focus on hypertext and to create an interactive exercise that illustrated the exploration and freedom that hypertext environments allow. The premise of the exercise rested on a story from Lloyd Alexander's *The Foundling and Other Tales of Prydain*. Through discussion with Dr. Kelli Cargile Cook, my thesis advisor, I decided on creating an educational website that compared elements from Alexander's Chronicles of Prydain to the aspects of Welsh mythology he drew upon when writing this series of young adult novels.

No stranger to creating educational material, I had co-created a CD tutorial on essay writing in Dr. Cargile Cook's Interactive Media course, in which we focused on instructional multimedia. I have drawn on that experience and on the material from that course in creating *Foundation Stones of Prydain*. As I will discuss in more detail later (see "Educational Design" on page 19), *Foundation Stones* presents a more relaxed learning environment than the essay writing tutorial. The main objective of the site is to give users a rich understanding of the Welsh roots of the Prydain Chronicles and even to stimulate interest in the myths. The website's main feature, therefore, is the Welsh myth index, which sets up side-by-side various elements from the Prydain Chronicles and their counterparts in Welsh mythology.

Lloyd Alexander and the Chronicles

A secondary purpose of *Foundation Stones* is to honor Lloyd Alexander and the influential Prydain Chronicles. The interactive exercise, which is loosely based on the early chapters of *The Book of Three*, is fairly extensive compared to the rest of the site; I constructed it to attract young users' attention and to increase interest in Prydain by providing a visual dimension to the stories. However, I devoted three pages on the website to the author: a biographical sketch focusing on Alexander's interest in reading and writing and on his career as a writer that led him to writing about

Prydain and its characters; an accompanying list of his awards; and quotes from Alexander that reveal his philosophy on reading, writing, the genre of fantasy literature, and other topics. The Welsh myth index is the main feature of the site, but information about Alexander comes second.

I believe such attention and honor to Alexander on a website is well deserved, not only because he has earned awards such as the John Newbury Honor Medal for *The Black Cauldron*, the John Newbury award for *The High King* (both Prydain novels), and in 2003, at the age of 79, the Lifetime Achievement Award from both Parent's Choice and the World Fantasy Convention. Lloyd Alexander himself represents the spirit of Welsh mythology and fantasy literature; he even rises to a level beyond the bards and storytellers.

In his introduction to his translation of *The Mabinogion*, Jeffrey Gantz points out that ancient Welsh storytellers memorized outlines of tales and filled in the gaps as they told them. He continues, "But the very freedom which characterizes oral transmission ineluctably led to oversights and misunderstandings which contributed to the deterioration of the plot and the obfuscation of the original themes and structures; neither could the tales ever hope to attain the coherence and internal consistency of stories conceived and fashioned in one piece" (13). Coming from myth, folklore, history, and "pseudo-history," and blended together from separate episodes, the tales of *The Mabinogion* lack some measure of consistency, flow, and resolution. With this type of material forming the inspiration for Prydain, Lloyd Alexander fashioned a story fascinatingly seamless in its premise, plot, and development. Characters and elements such as Glew, the wizard Morda, Eilonwy's mother Angharad and her magical objects, and the prophecies of Hen Wen are all woven together without a loose thread. Unlike C.S. Lewis' Chronicles of Narnia, in which the lion Aslan often dismissed peripheral matters as another story for another time (and never tells more), Prydain characters such as Dallben and Gwydion resolve reader concerns by the time the series ends. Readers finish the Prydain Chronicles feeling satisfied that Alexander has answered all the questions he can while leaving some significance to readers to find within themselves.

Alexander also carries the spirit of the Welsh tales. In his introduction to *The Mabinogion*, Gantz praises its qualities of artistry. One such trait is "the degree to which characteristic (courage, generosity, hospitality) and uncharacteristic (patience, moderation, a sense of fair play) Celtic virtues inform the action" (Gantz 28). Through the vibrancy and strangeness, "imagination is never completely divorced from reality. There is throughout a tension between rigid and plastic, concrete and abstract, real world and otherworld, necessity and desire—a tension which contributes richly to the detached, almost dreamlike quality of these tales: tangible and yet not quite real" (Gantz 28).

Alexander's own work and philosophy mirror these overall themes. Fantasy, he says, is a vehicle through which authors can convey truth about the world, whether objective or subjective. He said to the Children's Book Council:

> Creating worlds that never existed as a way to gain some kind of insight into a world that is very real indeed? The paradox is easily resolved. Whatever its surface ornamentation, fantasy that strives to reach the level of durable art deals with the bedrock of human emotions, conflicts, dilemmas, relationships. That is to say: the realities of life…
>
> The best fantasy it seems to me, is permanently relevant. Because it deals metaphorically with basic human situations, it always has something to say to us […] Dealing with the impossible, fantasy can show us what may be really possible. If there is grief, there is the possibility of consolation; if hurt, the possibility of healing; and above all, the curative power of hope. If fantasy speaks to us as we are, it also speaks to us as we might be. ("Lloyd Alexander")

These statements reflect Gantz' assessment of Welsh tales: "imagination is never quite divorced from reality" (28). In mythology and fantasy, the real and the created are closely intertwined. The myths demonstrate human qualities—some natural to the Celts and some not—and present the need to strive for the best of both; Alexander perpetuates this spirit in Prydain. In *The Castle of Llyr*, the enchanter Dallben tells

Eilonwy, "For each of us comes a time when we must be more than what we are" (Alexander 10). With lessons like this one overarching the Prydain Chronicles, Alexander captures the essence of Welsh mythology.

Alexander's use of mythology is unique in his genre of literature. Charles Sullivan III, Professor of English at East Carolina University and devoted student of folklore and mythology, places Alexander in a category with few other authors with respect to their use of Welsh myth; some *expand*, some *interweave*, but Alexander *invented* his own stories and borrowed from the myth, making the legends secondary. "The plot and main characters […] are essentially of the author's own devising," as opposed to retellings or adaptations of mythology (Sullivan 56). Alexander's inventiveness and originality nevertheless stimulate interest in myth because of the fantastic but distinctly Celtic atmosphere of Prydain.

