



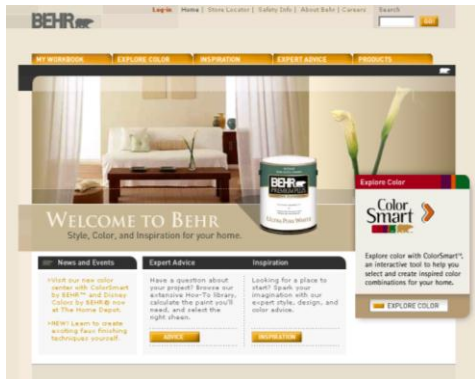
ArtsCanada

Multimedia Evaluation Report

Dr. Susan Codone

TCO 620

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Behr



ClassZone

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Executive Summary

Introduction

Multimedia continues to transform how we learn, shop, and entertain ourselves. It seems the majority of public Web sites these days offer some elements of multimedia, either in the form of flash, sound or video clips, or even user-driven navigation and content creation. As people all have different styles of learning and comprehension, the advent of multimedia makes more information accessible to more people. But what differentiates effective multimedia from mere decoration or technical hot-dogging? While proponents for multimedia in education feel that "learning will increase due to the reinforcing nature of multiple stimuli" (Mike Foster, "Multimedia design controversies," <http://coe.sdsu.edu/eet/Articles/MessMulti/start.htm>), there are certainly many inappropriate or unnecessary uses of multimedia on the Internet. This evaluation report presents our findings from our evaluation of three public Web sites. Our goal is to determine which site uses multimedia and interactivity most effectively.

Overview

Our team reviewed the following three sites:

- ArtsCanada <http://artscanada.cbc.ca/artscanada.jsp>
- Behr <http://www.behr.com/behrex/>
- ClassZone (Spanish sub-section) <http://www.classzone.com/spanish.cfm>
 - Spanish Flashcards interactive section
http://www.classzone.com/books/en_espanol_1b/page_build.cfm?id=flashcards_e1&u=4&sfd=yes

We were interested in evaluating sites from a variety of fields, so the team reviewed approximately 20 sites before choosing representatives from education, commerce, and the Arts. We chose these sites due to their high-level of interactivity and user-centered focus.

We used Evaluation Rubric 1 to perform our evaluations due to its simplicity and straightforwardness. This rubric asks detailed questions regarding:

- Media
- Content
- Site design
- Usability
- User motivation and interest
- Grammar, spelling, and punctuation

We felt this rubric covered all areas that should be considered for effective multimedia design. The rubric provided a 300-point scale to grade multimedia applications. The team deducted five or more points for serious errors that affect

the usability of each Web site and up to two points for minor problems that did not affect usability.

We also evaluated these three sites per the Department of Defense's Levels of Interactivity as defined in the *Department of Defense Handbook, Glossary for Training*, MIL-HDBK-1739-4, Part 4 of 4 of 9 June 1997.

We found that Behr was the most effective multimedia site, with the high score of 282. Its interactivity levels span from Level 1 (Passive) through Level 3 (Complex participation), and its attractive design and skillful use of multimedia elements invite visitors to explore the site. The interface is intuitive and makes it easy for a visitor to "decorate" a virtual room. Behr's use of multimedia and interactivity is effective and provides a valuable service to its visitors.

Web Site Analyses

ArtsCanada Introduction

The ArtsCanada Web site is a product of the New Media division of the Canadian Broadcasting Corporation (CBC). The CBC is financed mainly through public funds and parliamentary appropriations. Its mission is to promote national pride, protect Canada's heritage, support Canadian arts and culture, and build mutual understanding between Canada's two linguistic communities. ArtsCanada was designed to promote Canadian arts and culture and support the CBC's mission. The audience consists of Canadians and anyone who is interested in Canadian arts and culture.

The ArtsCanada Web site and its database were designed by Snap Media, a creative services company located in Toronto. The Web site uses Macromedia Flash Player 7. The site contains four sections:

1. Art News – Contains daily Art news, in-depth reports, artist profiles, and regular columns from across the country.
2. Features – Explores the Arts through original, interactive, media productions.
3. Series – Contains ongoing series inspired by favorite CBC arts, entertainment, and music programs.
4. Index – Contains an archive of everything on ArtsCanada, past and present.

ArtsCanada Comprehensive Review

The following table presents the completed evaluation rubric for ArtsCanada. A comprehensive write-up follows.

