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CONTENT AND INTERFACE ANALYSIS OF SEAWORLD.ORG

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# CONTENT AND INTERFACE ANALYSIS OF SEAWORLD.ORG

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# CONTENT AND INTERFACE ANALYSIS OF SEAWORLD.ORG

## EXECUTIVE SUMMARY

The Animal Information Database, or ***seaworld.org***, is a multifaceted web site that serves as an educational resource for students, teachers, and the general public. The site provides information about wildlife and conservation, and educational resources such as Shamu TV and SeaWorld/Busch Gardens Adventure Camps. The site also contains lesson plans for teachers that comply with national science standards.

This report describes a formative evaluation of the interface and educational content of ***seaworld.org***. The study applied a descriptive approach to address the following evaluation questions.

- Is ***seaworld.org*** designed well?
- Are the scholastic elements educationally sound?

### Data Collection

To analyze the interface of the site, three frameworks were consulted: VOICES, Evaluation Checklist, and Draft Evaluation Criteria for Content-Based Web Sites (DECCWB). Each methodology emphasized a different area of analysis for online educational materials. Elements from each were taken that best served the character of ***seaworld.org*** and the needs of the evaluation.

An instrument was developed that focused on three major areas: design, navigation and technical issues. A four-point scale was used to analyze each area: Needs Work-1 point, Adequate-2 points, Good-3 points, and Excellent-4 points.

To analyze the scholastic elements, a modified version of a structure advocated by Sullivan and Higgins (1992) was used. The instrument focused on issues related to objectives, assessment, ease of use, content, appeal, and target audience. The instrument employed the same four-point scale.

## **FINDINGS**

In response to the question, "Is the site designed well?", analysis showed the following:

### **Design**

Conclusion: There is room for improvement concerning the aesthetics of the site.

Recommendation: Navigational links do not have to be limited to text. Often a simple rectangle with a drop-shadow makes a very attractive link. Also, images do not always have to be directly related to the text that appears on the page. Sometimes images can be used within a site just to set a mood.

Conclusion: The design, content and navigational elements of the site are not well integrated.

Recommendation: Develop a consistent theme that permeates the site. Themes are often used to tie navigation and content together. The ocean or the jungle are potential themes for **seaworld.org**.

### **Navigation**

Conclusion: Navigation in some areas is confusing. Also, several navigational designs are employed throughout the site.

Recommendation: Develop a solid, consistent navigational system that can meet most of the needs of the site.

Conclusion: A site map is not available.

Recommendation: Because of the size of **seaworld.org**, making a site map available to users would be an added convenience.

### **Technical Issues**

Conclusion: Several links that result from use of the search tool lead to meaningless text.

Recommendation: Correct any problems with the search tool.

In response to the question, "Are the scholastic elements educationally sound?" analysis showed the following:

Conclusion: Many of the objectives need to be refined.

Recommendation: Objectives should be stated to focus on the individual learner, not several learners.

Recommendation: Objectives should be stated to illustrate the expected observable behavior of the learner.

Recommendation: Objectives should state what the learner will be able to do after instruction, rather than what the learner will be doing during instruction, or why the learner is participating in the instruction.

Conclusion: Goals within the Teacher's Guides need to be refined.

Recommendation: Goals do not have to be as specific as objectives, but should still focus on observable performance.

Conclusion: Several activities and Teacher's Guides are targeted at very large age groups without suggestions on how to scale the content.

Recommendation: Target lessons to a smaller range of grade-levels.

Recommendation: Provide suggestions for scaling when necessary.

Conclusion: Currently, teachers cannot easily determine if the Teacher's Guides or specific Classroom Activities correspond to American Association of the Advancement of Science (AAAS) standards.

Recommendation: Post a notification near all Teacher's Guides and Classroom Activities that identifies the content as complying with AAAS standards.

Recommendation: Post information that clearly identifies which standards are met by each Teacher's Guide and Classroom Activity.

## **CONTENT AND INTERFACE ANALYSIS OF SEAWORLD.ORG**

**Seaworld.org** has been operational for six years. During the time of its existence, no formal procedures have been put in place to monitor its use or guide its development. The present evaluation has been prompted by the need to obtain a better understanding of what can be done to enhance the site.