History of Welsh Mythology

There are currently few sources of Welsh mythology. *The Mabinogion*, which constitutes the main source of Welsh mythology, is a collection of Welsh myths and tales passed down in the tradition of the bards. As literature and as a link to the history of Europe (and therefore the history of many Americans), *The Mabinogion* deserves close attention. Unfortunately, it received hardly any recognition, even from the Welsh themselves, until the nineteenth century (Gantz 31). Before that time, the tales in *The Mabinogion* were found in *The White Book of Rhydderch* and *The Red Book of Hergest* (Bently 78). Lady Charlotte Guest translated these stories in 1849 and gave the collection the title of *The Mabinogion*, assuming from the Welsh word *mab* ("boy") that *mabinogi* meant "children's story," and that *mabinogion* was plural. Lady Guest's own accompanying notes provide extra detail and supplemental information. Another source of myth is the *Triads of the Island of Britain*, a work of summarized stories arranged in threes as a memory aid for bards (Bently 78). The *Triads* were recorded by people who listened to bards and other wandering storytellers.

Lloyd Alexander used elements from all of these sources in his stories. While Alexander has noted that Prydain grew beyond the bounds of mythology, the Chronicles are an important link for children and young adults to the legends and tales of the past. Understanding the origins of characters and elements of the Chronicles adds a new dimension to them. Alexander professes his love for the land of Wales and its legends, and the website will direct his readers to those same legends and, ideally, give them an engrossing introduction to myth. Through his Chronicles of Prydain, Lloyd Alexander provides a gateway to the world of *The Mabinogion* while telling a story that is fantastic and engaging in its own right.

Niche of *Foundation Stones*

Welsh tales remain on the fringes of mythological attention, overshadowed and set to the side because of focus on giants such as the Greek, the Norse, and the Egyptian. Personally, I never learned anything of Celtic mythology until my Creative Writing/World Mythology class during my senior year of high school; however, I had received instruction on other lore, particularly Greek, throughout my public schooling.

Though Welsh mythology is ignored in the face of other civilizations' systems of belief and history, millions of people have cultural ties to the Welsh tales. According to the 2000 United States census, 24.5 million people reported their ancestry as English (Brittingham and de la Cruz 2). If we do not take into account those with British descent who submitted a different ancestry, this is about 9% of the United States population who may claim Welsh mythology (which concerned the whole of the island of Britain in many stories) as part of their heritage. In addition, millions of people in Great Britain can access *Foundation Stones of Prydain* and find there a gateway to the mythology that is part of their national and family history.

In print and on the Web, the only work I could find that matched the purpose of *Foundation Stones* is Michael O. Tunnell's *The Prydain Companion*. Tunnell reviews extensively the characters and elements of the story and then gives background from Alexander's own notes and observations

about how the mythology came to be used in the Chronicles; however, the reference material is not

exhaustive, and I found connections or details from my own reading in *The Mabinogion* that Tunnell

did not offer. In addition, a Web document is much more accessible in our time than a book printed

in 1989. A somewhat scholarly work, *The Prydain Companion* seems directed to a more than casual

reader of the Prydain Chronicles. *Foundation Stones* aims to bridge the gap between some readers'

surface experience and others' devoted enjoyment and quest for depth. Its audience is the same that

Alexander intended for Prydain: older children and young adults. In this respect, *Foundation Stones*

stands alone in a place that has waited for it—a niche in cyberspace.

Web Design Theory and Practice

As noted previously, Web standards have evolved significantly since the initial rush for online presence in the 1990s. Though no entity can establish guidelines for site appearance and functionality, there are design principles that create usability and accessibility. In the production of *Foundation Stones*, I have followed Web design standards as much as possible, both in general design and in the site's educational function. In this section, I will not consider audience separately; the site's audience affected development in every stage, so I will address its effects on each factor.

General Design

An exhaustive discussion of Web design principles is not possible here; however, I will review the following major factors in the creation of *Foundation Stones*:

- Structure and navigation
- Theme and style
- Page layout
- Content

These basic aspects of Web design have guided me in several projects, and though they are becoming second nature, I have noted the decisions I made in each area.

Structure and navigation

Development of a website begins with determining information structure and site navigation; otherwise, it may eventually become, as one Web designer has said, like California's Winchester House, "a large oddity with questionable functional value" (Smart 34). As I conducted research on the Internet to find information about Lloyd Alexander and to see whether a site like *Foundation Stones* already existed, I began categorizing the content that I would include in my site. Sorting content is a prerequisite to creating a site structure. The main feature of the site, the Welsh myth index, constituted one category; other categories became biographical information on Alexander,

quotes from him on various topics (which I decided to include when I found Alexander's insightful

thoughts about the value of fantasy literature), the interactive exercise, and my sources for the site's

content. I used a "top-down" approach, meaning I moved from general to specific when organizing

information (Farkas and Farkas 56). With the site's information separated into chunks, I could decide

on a site structure.

The structure of a website is something that is invisible unless the site includes a site map,

which may or may not visually represent the site's organization. According to Farkas and Farkas,

websites consist of nodes, or "substantial chunk[s] of digital content" (126). Essentially, nodes are

separate pages (though a single page may contain several nodes). When planning a website, it is

useful to produce a node-link diagram, which shows the relationship between nodes or pages and how

they are linked to one another (54, 129). Initially, I created such a diagram on paper; later, I included

a print version when proposing *Foundation Stones* to the Honors committee (see Figure 1). Such a

structure is called a hierarchy or inverted tree. Many websites today employ this organization,

branching downward from the home page; it would be most familiar to the site's intended audience.

The navigation of *Foundation Stones* grew slightly beyond what Figure 1 depicts. The figure
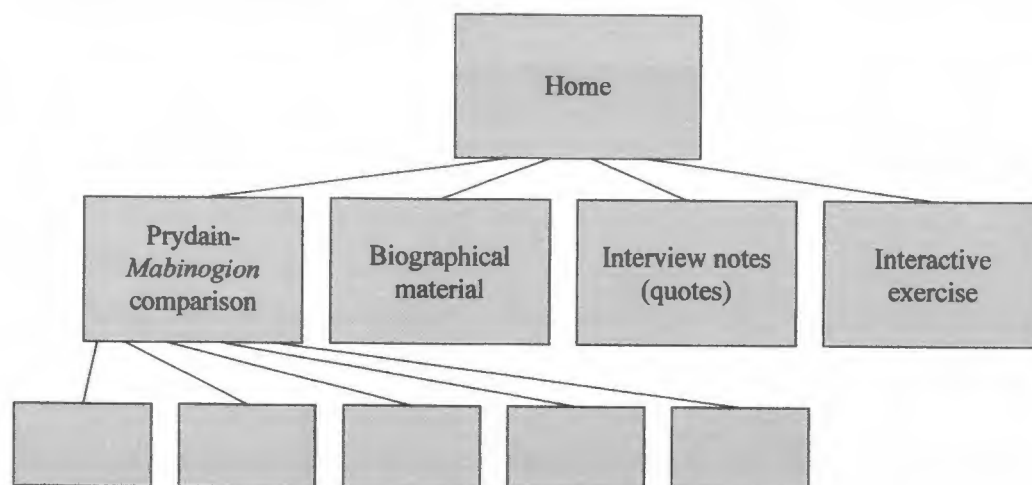