Table 1 ArtsCanada Rubric

http://artscanada.cbc.ca/artscanada.jsp		
Points	Elements of Review	
(50) 45	Media	<ol style="list-style-type: none"> 1. Multiple media elements used (more than three formats). 2. Most media elements support user understanding. 3. Most media elements are appropriate for content. 4. Images are in proper formats (.jpg, .gif, .png) and are sized appropriately. 5. Images are crisp and clear when displayed. 6. Most animation is well designed and has a clear purpose. 7. Interactive elements are present and successfully engage the user. 8. Media is appropriately distributed page to page (no more than 1-2 elements per page.) 9. Some gratuitous use of media is presented. <p>Comment: When content is loaded in the main frame, a visual indicator displays, with the message that the application is loading.</p>
(50) 45	Content	<ol style="list-style-type: none"> 1. Content is appropriate for target audience. 2. Content order matches design flowchart. 3. Content contains an effective introduction. 4. Transitions exist, and there are effective signals for content changes. 5. Content does not include an effective conclusion because the site is designed to be open-ended. 6. Some credits are listed. <p>Comments:</p> <ul style="list-style-type: none"> • Flowchart (item 2) is complex and could be simplified. • Introduction is not always effective.
(50) 30	Site design	<ol style="list-style-type: none"> 1. Website is logically organized with a clear hierarchy. 2. Site design is consistent from page to page. 3. Pages use a grid or template format to organize content. 4. Colors are not used appropriately for aesthetics and interface design. 5. Page interface is not intuitive. 6. A metaphor is present, but it is not obvious. 7. Design blueprint is not available. 8. Media is placed appropriately within page structure. 9. Site design does not show good application of Web design standards. 10. Text communicates how to proceed through site and how to use multimedia elements. 11. Some fonts are inappropriate for Web use (too small).

<http://artscanada.cbc.ca/artscanada.jsp>

Points	Elements of Review	
		Comments: <ul style="list-style-type: none"> • Web site is complex. • There is a color design issue with text contrast. • There are six sets of buttons on the main page, and they all behave differently, which makes navigation complicated. Web design standards are not followed.
(50) 47	Usability	1. All media plays as it should (sound, animation, and video perform appropriately). 2. Buttons and hotspots work as they should. 3. All hyperlinks work. 4. An exit option is available on appropriate pages. 5. Icons or clear labels are not used to indicate navigation. 6. All necessary files are on the server. Comment: Not all buttons function as hotspots, and some icons are not labeled.
(50) 50	User Motivation and Interest	1. The site and media elements engage the user through novelty, humor, game elements, testing, adventure, unique content, or surprise elements, etc. 2. The site design makes the user want to return to the site again. 3. Media elements are welcome and not distracting. Comment: None
(50) 50	Grammar, Spelling, and Punctuation	1. Site and media elements are completely correct grammatically, and there are no spelling errors. 2. New and unusual acronyms and words are explained when first used. 3. Punctuation rules followed appropriately. Comment: None
Total Points: 267/300		

Interactivity Multimedia Highlights

ArtsCanada is loaded with multimedia, including audio, animation, interactive word games, and video clips. Multimedia highlights include the following:

- The Lit Quiz
- The Red Green Show
- Tales from the Tundra
- The True North Concert

This part of the evaluation focuses on the Lit Quiz and the Red Green Show.

Lit Quiz

Located in the Series section, the Lit Quiz application tests users' knowledge of Canadian literature, war literature, 19th century literature, love and romance, the

classics, and more. Every week, for six weeks, the animated host gives participants five questions that pertain to a specific literary topic. Users who answer all five questions correctly can submit their name for a drawing at the end of the six weeks. Prizes include various CBC paraphernalia.

The application's metaphor is a book with a table of contents. Users can click on the table of contents to view the quiz rules, read about previous quizzes, and take the current quiz. To navigate through the application, users simply click the top of the page.

The Red Green Show

The Red Green Show is a homespun comedy that airs on CBC television every Friday night. Red Green (affectionately known as Mr. Fix-It for the soul) believes that anything can be fixed with a little duct tape, including the mid-life crisis of the middle-class male (which happens to be the primary audience).

Located in the Series section, this application opens with an animated story about Red Green's abduction by an alien. The alien believes that Red's brain is the perfect specimen for studying the mentality of the human male.

The application's metaphor is a futuristic laboratory containing a MainBrainScreen, a photo of Red, and a monitor with Red's heart rate. When users move the mouse over the MainBrainScreen, the mouse turns into a magnifying glass. By exploring Red's brain on the MainBrainScreen, users activate the **Written Word** (an interactive reading game), the **Spoken Word** (streaming video clips from the TV show), and the **Word Game** (an interactive word game). Once users successfully complete the word game, they are rewarded with an interactive game of hockey.