### **PRODUCT DESCRIPTION**

#### **Setting**

SeaWorld San Diego first opened March 21, 1964. The park initially encompassed 22 acres and featured three main attractions: the Japanese Village, Lagoon Stadium, and Saltwater Aquarium. Today there are action adventures, hands-on exhibits, and themed environments to explore. In 1989, Anheuser-Busch (AB) acquired the park, which is operated by its Busch Entertainment Corporation (BEC) subsidiary. Also under the BEC umbrella are the other four SeaWorld venues, Busch Gardens, Discovery Cove, Williamsburg, Busch Gardens Tampa Bay, Water Parks, and Sesame Place. According to the parent corporation's 1999 annual report, AB parks entertained 19 million visitors and generated \$111 million in revenues. The San Diego park has grown to 166 acres and 19 major attractions since acquisition by AB.

#### **Mission**

The AB parks and their corporate partners strive to increase public awareness and appreciation for wildlife and conservation. SeaWorld San Diego's mission--expressed in nearly all marketing materials--is to entertain, amaze, and educate, creating memories that last a lifetime.

The San Diego Zoo and Wild Animal Park also aim to increase public awareness about environmental issues. However, SeaWorld sets itself apart in its endeavors to provide educational entertainment. The proposed *Splash Down Ride* exemplifies SeaWorld's efforts to simultaneously educate and provide the excitement normally associated with a theme park, fulfilling its mission.

## **Web Site**

**Seaworld.org** went online in November of 1994. The web site is maintained by Christine Morrision of SeaWorld San Diego and Pamala Wilson of SeaWorld Florida. Both webmasters collaborate to update and add new information to the web site. They work closely with all animal services departments to develop new content and ensure accuracy.

**Seaworld.org** is designed to be used by anyone interested in learning about wildlife and the environment, but is specifically targeted to K-12 teachers and students. Teachers and students can access the web site to obtain curriculum materials or search for specific topics.

**Animal Resources.** The *Animal Resources* link takes visitors to resources that are part of the SeaWorld/Busch Gardens Education Series. The education series includes information about wildlife issues and specific kinds of animals. For example, the *Animal Resources* section of the web site provides links to sections on animal rescue and rehabilitation, endangered species, and environmental conservation. Visitors may also access information on birds of prey, walruses, Clydesdales and many other animals. These sections provide information about the physical characteristics of the animals and their habitats, in addition to bibliographic information and supplementary resources.

**Educational Resources.** The *Education Resources* section is specifically designed to provide resources for teachers interested in finding an active, hands-on approach to teaching their students about animals and conservation. This area of **seaworld.org** offers lesson plans that integrate science, mathematics, geography, art, and language. Each lesson identifies the intended age group, goals and objectives, and relevant vocabulary. The lessons include a bibliography, and some may offer suggestions on assessment and where to find additional resources.

**Search the Animal Information Database.** The Animal Information Database may also be accessed by conducting a keyword search. For example, a visitor may enter "monkey" in the search field and subsequently be presented with several

links to information about monkeys. All searches are limited to the resources contained in ***seaworld.org***.

**Marketing.** The site is also marketed by displaying the Internet address on all educational publications and materials. These materials are viewed by teachers and students and can be used in conjunction with the resources provided at ***seaworld.org***. The SeaWorld Education Department also networks with participants at science educator conferences to further publicize the web site.

### **PURPOSE OF THE EVALUATION**

This evaluation was initially designed to be formative and serve three purposes. One purpose was to appraise how the site was being used. The objective was to determine if the site was being used as planned, or used in innovative, but perhaps "unintended" ways. Another purpose of the evaluation was to assess the degree to which ***seaworld.org*** corresponded to SeaWorld's mission statement and to the goals of the Education department. The third purpose was to determine if the site was designed well.

The present evaluation has remained formative, but was modified to focus on two major areas. The design of ***seaworld.org*** has remained a central point of the evaluation and incorporates a descriptive approach. Specifically, the site's usability, aesthetic appearance, and currency were assessed. The evaluation concentrated on the soundness of the educational materials available on the site; a descriptive approach underlies that effort.