Figure 1. Node-link diagram of *Foundation Stones of Prydain* (missing the sources node) from
the proposal. The lines represent link pathways. The third level represents the pages of the
Welsh Myth Index.

is missing links between the second level pages; the interface allows linking between these pages and even from the myth index pages back to the second level. The navigation bar's presence on every page (except the pages in the interactive exercise) permits more user freedom. As I will discuss in the section "Page Layout and Appearance," the number of categories of information or of second-level nodes dictates the way I presented navigation options visually in *Foundation Stones*.

While categorizing the content and separating it into nodes, I decided to use anchors (also known as bookmarks) in some pages. Current Web design standards discourage long, scrolling pages except where the site has already drawn users in and they are willing to move through the information; even then, text should not appear in large blocks (Farkas and Farkas 85, 221). Because they cannot see content below the initial screen, users many times ignore what may be there—if they cannot see it, it must be unimportant or even nonexistent (Alessi and Trollip 66). Users want to find particular information quickly, and they need to be able to tell when a page loads whether that page is relevant (Redish 7). For these reasons, I included anchors in the longer pages with links at the top to take the user to specific entries in the myth index. At a glance, users can see what such pages contain. In return, links between the entries offer to take the user back to the top of the page. Rather than create a single page for each entry, which would result in many more files to work with during development, I organized the myth index into ranges of letters. The anchors provide convenience for users in navigating through the myth index. Even in the planning stages, it is important to decide which pages will have to scroll, as well as where and how to provide bookmarks if necessary.

In her Web design instruction, Dr. Cargile Cook emphasized the need to allow for site expansion. Additional content was prominent in my mind while organizing *Foundation Stones*; originally, I intended to include characters, objects, and places from all five volumes in the series. However, deadlines dictating otherwise (another essential consideration in development), I focused on *The Book of Three*, the first of the five. If and when I add the rest of the series to the website, I could do so in one of two ways: 1) simply add the new entries among the current index pages or 2)

on the initial index page, create links to an index for each book and either duplicate entries that repeat throughout the books or include only those that are new to the series in each book. Either option would require simple additions and modifications because I created the site with the expectation of adding information later.

Theme and style

A website's theme is separate from the purpose; it is "the core message that connects [the] website to [its] audience. It is how the website presents itself" (Farkas and Farkas 36). It can be evident in a statement such as "Welsh mythology served as the foundation stones of Lloyd Alexander's Chronicles of Prydain, and young readers of the Chronicles can find more of the same spirit of adventure and fun in the myths."

The style is a specific outgrowth of the theme: it constitutes the specific decisions made to express the theme (Farkas and Farkas 37). To carry the theme, I decided on several visual elements—gray stone, Welsh countryside, and tapestries. The most important decision I made at this stage was the title itself: *Foundation Stones of Prydain*. To begin with, the idea of roots drove the idea of the site, but the concept would not transfer to the site itself. Such a theme may have been conveyed only by a visual representation of Gwystyl's cave, complete with tree roots forming curtains, from *The Black Cauldron*, book two of the Chronicles. When I struck upon the concept of foundation stones, the theme of the site and its visual elements fell into place (see the next section, "Page layout and appearance," for further discussion). In addition, the style involved keeping the text on a level appropriate for young adults, rather than writing with a college-level academic tone.

Page layout and appearance

Once I had decided on the foundation stones theme, I created the visual layout (see Figure 2 for a basic diagram). Though many commercial websites today have adopted a newspaper (multi-columned) format for the individual pages' layout, I chose a simple and standard layout for young

adults who may have limited Internet experience. In addition, each page carries one main idea, rendering multiple columns unnecessary.

I designed the site's pages with a screen resolution of approximately 1000 x 800. This resolution has become more standardized as computer monitors increase in size and operating systems include more settings.
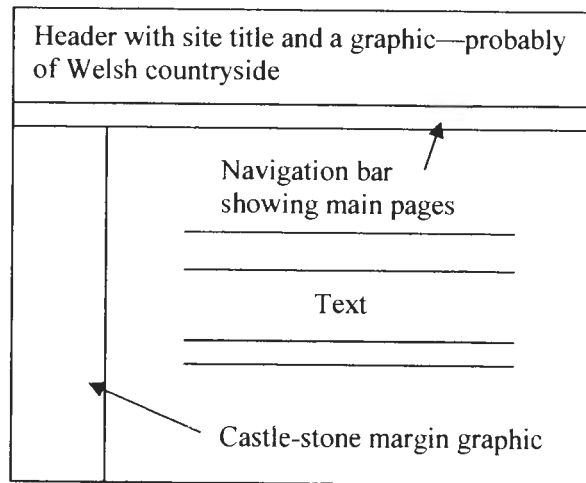

Figure 2. Simple page layout design from the project proposal.

The page layout consists of four main elements, which I will discuss in turn (see Figure 4 on page 13 for the complete page layout):

- Header and navigation bar

- Margin graphic

- Eagle tapestry

- Main body

Header and navigation bar. When I began designing the page layout, I decided I wanted the header and nav bar to appear together in one visual structure. This concept came from my analysis in Dr. Cargile Cook's interactive media course of the Smithsonian's educational website about their Viking exhibit (http://www.mnh.si.edu/vikings/). The header in that site, though visually
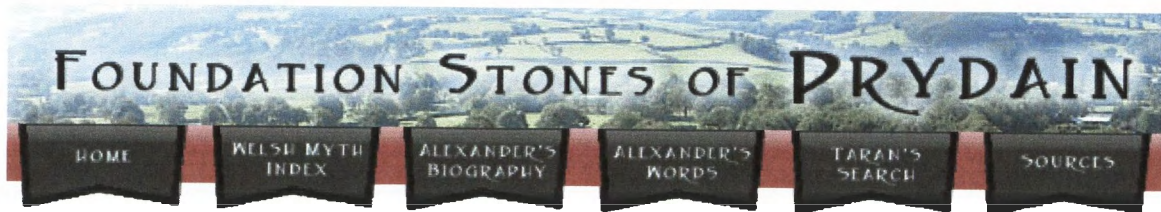

Figure 3. *Foundation Stones* header, including nav bar. The header on the home page is larger to draw more attention to it, while it appears this way on the other pages to take up less space on the screen.

simple, contained the title and navigation bar all in one structure. I followed this basic idea by putting my site's title over the Welsh countryside graphic and attaching the navigation bar below it (see Figure 3).