The interactivity in the Lit Quiz and the Red Green Show applications is close to Level 3 (complex participation). These applications combine sound, text, video, and animation in an entertaining, complex way. Both applications use a variety of cues and techniques to engage the user and cause the user to respond. The other applications are primarily Level 1 (passive) and Level 2 (limited participation), in that users make simple responses to instructional cues.

Evaluation

The following topics examine the specific elements that comprise the overall content and design of the ArtsCanada Web site.

Media

- A Loading bar provides a visual cue of progress whenever an application is initiated.
- The media is a little confusing at times. There are audio cues and visual cues, but their usage is not consistent.
- The site does not provide a volume adjustment in the Flash presentation.
- A user can play more than one audio clip at a time.
- There is some gratuitous use of animation. For example, when users move their mouse over a section link such as **Art News**, a description window

appears in the bottom left corner of the screen and slides across the page to the link. The description cannot be read while it is in motion, and this animation occurs every time users click on a section link.

- The streaming video clips are not clear. Users must have Real Player to watch them.

Content

- The content supports the site mission of promoting national pride and supporting Canadian arts and culture.
- The content is appropriate for the target audience.
- Though the site contains an effective introduction, it does not include an effective conclusion as the site is designed to be open-ended.

Site Design

- Some of the text is hard to read because there is not enough contrast between the text and the background. Also, the overlay of white text over the pictures is hard to read because many of the pictures have white in them.
- The design of the site is very complex. It could be simplified.
- Not all images contain alternate text.
- There are six separate sets of buttons on the main page that are arrayed all around the screen. These buttons are inconsistent. For example, the buttons on the top menu do not display audio or visual feedback when the mouse is moved over them, but the content buttons do. The four buttons on the left side display moving boxes that tell users more about the buttons. If users click on the home, radio, or local buttons, the behavior of the tool bar at the top changes. It displays mouse-over menus, which are different from the rest of the site.
- The **Drag For More Pictures** bar in the True North Concert application is a cool effect. It displays a series of blurry pictures that transition in sequence when users drag the bar across the bottom of the page. The effect is interesting but confusing due to the blurriness of the pictures.
- Some credits are listed, but others are not.
- Fonts are inappropriate for Web use. Some are quite small. If users have small monitors, they might have difficulty reading the text.

Usability

- Some of the links open new windows, and some do not. There is nothing to indicate which link will do what. Also, some of the buttons do not open up new windows. Instead, they overlay the content frame.
- Not all buttons function as hotspots.
- The site has many icons without clear labels to indicate navigation.

According to Bobby Online, the ArtsCanada site does not meet the requirements for Bobby AAA approved status. Some problems include:

- The site does not provide alternate text for all images.
- The pages cause the screen to flicker rapidly.

- An alternate, accessible version of the site is not available.
- Problems exist in the structural mark up of the tables.
- Information conveyed by color is not also represented another way.

User Motivation and Interest

- The content and multimedia elements of the ArtsCanada Web site provide users with a fun and educational experience.
- Users might be motivated by the chance to win prizes in the site's online quiz competitions.
- The media employed in the site serve the purpose of the site, attracting the user's attention and enabling exploration and experimentation.
- The sight is aesthetically pleasing.

Grammar, Spelling, and Punctuation

There are no spelling or grammar problems on the ArtsCanada site.

Behr Introduction

The Behr Web site welcomes the Internet visitor to explore the Behr Process Corporation's paint, stain, sealing, and finishing products. The Behr Process Corporation is a subsidiary of the Masco Company, the largest manufacturer of kitchen and bath cabinetry in the United States (US). The site provides general information about the company, including:

- Company history
- Job search
- Product information
- Safety disclaimers
- Store locations

The primary focus of the Web site, however, is an interactive means for the visitor to gain inspiration, explore color combinations, build a workbook/scrapbook, and obtain instructions for using Behr's products through the ColorSmart™ application.

The Behr Process Corporation and undisclosed content providers designed the Web site using Macromedia Flash 6.0 and hold the copyright on the site.

Behr Comprehensive Review

The following table presents the completed evaluation rubric for the Behr ColorSmart™ application. A comprehensive evaluation follows.