## EVALUATION QUESTIONS

### Proposed Evaluation

The following table presents the first set of questions that were drafted to guide the evaluation. Also included were related subquestions, the purpose of each question, and data collection strategies. The initial evaluation plan relied mostly on survey data, to be obtained from teachers and students. Because of difficulties in finding subjects familiar with the site, the evaluation was restructured. [The questions for the evaluation as conducted appear on the following page.]

Evaluation Question	Subquestions	Purpose	Data Collection Strategy
1. Is the site designed well?	<ul style="list-style-type: none"> <li>• Easy to navigate?</li> <li>• Aesthetically pleasing?</li> <li>• Updated regularly?</li> <li>• Adequate instructions/help for plug-ins?</li> <li>• Solid programming (e.g., works as planned all the time regardless of how many visitors are using it)?</li> <li>• Meets accessibility requirements and works well with graphics turned off?</li> </ul>	To determine if web site design allows visitors easy access to all instructional materials at all times.	<ul style="list-style-type: none"> <li>• Observation (of web site)</li> <li>• Interview (web designer)</li> <li>• Survey teachers and students</li> </ul>
2. How is the site used?	<ul style="list-style-type: none"> <li>• Use site as intended?               <ul style="list-style-type: none"> <li>• Supplementary materials used?</li> </ul> </li> <li>• Use site in unexpected, yet useful ways?</li> <li>• Use site as source for lesson plans?</li> <li>• Incorporate site into curriculum?</li> <li>• Use site only as an informational database?</li> </ul>	To determine if site has value to the intended audience.	<ul style="list-style-type: none"> <li>• Survey teachers and students</li> </ul>
3. How well does the site promote SeaWorld's corporate image?	<ul style="list-style-type: none"> <li>• Corresponds to the mission statement?</li> <li>• Overall structure is of the expected quality?</li> </ul>	To determine how the site is perceived by teachers.	<ul style="list-style-type: none"> <li>• Observation (of web site)</li> <li>• Survey teachers</li> </ul>

Table 1. Proposed Evaluation

## Implemented Evaluation

Below are the questions that guided the actual study. Related subquestions, purpose, and collection strategies are also listed. The first question remains unchanged. Note that the subquestions were more comprehensive, and there was no longer a reliance upon survey data. The second question introduced an issue for which data gathering activities were not originally planned. A content analysis was conducted to gauge the quality of the educational materials available on the site.

Evaluation Question	Subquestions	Purpose	Data Collection Strategy
1. Is the site designed well?	<ul style="list-style-type: none"> <li>• Clear purpose?</li> <li>• Easy to navigate?</li> <li>• Aesthetically pleasing?</li> <li>• Updated regularly?</li> <li>• Adequate instructions/help for plug-ins?</li> <li>• Reliable links?</li> <li>• Meets accessibility requirements?</li> <li>• Reliable links?</li> <li>• Loads quickly?</li> </ul>	<ul style="list-style-type: none"> <li>• To determine if web site design allows visitors easy access to all instructional materials at all times.</li> </ul>	<ul style="list-style-type: none"> <li>• Interface analysis of the site with customized instrument</li> </ul>
2. Are the scholastic elements educationally sound?	<ul style="list-style-type: none"> <li>• Clear objectives?</li> <li>• Relevant content?</li> <li>• Appealing content?</li> <li>• Appropriate assessment?</li> <li>• Appropriate audience?</li> </ul>	<ul style="list-style-type: none"> <li>• To determine if site has educational value.</li> </ul>	<ul style="list-style-type: none"> <li>• Content analysis with customized instrument</li> </ul>

Table 2. Implemented Evaluation

## **IMPACT OF THE LITERATURE REVIEW**

SeaWorld currently does not have in place a strategy for evaluating *seaworld.org*. To that end, then, the evaluator selected resources based on their potential to aid web and instructional designers in developing a new site or making modifications to the current site. The study conducted by Sarapuu and Adojaan (1998) described how educational web sites could be assessed by use of Likert-style (intensity) items. The literature also supported the need for continuous evaluation and provided several frameworks that could be used to determine the effectiveness of educational web sites. All the methodologies described in the review were integrated into the instrument ultimately used to appraise the interface of *seaworld.org*.