I wanted to include a photograph of a Welsh landscape from the beginning of the planning phase. The image of the British countryside is one of the things distinctly associated with medieval and fantasy stories. Employed on the site, it immediately lends some of the spirit of the myths and of Alexander's Chronicles. The nav bar furthers this feel of the subject matter because of the link between castles and tapestries, one of the decorations within them.

The row of tapestries matched the number of links I needed. During planning, I decided how many main sections the site would contain; because there were only six, I opted for a navigation bar rather than a column. When I created a website for the USU Writing Center, I had to use a navigation column because that structure works better with the number of links I had to include. Not every website has a link back to "Home," instead making a hotspot out of the site's title or the company's logo; I added one to my nav bar because, again, young adults may not yet be familiar with the practice of linking a logo to the home page. A link in the nav bar is more obvious to novice users.

On the home page, the title portion of the header is larger than the rest of the pages to place emphasis on it; throughout the rest of the site, its size is reduced to allow more space for content. Still, among all the pages there is a consistent, repetitive appearance to keep users oriented (Spyridakis).

Margin graphic. The stack of gray stone blocks on the left side of the pages (see Figure 4) came directly from the foundation stones theme. It helps to keep the main body of the page from being completely white and featureless. Its other purpose is to serve as a margin or buffer between the main body and the edge of the browser and to reserve a space for additional links, which show up in the Welsh myth index pages and on the biography page. Like the countryside image, the stone
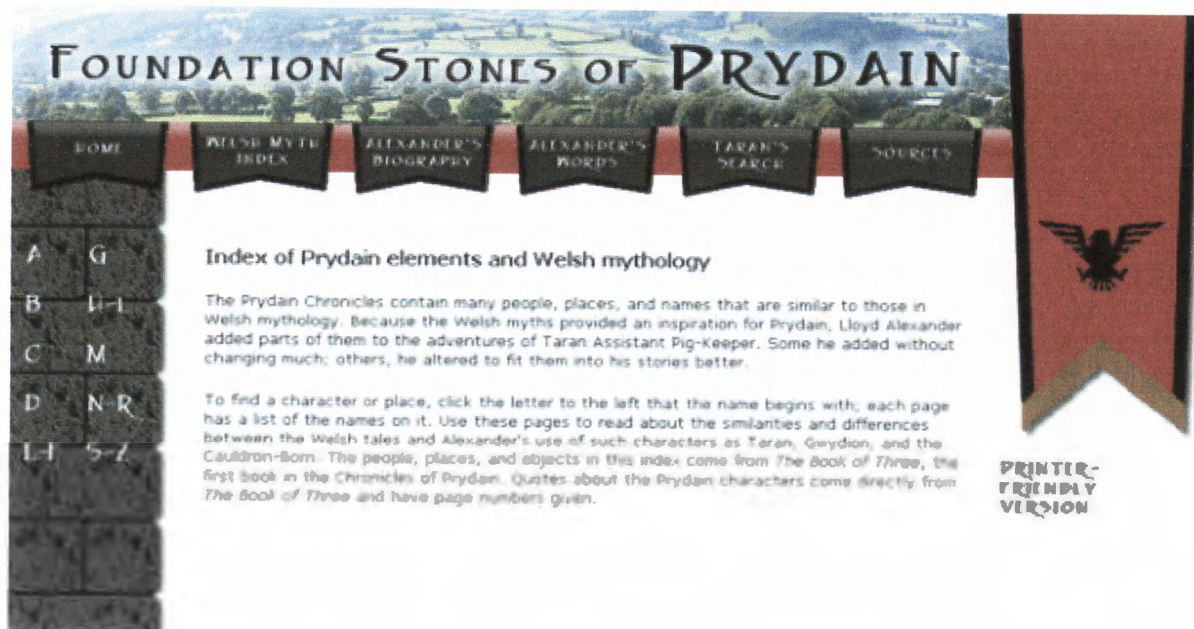
Figure 4. Complete page layout of *Foundation Stones of Prydain*, Welsh myth index page.

blocks give users an immediate feeling of where they are and what the site is about. One of the things about Wales that enchanted Alexander was its stone castles scattered throughout the country.

Eagle tapestry. Before I created the nav bar, I knew the header needed a boundary on the right side rather than open space. I created the large tapestry to resolve the problem and help convey the theme of the site, and I carried the tapestry idea into the nav bar itself. The stylized eagle holds no meaning in itself; however, eagles come into a few of the Prydain stories, and Caer Dathyl, where the High King rules, sits in the foothills of the Eagle Mountains.

Main body. I specified white as the main background color (the stone blocks and the white are actually a repeating swatch of about 1500 x 120 pixels). Because of the gray stone, I had considered a light gray for the main body background color. However, the default color for a website background is gray—it shows up when the designer specifies no background color in the underlying code. I wanted to avoid the appearance of neglect, and the light gray looked unattractive anyway. A white background creates a sharper and cleaner look.

This discussion of page background introduces the use of color, an extremely important consideration in page appearance and in the theme. Dark gray and black became part of the color scheme automatically because of the stone block graphic. The inclusion of the Welsh landscape in the header brought green into the scheme. In a previous Web design project completed with a class member, we used a dark red in the color scheme, and it looked appealing. I decided to include a deep red in the graphics of *Foundation Stones* partly for that reason and partly for its being complimentary to the green.

In choosing colors while creating the graphics, I adhered to the principle of using web-safe colors. According to Williams and Tollett, web-safe colors are those common to Web browsers across computers and operating systems—graphics created with web-safe colors will appear consistent across systems (167). If a page uses a color unavailable in a browser's inventory, the program tries to compensate by using the closest color or blending colors; however, this can result in "dithering," or a harsh, spotted look to graphics (163, 167). Macromedia Fireworks MX 2004, the graphic manipulation program I used, offers web-safe colors with the option of altering them. I kept with the web-safe options in order to keep the graphics' appearance the same for all users.