Table 2 Behr Rubric

http://www.behr.com/behrx/		
Points	Elements of Review	
(50) 47	Media	<ol style="list-style-type: none"> 1. Multiple media elements used (text, static graphics, forms, animations, interactive graphics). 2. Almost all media elements support user understanding. Animations on introductory page support user engagement but not understanding. 3. All media elements are appropriate for content. 4. Images are in proper formats (.jpg, .gif, .png) and are sized appropriately. 5. Images are crisp and clear when displayed. 6. Animation, when used, is well designed and has a clear purpose. 7. Interactive elements are present and successfully engage the user. 8. Media is appropriately distributed page to page (no more than 1-2 elements per page.) 9. The gratuitous use of media is avoided. <p>Comments:</p> <ul style="list-style-type: none"> • The media is simple but exquisitely executed. It does not distract visitors and forms the core of elements providing the site's utility. • Significant accessibility issues exist, which audio and alternative text could mitigate. However, the primary purpose of this site is to assist visitors in the selection of colors.
(50) 48	Content	<ol style="list-style-type: none"> 1. Content is appropriate for target audience. 2. Content order matches design flowchart. 3. Content contains an effective introduction. 4. Transitions exist, and there are effective signal content changes. 5. Content includes an effective conclusion. 6. Most credits are listed. <p>Comments:</p> <ul style="list-style-type: none"> • The content meets the needs of the targeted audience. The site gains broader utility by citing resources available at the point of sale. It would be beneficial to add the ability to order color corrected paint chips matching the visitor's project specifications. • The credits indicate the existence of an undisclosed content contributor. • The site does not explicitly note the use of Flash 6.0.

Points	Elements of Review	
(50) 49	Site design	<ol style="list-style-type: none"> 1. Web site is logically organized with a clear hierarchy. 2. Site design is consistent from page to page. 3. Pages use a grid or template format to organize content. 4. Colors are used appropriately both for aesthetics and interface design. 5. Page interface is intuitive. 6. A clear metaphor is present. 7. Site design follows flowchart specified in design blueprint (This is assumed, as the design blueprint is not available for analysis.) 8. Media is placed appropriately within page structure. 9. Site design shows excellent application of Web design standards. 10. Text clearly communicates how to proceed through site and how to use multimedia elements. 11. Fonts are appropriate for Web use.
		<p>Comments:</p> <ul style="list-style-type: none"> • The site is easy to navigate, with multiple points of entry to individual elements. • Page real estate is used effectively, with minimal text used when graphical elements provide the visitor's interaction. Open space ensures a non-distracting background. • The project metaphor provides an obvious link to the real world, along with logical introduction and conclusion points. • The only deduction in design stems from its complete reliance on visual acuity and dexterity, making the site inaccessible to anyone with disabilities in these areas.
(50) 48	Usability	<ol style="list-style-type: none"> 1. All media plays as it should (sound, animation, and video perform appropriately.) 2. Buttons and hotspots work as they should. 3. All hyperlinks work. 4. An exit option is available on appropriate pages. 5. Icons or clear labels are used to indicate navigation. 6. All necessary files are on the server.
		<p>Comments:</p> <ul style="list-style-type: none"> • All links function as expected. • Some pop-up windows lack exit provisions. The exit button must be scrolled to in all definition pop-up windows.
(50) 50	User Motivation and Interest	<ol style="list-style-type: none"> 1. The site and media elements engage the user through novelty and the usefulness of the information. 2. The site design makes the user want to return to the site again. 3. Media elements are welcome and not distracting.

<http://www.behr.com/behrx/>

Points	Elements of Review	
		Comments: This sight is fun and easy to use. Although the overall design is simple, the results provided by the interactive project tools are endless. This is definitely a site to return to again and again.
(50) 40	Grammar, Spelling, and Punctuation	<ol style="list-style-type: none"> 1. Site and media elements are mostly correct grammatically, and there is one spelling error noted. 2. New and unusual acronyms and words are explained by use of hypertext definitions. 3. Punctuation rules are mostly followed appropriately.
		Comments: <ul style="list-style-type: none"> • The text contains a few instances of missing commas and hyphens. • The site uses passive voice and future tense throughout text.
Total Points: 282/300		

Interactivity and Multimedia Highlights

The Behr site provides an excellent example of careful, effective use of multimedia. The introductory page engages the visitor with catchy animations of paint swiping across the screen to reveal images of home interiors and exteriors brilliantly decorated, ostensibly, with Behr products. The site invites the visitor to enter the inspiration area for examples of how color can foster a mood, create memories, update the environment to current styles, and contribute to the home’s practicality. When sufficiently inspired, whether by the site or before entering, the visitor can select colors by name or number, by browsing via a color spectrum tool, or by building from a conceptual description (e.g., peaceful, neutrals, relaxing, etc.). The site makes various coordinating recommendations, invites the visitor to modify the selections, enables the visitor to preview the colors applied to the virtual room of their choice, and then prompts the visitor to save the selections in a project. Although the interactivity levels throughout the site are primarily Level 1 (passive) and Level 2 (limited participation), the interaction with the application during the color manipulation and room design approaches Level 3 (complex participation).