## **REVIEW OF RELEVANT LITERATURE**

### **Introduction**

Instructional designers focused on the design of materials for the informal education market must put a lot of thought into devising a strategy for development, especially if the web is the preferred medium of delivery. The design of a web site involves planning and anticipation. Web sites containing educational content will be scrutinized for their usability, appearance and accuracy, and developers must take this fact into account. Finally, institutions that provide informal education should expect to conduct continuous evaluation of their programs--especially those available online--and decide upon an evaluation framework or methodology during the development or redesign of their site.

### **Design**

Before redesigning or planning the construction of a new web site, the developer should research other sites that serve a similar purpose. Plous (2000) believes that investigation of other sites exposes the designer to new ideas and provides valuable resources that may be linked to from the new web site. A preliminary search may also yield the discovery of resources or tools that can be used by the designer, thus preventing their unnecessary development. For example, the designer should not waste time programming an online clock without first spending a little time to determine if one is already available to download.

In preparing to develop an educational web site, designers must also consider how it will be perceived by educators. Several guidelines have been drafted to help K-12 educators identify quality web sites, and it would be beneficial for the designer to become acquainted with some form of standards before proceeding too far into the development process.

**Evaluation Scale of Education Web Sites.** Sarapuu and Adojaan (1998) conducted a study in which 27 teachers were asked to assess two educational web sites using the Evaluation Scale of Educational Web Sites they developed. The two sites assessed were *Estonian Vertebrates* and *Arthropods*. The scale consisted of 43 Likert items, ranked 1-5, that were divided into three major groups: composition of the site, which focused on general characteristics, presentation and illustration of information, and user impressions; pedagogical aspects; and curriculum-related aspects.

The scale was used to identify areas in which one web site ranked higher than the other. The results were plotted and showed distinct differences between the two sites. In the area of general characteristics, *Estonian Vertebrates* consistently outperformed *Arthropods* and the subjects characterized the better of the two sites as having a more informative introductory page and more convenient navigational elements. In regard to the presentation of information, the *Estonian Vertebrates* site once again ranked higher, in part because it provided audio clips of animal voices. The results also revealed the users' impressions, showing that they considered the *Estonian Vertebrates* site as more enjoyable overall, and more likely to increase a student's motivation to learn.

Examination of the pedagogical aspects, which focused on motivation and educational philosophy, disclosed no significant differences, but the *Arthropods* site was thought to offer more opportunities for learner feedback. The curriculum-related results suggested that both sites are rich in extra-curriculum activities. However, scientific vocabulary is defined in the *Estonian Vertebrates* site, but application of the *Arthropods* site would require the use of supplementary materials.

The above study suggests an evaluation scale that can be used to examine an educational web site from several perspectives. Consulting the Evaluation Scale of Educational Web Sites or any framework during the design phase of a web site benefits the designer. Knowing in advance how the site will be evaluated can facilitate the development of a quality site.

**User Perceptions.** December (1998) warns instructors that sites may include useful and accurate information, but if organized poorly, they are not nearly as useful as web sites that are structured well. Teachers are also being encouraged to ask questions about how educational sites may address their particular needs. December suggests asking the following questions:

- Does Internet use enrich this activity?
- Does learning occur, or is too much time spent tweaking machines and software?
- What are the costs of the Internet activity? What time is not being spent because of the Internet activity?

The designer should keep in mind that visitors to the site will indeed ask such questions. It is essential that a site contains accurate information, is organized well, and easy to navigate.

One of the most common complaints of web users is that the information they need is difficult to find (Plous, 2000). To enable the user to easily navigate the site, much planning should go into deciding how the navigational system will be structured. All links should be descriptive and consistent throughout all pages, and plug-ins or other applications should be clearly labeled (Abdullah, 1998). Planning a solid navigational system, in addition to considering the users' perceptions, will aid in the production of a site that will be thought of as a useful educational resource.