Content

Of the five types of content found on websites—text, graphics, animation, video, and audio (see Farkas and Farkas 83-100)—I included only the first three. Many sites require the cooperation of many contributors: writers, editors, graphic designers, and so forth. However, with my experience, I was able to meet the needs of the site. I will discuss the three types of content I used in *Foundation Stones* and how I acquired them, as acquisition is a necessary aspect of planning and execution of the site.

Text. In creating the pages and inserting text, I tried to avoid using long paragraphs, and I made use of white space throughout the site. "Limiting the amount of text, adding blank space, making key points scannable, and creating an attractive format will engage users," say Farkas and

Farkas (85). Since I am trying to attract users both to the Prydain Chronicles and to Welsh mythology, following these guidelines will help the site to reach its goal.

Typically, very short paragraphs are ideal for websites because many Internet users are looking for something particular, and they want to find it fast. Long paragraphs will be discouraging to such users and prompt them to resume their searching elsewhere. However, users who are "reading to learn" as users of *Foundation Stones* would be "will more actively engage in their reading than other readers" (Redish qtd. in Spyridakis). Therefore, I was less concerned about having some rather lengthy paragraphs when composing and accumulating text for *Foundation Stones*.

I acquired the text either through research or through my own writing. I wrote the introduction on the home page, the myth index, the biography (using *Lloyd Alexander: A Bio-Bibliography* by James S. Jacobs and Michael O. Tunnell), and the guiding scrolls in the interactive exercise. As I wrote these sections, I attempted to write at a level appropriate to the site's young adult audience, as "structur[ing] the language, vocabulary, and syntax of a site to the audience" is key to fulfilling user needs (Shuler 22). The Lloyd Alexander quotes came from various Internet sources.

For the body text, I specified Verdana as the default font; this typeface is simple but pleasant, and as a sans-serif font, it allows the use of smaller sizes without sacrificing readability. The site's young audience generally can read small type, and one advantage of sans-serif fonts is the fact that they appear larger than a serif font of the same point size. I used Caeldera for the header, nav bar, side bar, and scrolls and signs in the interactive exercise for a slightly medieval but readable appearance.

Graphics. Most of *Foundation Stones* required only a moderate amount of graphics material—the header, nav bar, tapestry, and stone block graphic. The index navigation at the left and bottom of the myth index pages were simple additions (and fall into the text category more than graphics). With the exception of the photograph in the header, which I use with permission, I created these graphics myself using the features in Macromedia Fireworks MX 2004. There is little

integration between text and graphics throughout these pages because there is no need to refer to the

graphics themselves, and the text stands on its own with no need for supplementary illustrations.

The interactive exercise is a much different matter (see Figure 5). The activity section of the

website employs very "tight integration" of text and graphics, meaning that text refers directly to the

graphics (Farkas and Farkas 88). I created the scenes and characters using Microsoft Paint and

Macromedia Fireworks and FreeHand. Fireworks allowed me to create .gif files out of the individual

elements and optimize them for use on the Internet. The graphics in the exercise caused much

personal debate for me; a Web designer always must keep the user—and the user's machinery—in

mind while developing a site. I imagined that the number of graphic elements in the activity would

require a substantial amount of load time on dial-up Internet connections. To my surprise, the

individual pages take less time to load by modem than I had feared. Broadband connections load the

graphics very quickly. I decided to keep the exercise for the reasons that it loads faster on a modem

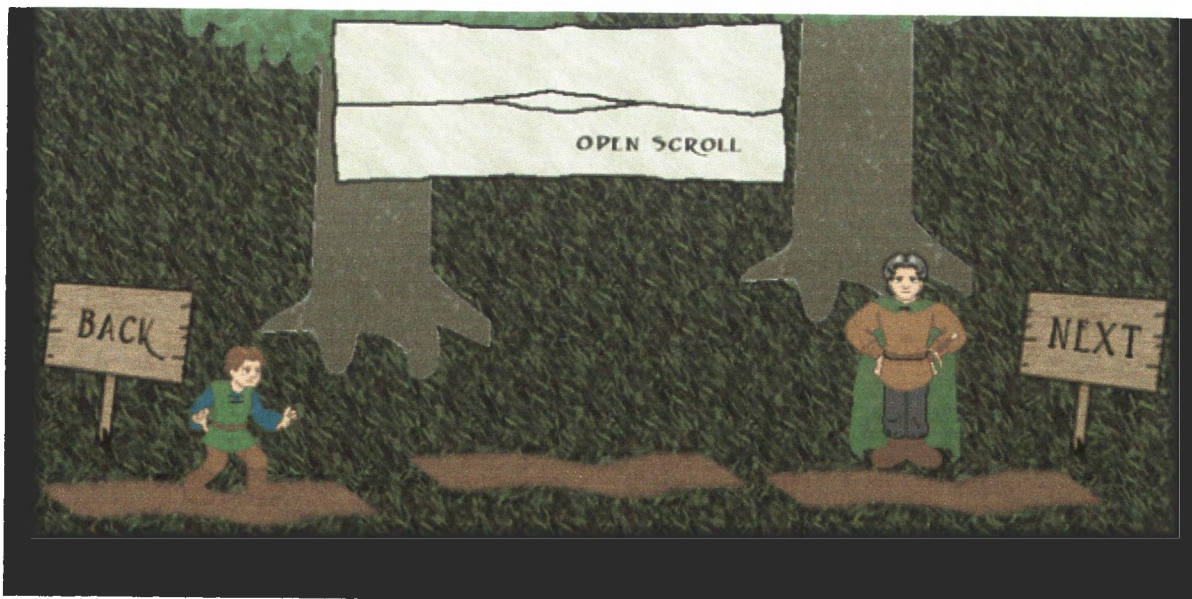connection than I had expected and that broadband connections are becoming more common among

Figure 5. The interactive exercise depends much more heavily on graphics than the rest of the website.

Internet users. The computer on which *Foundation Stones* will be tested has a broadband connection, so load time should not be an issue.