The site carries the project metaphor throughout the visitor experience as the ColorSmart™ application enables the visitor to enter room types, dimensions, and other specifications (number of doors and windows), and then computes the recommended quantities needed for the various products. The site provides clearly written instructions for applying the various products, as well as safety considerations and tools necessary to complete the project.

The narrow scope of the site enables visitors to quickly find what they need. The simplicity of multimedia usage streamlines the site, makes for quick response times, and minimizes wait time. The lack of audio and video media does not affect the usability of the site by its intended audience. However, incorporating audio and video could mitigate accessibility issues for those with visual or dexterity

impairments. Overall, the site is easy to understand, fun, open-ended, and a good vehicle for highlighting the company's products.

Evaluation

The following topics examine the specific elements that comprise the overall content and design of the Behr Web site.

Media

- Graphics images appear in both .gif and .jpg formats. The images are clear and crisp online. The hue and saturation are consistent image to image.
- The site uses animation sparingly and effectively. A Loading bar provides a visual cue of progress when initiating ColorSmart™. Animated lines appear in new pop-up windows to draw the visitor's attention from the title of the window to the prompt for interaction, and then on to the item on which action should be taken. Hot spots shift position or highlight when selected to indicate that the site registered the visitor's mouse-click. When elements online shift by only subtle color changes, the site uses movement across the screen or shrinks the old elements, then zooms the new ones to ensure that the visitor knows that a change occurred.
- Forms function reliably to enable users to email their questions to customer support, apply for open positions at the company, and register the visitor name to enable project saving.

Content


- The site's content is tightly organized, with effective transitions from element to element.
- The content is grouped logically, with identifiers that intrigue and invite the visitor to explore.
- The site presents minimal content on each page, with sufficient clear space provided to enable the visitor to glean the information with little distraction.
- The site's introduction provides general background, and the visitor's journey concludes with an invitation to save the project.

Site Design

- The opening page of ColorSmart™ provides the minimum requirements for using the application. Additionally, it contains a warning that pop-up suppression software must be disabled in order for the application to function. Given the importance of this warning, consideration should be given to providing a more prominent placement of the information.
- The site design allows for multiple entry points to most of its functionality (e.g., tabs, link lists, contents pages, etc.), and for multiple paths to individual elements (e.g., the color modification element). Despite this, the simple, overall design makes navigation and orientation manageable by the visitor. Although the site's hierarchy is clearly communicated in the introductory pages, the site does not force a path through the information that would hamper the visitor's experience. Similar to a shopping expedition, the visitor can wander at will, sample along the way, save whatever is found, and then leave, with the knowledge that a return is possible at any time.

- The design provides a known metaphor of a project and the paint chip, which will be familiar to most visitors contemplating home improvement projects. The paint chips produced by the visitor online look like what can be selected from a paint display at a Home Depot® store. The site designers could consider enabling visitors to order color corrected paint chips for their individual projects as a nice-to-have feature.
- The preview feature teaches the visitor, through exploration, the meaning of the terms used on the site. For example, when the visitor selects **Accent Color**, associates a color to the term, and then selects **Preview**, the appearance of the selected color defines the Accent Color term.
- Especially nice in this Web site is the matching of the color scheme to that of the product labels and the printed literature and brochures available at the Behr display in a Home Depot store. This consistent branding and the printer friendly version of the project that provides a graphic to associate the colors on the virtual paint chips to their location at the store's Color Center display enables the visitor to use the information produced online when ready to move ahead with the project at the store.
- The site uses a sans serif font consistently throughout, with sparing use of alternative fonts for emphasis. In most cases, the number of fonts on any given page does not exceed three. Navigation pages are exceptions to this norm, but do not seem unduly distracting, as the density of content is low.