Animation. My use of this content type is limited to three objects, all within the interactive exercise: the marching Cauldron-Born warriors and the gwythaint (a large bird of prey under the sway of Prydain's villain, Arawn), both elements from the Prydain Chronicles encountered in *The Book of Three*, and the dwarf. The purpose of using animations in these places was to add enjoyment for users. Most of the graphics are static, but the exercise depicts a journey, so I decided some things needed to move. Some of the movement comes from rolling the mouse pointer over Taran, the main character in the exercise, but this is not technically animation. I selected the Cauldron-Born and the gwythaint for animation, and the movement is ongoing. The animation of the dwarf was an afterthought, and I programmed the animation to terminate after a specified number of repetitions. I drew all of these characters in MS Paint and animated them in Fireworks. Flash was unnecessary because the simplicity of the animation required only animated .gif files rather than .swf files. Animated .gifs are smaller and therefore more quickly loaded than Flash movies.

One purpose of the usability test was to determine whether I used these content types effectively and whether any are unnecessary or even annoying. Participants will specifically be able to give feedback on the text, graphics, and animations.

Educational Design

Two aspects of educational Web design influenced the development of *Foundation Stones*: education philosophies and instruction formats or methodologies. This discussion is based on guidelines given by Alessi and Trollip's extensive *Multimedia for Learning: Methods and Development*.

Education philosophies

Foundation Stones follows two approaches to learning; interestingly, they are opposites. The first approach is constructivist, the one I used for the overall site structure. Constructivism in the area

of education emphasizes the need for learning rather than teaching—learners should *construct* their

own learning experiences, which in turn enables them to make their own mental connections. This

type of learning, constructivists assert, is the most beneficial. Applied to programs such as

Foundation Stones, constructivism dictates that users' navigation of the website be left open to them

rather than guided by the creator or a teacher. This philosophy easily transfers to Web design because

so many sites allow the user to roam wherever he or she pleases. Some websites follow a linear or

multipath format (see Farkas and Farkas 129), taking the user where the creator desires. A hierarchy

gives the user more freedom. Though the Welsh myth index is the main feature of the site, it is not

my intention to force users to go to it and read each entry. *Foundation Stones* serves as a reference

for anyone wanting to learn more about Lloyd Alexander as well. The site is very open to user

investigation.

The second philosophy I followed is the behavioral psychology approach. This ideology

proposes an opposite of constructivism—learning is about observable behavior affected by practices

such as positive or negative reinforcement (Alessi and Trollip 18). In other words, punishments and

rewards are the keys to learning, characterized by modified behavior. In educational multimedia,

behavioral psychology appears in practices such as quizzes and other exercises where there are right

and wrong answers. If a learner's answer is wrong, the program says so; if right, the learner receives

positive reinforcement in the form of praise or even cinematics or animations. The interactive

exercise follows this philosophy. Even though I tried to stay away from ingratiation for correct

answers, the activity allows only one way to the end, and only the right answers will get the user

there. Still, the activity is not a strict learning experience; hints are available at each question. I

included this feature to allow for the constructivist approach of the rest of the site; there is no way to

be certain whether a user going through the activity would have read the appropriate entries in the

Welsh myth index and be able to answer the questions accordingly. The hints allow for this

possibility (or even likelihood) and make the exercise more fun than a chore.

Instruction methodology

Alessi and Trollip acknowledge that one instructional multimedia methodology, hypermedia, "is a good methodology for constructivist learning environments" (140)—this is because most hypermedia offers the freedom of navigation in no particular order. Hypermedia consists of documents or objects linked to other documents or objects, and the learner determines his or her own path by selecting links (141).

Foundation Stones employs two formats within the hypermedia methodology: specific subject matter reference and game (144, 147-148). I will discuss how the site exhibits each format.

Subject matter reference. Encyclopedic or general reference programs cover a wide range of topics. Since *Foundation Stones* focuses on Welsh mythology, Alexander's Prydain Chronicles, and Alexander himself, it is far from an encyclopedic reference, though the myth index is set up alphabetically. It "catalog[s] the knowledge of particular subject areas" and therefore does not qualify as an encyclopedia (144). Most of the website is set up in this format.

Edutainment. This format within the hypermedia category generally relies on hot items being cartoon images (147). I created the "Taran's Search" portion of the website in this category. The game presents a visual way for users to be introduced to some of the links between mythology and Prydain and for them to have an adventure of their own within the website. Users may be learning as they go (in the case that they had not read the myth index entries required to answer the questions ahead of time), or the game may be a review for them, and they can feel the excitement of making it to the end of the journey without any help.

Usability Testing

On April 21, 2005, I observed three children (with parent/guardian permission) as each worked on four tasks using *Foundation Stones of Prydain*. Table 1 gives some of the participants' characteristics. The following report discusses my findings and my recommendations for changes to the website.

Table 1. Characteristics of testing participants.

	Age	Grade	Prydain Chronicles read	Seen Disney's *The Black Cauldron*?
Participant 1	11	5th	none	yes
Participant 2	11	5th	none	yes
Participant 3	10	5th	*The Book of Three, The Foundling*	yes

Objectives of Testing

I had two main objectives for the testing of *Foundation Stones*:

1. Find out whether the Welsh Myth Index is easy to navigate and whether users can quickly find particular information.

2. Find out whether users encountered any problems in the activity called "Taran's Search" that kept them from successfully completing the activity.

It was important to test the Myth Index because it is the central feature of the website, and I wanted to make sure it serves its purpose. There could potentially be many problems with the interactive exercise; in addition, because it is so different from the rest of the website, it needed to be tested specifically.

Test Structure

I gave each participant four scenarios with one task each. The scenarios follow with the time standard I chose for each task, allowing for the children's reading speeds:

Scenario 1. You have read The Book of Three, the first book in the Prydain Chronicles, and your favorite character was Gwydion. You want to learn more about where he came from. Use the Welsh Myth Index to learn about Gwydion's origins in myth. Task: Find the answer to this question and write the answer below: What is the name of Gwydyon's nephew [some spellings vary between *The Mabinogion* and the Prydain Chronicles]? (5 minutes.)

Scenario 2. You are writing a report on Lloyd Alexander, and you're trying to find information about his life. Task: Using the website, find out the answer to the following question and write the answer below: Where did Lloyd Alexander meet his wife, Janine? (5 minutes.)

Scenario 3. You enjoyed The Book of Three and reading about Taran's search for Hen Wen in the story. You want to experience the story a little more. Task: Complete the Taran's Search exercise. (10 minutes.)

Scenario 4. You thought the Horned King was an interesting villain, and you want to know where Lloyd Alexander got the idea for him. Task: Find and read the information on the Horned King. (5 minutes.)

I served as test facilitator and logger, briefing and debriefing the participants and keeping notes and time during testing.

Results

I discovered minor problems in both of the areas addressed by my objectives. Not all tasks were completed, as shown in Table 2.

For Scenario 1, neither Participant 1 nor Participant 2 used the Welsh Myth Index to accomplish the task. Participant 1 did not leave the home page; he assumed the name "Taran" must be the answer to the question. Participant 2 made it to the Welsh Myth Index page, but in reading that page, she must have assumed the same as Participant 1.

Table 2. Task completion by participants in minutes.

	Task 1	Task 2	Task 3	Task 4
Participant 1	5*	6	12—won	3
Participant 2	3*	2	7—lost	X
Participant 3	2	1	8—won	3

An "X" indicates quitting without completing the task.
* These tasks were technically incomplete; these participants wrote down the wrong answer to the question.

In Scenario 2, Participant 1 must have thought Lloyd Alexander was a character name, and this time he entered the Myth Index. He went to the "A" page, looked at the list of entries, and then clicked the "H-L" link. When he still did not find Lloyd Alexander's name, he looked at the nav bar and then selected "Alexander's Biography," where he found the correct information. The confusion may have come from the lack of specific mention in the scenario that Lloyd Alexander is the name of the author, not a character. Both of the other participants accomplished this task quickly.

While working on Scenario 3, Participant 1 clicked choice "A" on the scroll several times on the first quiz page before realizing he needed to click the signs instead. Participant 3 did the same once before switching to clicking the signs. Participant 2 did not open the scroll of instructions on the first page; after moving into the exercise a couple of pages, she went back to the beginning and asked me, "What am I supposed to do?" I directed her to the scroll of instructions. Then she made her way through the exercise and completed the task, though she lost through selecting a wrong answer for the last question. Participant 3 also did not open the scroll on the first page; she moved her mouse toward it at first, but seemingly confused about whether she was expected to click that or the "Enter" sign, she did the latter. It was only after making her way several screens into the exercise that she clicked the "Back" signs until she returned to the first page and opened the instructions scroll. As she made

her way through the exercise, sometimes she clicked "Back" too many times, but she made it to the end.

For Scenario 4, Participant 1 clicked the biography link before going to the Welsh Myth Index and clicking "H-L" and completing the task. Participant 2 encountered more difficulty, as shown in Table 3; during the task, she seemed at times to be simply clicking links at random. She quit the task after 7 minutes. Participant 3 tried a few different links (Alexander's Words → Sources → Alexander's Words) before clicking "Welsh Myth Index" and then "H-L" and completing the task.

Table 3. Participant 2 attempts to complete Task 4.

Link clicked	Number of times
Alexander's Words	4
Welsh Myth Index	3
Sources	1
Home	1
Taran's Search	3
Alexander's Biography	1

Participant answers to the posttest questionnaire gave the website favorable ratings:

Table 4. Participant ratings.

Question	Answer	Why?
1. The visual look of the website is:	P1: Good	Because you got all [information] on all the [characters]
	P2: Good	It has good [information]
	P3: Good	Because it has lots of information.
2. How easy is it to find specific names in the myth index section?	P1: Very easy	It's very easy because you have to know what letter it [starts] with
	P2: Neither easy nor difficult	All the questions were in the sections except for the last question was difficult to find
	P3: Very easy	Because all you do is choose a letter and a person.
3. How fun was the Taran's Search exercise?	P1: Fun	Because you have to know what to do and, be smart, and no pop-ups.
	P2: Fun	It has good [information]
	P3: Fun	Because it is challenging.
4. How likely would you be to tell a friend about this website?	P1: Likely	Because it's fun and cool.
	P2: Very likely	Because I think this was a very good website
	P3: Very likely	Because I liked it so they might too.

5. What suggestions do you have for making this site better?	P1: none	
	P2: On Taran's Search there should be some [information] on the question	
	P3: none.	
6. Please write any other thoughts, ideas, or suggestions you have about this website:	P1: none	
	P2: none it's all good	
	P3: A crossword puzzle.	

The Answer column gives the participants' response from a range of five answers possible (for example, question 1 had responses "Very good," "Good," "Fair," "Poor," and "Very poor." Misspelled words are in brackets with corrected spelling.

Recommendations

Based on the results of my testing of *Foundation Stones,* I suggest two changes to the website:

First, wording on the home page and on the Welsh Myth Index page should be altered to make it clearer how the index is set up. Participants 1 and 2 encountered difficulty with the first task, possibly because they were unsure how to proceed using the index.

Second, the instructions for Taran's Search should be more detailed, discussing the scrolls, signs, and other dynamics of the exercise. The scroll containing the instructions should load in an open state so that participants do not have to be confused as to what to do first. An open scroll will encourage reading more than a closed one. Any confusion exhibited by the participants during the exercise can likely be alleviated by making the instructions more detailed and open for reading.

Website Revisions

I closely followed my recommendations from the usability testing, which discovered that participants may need more description about how to use the Welsh Myth Index and that the instructions for Taran's Search needed to be more visible and more clear. I made the following changes to *Foundation Stones of Prydain* because of the findings of my testing:

    1. Changed wording on the home page. Previously, the third paragraph on the home page read, "*Foundation Stones of Prydain* shows you how much mythology worked its way into Alexander's Prydain. Learn more about the tales that inspired these fun but insightful stories about Taran the Assistant Pig-Keeper and Princess Eilonwy of the red-gold hair using the Welsh Myth Index." Thus, mention of the Myth Index did not occur until the end of the paragraph. I changed the wording of the second sentence to read, "Using the **Welsh Myth Index**, look up characters such as Taran Assistant Pig-Keeper and Eilonwy of the red-gold hair and find out their background in myth." In both cases, the words "Welsh Myth Index" were linked, but I used a bold font to give emphasis to the phrase.

    2. Changed wording on the Welsh Myth Index page. From the testing, I judged that the Welsh Myth Index page needed more in the way of instructions on using the index. Previously, the second paragraph read,

> The people, places, and objects in this index come from *The Book of Three*, the first book in the Chronicles of Prydain. Click the letters to the left to read about the similarities and differences between the Welsh tales and Alexander's use of such characters as Taran, Gwydion, and the Cauldron-Born. Quotes about the Prydain characters come directly from *The Book of Three* and have page numbers given.