Usability

- All links within the site function consistently and take the visitor to where expected.
- Animation elements function smoothly.
- The site provides a glossary of terms through hypertext links. The definitions appear in small pop-up windows in the upper left corner of the screen. The visitor must close the window by clicking the MS Windows  icon or the **[Close Window]** button in the window's lower right corner. In each of these pop-ups, the button appears below the display area, requiring the visitor to scroll down. It would be preferable to provide the definitions in small pop-up text boxes adjacent to the term that automatically disappear when the user navigates away from the link.
- A significant amount of the site's interaction occurs within pop-up windows. Although many of the windows provide buttons in the lower left corner that enable the visitor to return to the previous function level, it can be difficult to make more subtle back-ups, for instance, to the color just selected. Additionally, some of the windows do not have any back-out provisions.

According to Bobby Online, the Behr site does not meet the requirements for Bobby AAA Approved status. Among the priority 1 user checks, significant shortcomings exist.

- The site provides almost no alternative text for images or animations.
- Essentially, the site conveys almost all of the information on the page through subtle use of color (that is the site's purpose, after all). With no

audio and little to no alternative means of communicating the information, the site is inaccessible to anyone with significant visual impairment.

Among the priority 2 user checks, the total reliance on the mouse significantly impacts those with significant dexterity disabilities.

User Motivation and Interest

- The content and multimedia elements of the Behr Web site provide visitors with a fun and useful experience.
- The media employed in the site serve the purpose of the site, attracting the visitor's attention and enabling exploration and experimentation.
- The sight is aesthetically pleasing. The color palette selected reinforces the perception of the expertise of the product designers – if they can do things this well online, they must know what they are talking about when providing expert decorating advice.
- Given that the most likely audience is the amateur decorator or homeowner interested in home improvement, the content of this site provides most of the information needed. The site introduces more advanced techniques and provides information about how to obtain more information from a CD-ROM available at Home Depot.

Grammar, Spelling, and Punctuation

- One spelling error appears in the Project Organizer: Faux Finishing: SandWash procedure.
- There are a few instances of missing commas and hyphens.
- Use of passive voice and future perfect tense is prevalent.

ClassZone Introduction

Textbook publisher McDougal Littell (ML), a subsidiary of the Houghton Mifflin Company, produces ClassZone. ML publishes middle school and high school textbooks in Mathematics, Social Studies, World Languages, Science, and Language Arts. Since the content and delivery is consistent throughout these disciplines on the site, this evaluation includes a brief site overview and then focuses on the Spanish subsection of the World Languages section.

ClassZone is designed using HTML, Javascript, and Flash technologies.

The primary ClassZone audience is students who use ML texts in their classroom. The site is built around the core curriculum found within ML's textbooks and mimics a book metaphor: title, chapter, and section. The opening screen includes well-designed icons that represent the major disciplines: Mathematics, Social Studies, World Languages, Science, and Language Arts. Selecting an icon presents a new Web page that further categorizes the subject, linking the user to a specific textbook. The interface enhances the book's content by incorporating additional information and online activities. The site provides opportunities for students to continue their study independently and at their own pace outside of the classroom.

After selecting **World Languages** from the home page, the student is presented with three choices: French, Spanish, and German. Selecting **Spanish** brings up pictures of all the Spanish textbooks that ML currently publishes. After the student selects a textbook, a Web page is presented that contains the following content descriptors:

- Online Workbook
- WebQuest
- Vocabulary Flashcards
- Self Check Quizzes
- The Writing Center
- Search with the Book

The information is well presented graphically. Content structure and grammar are of high quality and consistency. Students must pick their textbook and then their unit (*unidad*) in order to access that unit’s activities.

A specific set of content is also targeted to teachers. ML recognizes that teachers are its primary customers and often have decision-making authority in regard to textbooks; thus, ClassZone provides an online store. Teachers also benefit from curriculums, quizzes, and grading applications – all provided within the site. ClassZone even incorporates an interactive US map that allows teachers to find their state’s educational performance criteria. ClassZone then links the criteria to the specific textbook and section where the criterion is implemented.

ClassZone Comprehensive Review

The following table presents the completed evaluation rubric for the Spanish section of ClassZone. A comprehensive write-up follows.

Table 3 ClassZone Rubric

http://www.classzone.com/books/en_espanol_1b/		
Points	Elements of Review	
(50) 42	Media	<ol style="list-style-type: none"> 1. Multiple media elements used (more than three types). 2. All media elements support user understanding. 3. All media elements are appropriate for content. 4. Images are in proper formats (.jpg, .gif, .png) and are sized appropriately. 5. Images are crisp and clear when displayed. 6. Animation, when used, is well designed and has a clear purpose. 7. Interactive elements are present and successfully engage the user. 8. Media is appropriately distributed page to page (no more than 1-2 elements per page). 9. The gratuitous use of media is avoided.

Points	Elements of Review	
		Comments: The media is varied and well designed, though it would be nice to add some video.
(50) 45	Content	<p>1. Content is appropriate for target audience. 2. Content order matches design flowchart. 3. Content contains an effective introduction. 4. Transitions exist, and there are effective signals for content changes. 5. Content includes an effective conclusion. 6. Credits are listed.</p> <p>Comments: • Content is mapped appropriately to the textbooks and expands upon them nicely. • The inclusion of external links adds additional value; however, some of the content links are only placeholders and are under development.</p>
(50) 40	Site design	<p>1. Web site is logically organized with a clear hierarchy. 2. Site design is consistent from page to page. 3. Pages use a grid or template format to organize content. 4. Colors are used appropriately both for aesthetics and interface design. 5. Page interface is intuitive. 6. A clear metaphor is present. 7. Site design follows flowchart specified in design blueprint. 8. Media is placed appropriately within page structure. 9. Site design shows good application of Web design standards. 10. Text clearly communicates how to proceed through site and how to use multimedia elements. 11. Fonts are appropriate for Web use.</p> <p>Comments: • Pretty well designed hierarchically, but there is some confusion about how to get back to the main ClassZone home page without using the Back button. • Some pages should be combined. • The navigation is a little thin on some pages and could be more robust.</p>
(50) 38	Usability	<p>1. All media plays as it should (sound, animation, and video perform appropriately). 2. Most buttons and hotspots work as they should. 3. Most hyperlinks work. 4. An exit option is available on appropriate pages. 5. Icons or clear labels are used to indicate navigation. 6. All necessary files are on the server.</p>

Points	Elements of Review	
		Comments: 90% of the hyperlinks work, but some are broken or do not ever come up. This is particularly true for the external links.
(50) 45	User Motivation and Interest	<ol style="list-style-type: none"> The site and media elements engage the user through novelty, humor, game elements, testing, adventure, unique content, or surprise elements, etc. The site design makes the user want to return to the site again. Media elements are welcome and not distracting.
		Comments: <ul style="list-style-type: none"> The interface is colorful but not overdone. It is very effective for both teachers and students. The multimedia components enhance learning and are complimentary to the learning process. Motivation is primarily driven by the student's interest in the subject – not by the Web site itself.
(50) 50	Grammar, Spelling, and Punctuation	<ol style="list-style-type: none"> Site and media elements are completely correct grammatically, and there are no spelling errors. New and unusual acronyms and words are explained when first used. Punctuation rules are followed appropriately.
		Comments: Excellent
Total Points: 260/300		

Interactivity and Multimedia Highlights

While the overall content is well executed and supports learning, the focus of this evaluation is on the effective use of multimedia and interactivity. Current learning theory suggests that by effectively combining multimedia elements such as text, graphics, sound, and animation, the student will engage to the extent that deeper learning occurs. That said, the multimedia application that really stands out in this site is the Flashcards, so the remainder of the evaluation focuses on the Flashcards application.

Flashcards

Flashcards have been an educational staple for many years. From kindergarten forward, these 3x5 index cards are effective because of their simplicity – questions on one side of the card, answers on the other. The traditional learning experience involves collaborative interaction between the teacher and the student. This interactivity translates seamlessly to the computer – the computer takes over the teacher's role. ClassZone's Spanish Vocabulary application faithfully follows the card metaphor. The initial screen shows a lined index card containing a word in English. The student tries to guess the Spanish translation. Moving the mouse over the card displays an animated arrow with the words *turn card*. Clicking on the card animates the graphic and realistically "turns" the card over, revealing the correct

Spanish word. The student can select **Play** to hear the word spoken with the correct pronunciation. The entire 64-card stack can be turned over by selecting **Flip Stack**. Then, the student can view the cards from the Spanish side.

This application effectively combines sound, text, graphics, and animation in an engaging and entertaining way. Learning takes place because 1) the activity is well executed and 2) the activity follows a predictable and well-known schema that utilizes clear learning cues. Traditional flashcards are a proven vocabulary-learning tool. The use of the computer improves upon this method because the teacher and/or student do not have to spend their time making the cards and because the content is mapped to the student's progress within the textbook.

The interactivity in the flashcards is close to Level 3 (complex participation). While the student responses are relatively the same, the leveraging of the various multimedia elements distinguish it from the typical point and click interactivity found in Levels 1 (passive) and 2 (limited participation).