After I added a few words in the way of instruction and rearranged other words, it now reads,

> To find a character or place, click the letter to the left that the name begins with; each page has a list of the names on it. Use these pages to read about the similarities and

differences between the Welsh tales and Alexander's use of such characters as Taran, Gwydion, and the Cauldron-Born. The people, places, and objects in this index come from *The Book of Three*, the first book in the Chronicles of Prydain. Quotes about the Prydain characters come directly from *The Book of Three* and have page numbers given.

I believe these more explicit instructions should help the site's audience make better use of the Myth Index.

3. Changed the nature of the instructions for Taran's Search. Participants had problems with Taran's Search because the instructions scroll had to be opened before the instructions could be viewed. Not having read the instructions and being made aware of the hints caused difficulty especially with Participant 2. I have eliminated the closed scroll on the opening page of the exercise and added explanation to the instructions.
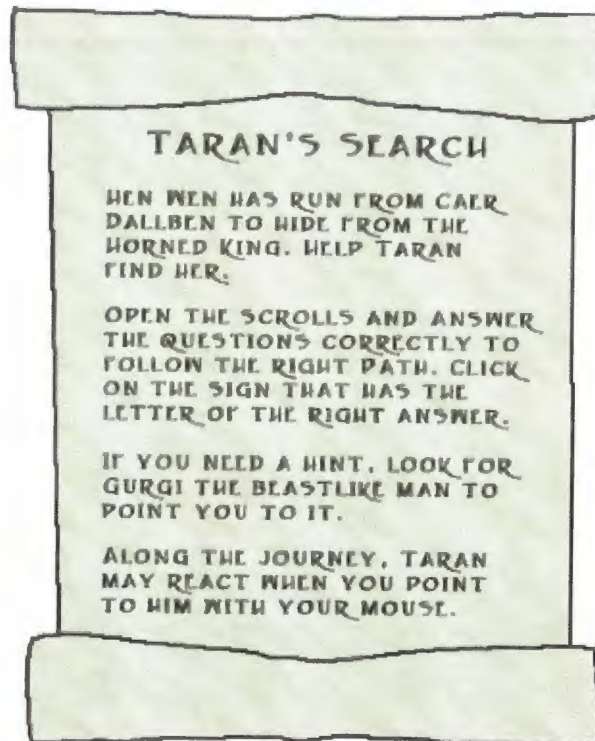

Figure 6. The image of the scroll on loading of the original exercise page and the open instructions scroll on that page after revision. The second paragraph previously read, "Answer the questions correctly to follow the right path. If you need a hint, Gurgi the beastlike man will point you to it." These ideas and instructions were expanded to the second and third paragraphs shown here.

OPEN SCROLL

TARAN'S SEARCH

HEN WEN HAS RUN FROM CAER DALLBEN TO HIDE FROM THE HORNED KING. HELP TARAN FIND HER.

OPEN THE SCROLLS AND ANSWER THE QUESTIONS CORRECTLY TO FOLLOW THE RIGHT PATH. CLICK ON THE SIGN THAT HAS THE LETTER OF THE RIGHT ANSWER.

IF YOU NEED A HINT, LOOK FOR GURGI THE BEASTLIKE MAN TO POINT YOU TO IT.

ALONG THE JOURNEY, TARAN MAY REACT WHEN YOU POINT TO HIM WITH YOUR MOUSE.

Conclusion

From beginning to end of its development, *Foundation Stones of Prydain* has required the best of skills developed during my coursework as an Honors student at Utah State University. I have planned and built a unique website using current Web design principles and audience analysis, tested the site using participants from the site's primary audience, and reported on that testing. I have interpreted results from the testing as they regard the effectiveness of the website and made changes accordingly.

I look at the development of *Foundation Stones* as an important project in my education; it stands as an illustration of the skills I have gained and the work I do as an Honors student. Foundation Stones itself is a significant contribution to the understanding of the literature it addresses and a tribute to Lloyd Alexander. My education has allowed me to create such a tribute. The usability testing portion of this project demonstrated to me that while I may have mastered basic Web design principles, there are finer points and more subtle issues that enter the equation as well.

In the near future, I intend to make *Foundation Stones of Prydain* available on the Internet with its own domain name, possibly as part of a larger personal website. I also hope to eventually expand the site's scope to include all of the Prydain books. I would like this site to be widely available as a resource for students and teachers as they read and study Alexander's momentous work, the Chronicles of Prydain. The Chronicles provide a bridge to a mythology that itself serves as the gateway to an ancient civilization and the history of millions of people.

Works Cited

Alessi, Stephen M. and Stanley R. Trollip. Multimedia for Learning: Methods and Development. 3rd
ed. Boston: Allyn & Bacon, 2001.

Alexander, Lloyd. The Castle of Llyr. New York: Dell, 1966.

Bently, Peter, ed. Heroes of the Dawn: Celtic Myth. Myth and Mankind. Amsterdam: Time-Life,
1996.

Farkas, David K., and Jean B. Farkas. Principles of Web Design. New York: Allyn & Bacon, 2002.

"Lloyd Alexander." Children's Book Council Archives. 2002. 16 Sep. 2004
<http://www.cbcbooks.org/html/lloydalexander.html>.

The Mabinogion. Trans. Jeffery Gantz. New York: Dorset, 1985.

Redish, Janice C. "Writing for the Web: Letting Go of the Words." Intercom June 2004: 4 – 10.

Shuler, Lynn M. "Critiquing a Web Site." Intercom Online Nov. 1999. 19 Apr. 2005
<http://www.stc.org/intercom/pdfs/1999/199911_21-23.pdf>.

Smart, Karl L. "Building Quality Web Sites." Intercom Apr. 2001: 34+.

Spyridakis, Jan. H. "Guidelines for Authoring Comprehensible Web Pages and Evaluating Their
Success." Technical Communication Online 47.3 (2000). 19 Apr. 2005
<http://www.techcomm-online.org/issues/v47n3/full/0419.html>.

Sullivan, Charles W. Welsh Celtic Myth in Modern Fantasy. New York: Greenwood, 1989.

Williams, Robin, and John Tollett. The Non-Designer's Web Book. 2nd ed. Berkeley: Peachpit,
2000.