Activities like The Writing Center, WebQuest, and Quizzes primarily include Level 1 and 2 interactions. This is not intended to imply that ClassZone is not providing a value-added learning environment. Taken as a whole, ClassZone is quite complete and detailed.

Evaluation

The following topics examine the specific elements that comprise the overall content and design of the ClassZone Web site.

Media

- The Writing Center and WebQuest activities provide students with instructions and scenarios that they can apply to written assignments. Students can upload these assignments, and teachers can download them for grading.
- Quizzes involve interactive multiple-choice questions and feedback. Quizzes can be automatically submitted and graded by a Grading application.

Content

- Though the Flashcard application is a good example of multimedia, there may be some confusion around the word Play. Play in an interactive environment often signals the start of something. In this case, Play really means Listen. Changing Play to Listen would strengthen the cue between the multimedia element and the actual activity — hearing the spoken Spanish word.
- Content is mapped appropriately to the textbooks and expands upon them nicely.
- The inclusion of external links provides students with additional study resources.

Site Design

- The interface is colorful but not distracting.

- The flashcards are a good example of site design consistency. They appear in different disciplines throughout ClassZone and include alternative exercises, such as finding the missing pronoun in a sentence.
- Some pages could have been combined; for example, drilling down to the student's textbook takes about four clicks – utilizing pull-down menus could reduce this to one click.
- The navigation is a little thin on some pages and could have been more robust. For example, sometimes students are "stranded" – they're either allowed to go back one level or must jump back to home, but they are forced to skip the intermediate levels.

Usability

- There are some issues with broken or missing hyperlinks. This is particularly true for the external links.
- Externally linked pages are often of poor quality. ClassZone should have standards for linking to quality content regardless of whether the content is generated by them or not. Their quality assurance process should ensure that their external content matches their internal standards. While evaluating the site, this external content often caused confusion and "noise" (disruptive to the learning experience – no value added).
- Some content (e.g., Online Workbook) is not available.

According to the Bobby Online, ClassZone does not meet the requirements for Bobby AAA approved status. Some problems include:

- An alternate, accessible version of the site is not available.
- There should be a NOSCRIPT element on an appropriate part of the page which provides the same information made accessible to browsers that do not support scripting.
- Any changes in the document's language (e.g., `<HTML lang="fr">`) should be identified.
- The site does not include a document type declaration (DTD) at the beginning of a document that refers to a published DTD (e.g., the strict HTML 4.0 DTD).
- The site does not always provide alternate text for images.

User Motivation and Interest

- The site is an effective study aid for students.
- The site is an effective resource for teachers.
- The multimedia components enhance learning and are complimentary to the learning process.

Grammar, Spelling, and Punctuation

There were no spelling or grammar problems on the ClassZone site.

Summary

While not a spectacular example of multimedia, the ArtsCanada Web site fulfills its purpose of promoting Canadian arts and culture. The content is presented in a useful, entertaining, and interactive format. The site could be improved by redesigning the button bars and toolbars into a consistent formation with consistent actions. Also, smoothing out the navigational structure would improve the site. Despite the problems with ArtsCanada, people looking for Canadian Arts and cultural information would find the site to be satisfactory.

ClassZone is a well-designed, online, educational product. It is attractive and maps well to the real world classroom environment. It is engaging and includes many intuitive features. But the site only occasionally utilizes dynamic multimedia features. This is most likely a business decision — multimedia can be costly, and textbooks tend to churn every few years, so the publishers would find it difficult to maintain the site if too much high-end multimedia is incorporated. After interviewing a student ClassZone user, the reviewer found that the student user does feel that this site has enhanced her performance and improved her Spanish. Overall, ClassZone serves its audience quite well.

The high score in the rubric analysis, 282, went to the Behr Web site. The Behr site, and its online implementation of ColorSmart™, provides an extremely effective marketing tool for the paint, stain, and finishing products of the Behr Process Corporation. Its attractive design and skillful application of multimedia elements invite visitors to explore the products while assembling the components of their home improvement projects. The interactive exploration of the Behr products and the myriad colors available extend the experience of those who only visit the brick and mortar outlets, such as Home Depot. Custom paint chips reflect individual selections, encouraging potential customers to explore additional products. Visitors save their projects, and the site invites them to print their selections. The output from these online sessions provides potential customers with a graphic that associates the virtual paint chips in their projects with the actual location of the paint chips in the retail outlet's Color Center display. The online experience thus brings the visitor into the real world where their purchases must be made. While providing a valuable service to its visitors, the Behr Web site successfully serves the company objective of spotlighting its products and uses both multimedia and interactivity most effectively.