**Analysis.** Content cannot be ignored. A full content analysis can help to determine if the web is the best medium for delivery. A thorough media analysis will reveal if the content is more suitable for videotape, print, lecture, or any other delivery format. Instruction that relies heavily on audio or video is not yet suitable for delivery over the web, but courses that would be enhanced through

frequent communication with the instructor or group interaction (e.g. through chat rooms) are ideal for Internet dissemination (Barron, 1998).

Also to be considered are the hardware capabilities and platform choices of the users. Important issues of concern are operating system, modem speed, browser, and browser version (Barron, 1998). It is necessary to understand how many users will be using a particular hardware and software configuration. Often, graphics that appear one way on a PC will appear differently on a Macintosh. Also, if a large percentage of users will be using older hardware and software, the designer will be limited in options relating to plug-ins and any other files that may be large in size.

### **Ongoing Evaluation**

Web sites should be evaluated the entire time they are in use (King, 1998). The best way to evaluate an educational web site is to first adopt a methodology or framework for guidance. Frameworks offer several issues to consider and the designer can choose from among many those that may be of most importance. VOICES, an acronym for an approach that examines a web site based on its vision, originality, integrity, community involvement, empowerment of primary users, and structure, is one of many frameworks developed specifically to address the issues related to the evaluation of educational online materials (Rutkowski, 1999). The Evaluation Checklist (Gray, 1997) and Draft Evaluation Criteria for Content-Based Web Sites (DECCWB) (Tweddle, Avis, Wright & Waller, 1998) are two additional approaches to web site evaluation worth considering.

All three approaches suggest assessment of web site accessibility. Accessibility addresses how well the site works with screen readers or other hardware or software used by visitors with special needs. Accessibility also relates to how well the site can be navigated with graphics disabled. Each framework also calls for assessment of the effectiveness of the navigational system. A third common characteristic among all methodologies relates to how well the site enables visitors to submit feedback or otherwise contact the authors of the site.

The Evaluation Checklist and DECCWB are more detailed than VOICES and promote assessment of the following:

- The update schedule of the site;
- The reliability of the information;
- How the site links to information that complements content; and
- How the site supports related offline educational activities.

**VOICES.** VOICES distinguishes itself as an evaluation framework because it addresses needs specific to informal educational web sites (Rutkowski, 1999). VOICES examines the following elements of educational web sites:

- Vision: how well the purpose of the site is articulated;
- Originality: the uniqueness of the content, design and interactive elements;
- Integrity: how well the content, design, vision and other elements come together to form a unified educational experience;
- Community: how well the site fosters new communication, internal as well as external;
- Empowerment: how involved students, teachers and parents are in the content, production and maintenance of the site; and
- Structure: the degree to which the site accommodates visitors with special needs.

The web sites of Girl Scouts of the U.S.A. (<http://www.gsusa.org/>), 4H in the USA (<http://www.4-h.org/>), and U.S. Youth Soccer (<http://www.usysa.org/>) have all been assessed by the VOICES framework. All sites involve non-traditional educational elements, which is why they are ideal to be evaluated by VOICES.

**Evaluation Checklist.** The Evaluation Checklist emphasizes on assessment of the absence of gender or cultural bias. This methodology also gauges how well the site expresses various points of view. Finally, it identifies to what degree visitors to the site are given the opportunity to develop critical thinking skills. The framework can be divided into the following components:

- Student action: how students communicate and send and receive feedback;
- Interface: aesthetic appearance and navigability;
- Curricular design: clarity of instructional objectives;

- Program design: effective use of technology to promote deeper understanding of ideas, and the application of e-mail groups and news letters to offer teachers opportunities to share experiences, opinions and suggestions about the program;
- Instructional design: accommodation of several learning styles and content which stimulates learner creativity; and
- Instructional support materials: support for students with special needs and suggestions for parent and community involvement.

The Evaluation Checklist is used at ED's Oasis, a project funded by AT&T Foundation and administered by California Instructional Technology Clearinghouse and the Stanislaus County Office of Education (Gray, 1997). ED's Oasis is an online resource that provides content to assist teachers in effectively applying technology and the Internet to their classroom activities. The site is divided into three main areas: a collection of sites that have received ED's Oasis approval, a section that features stories on how specific sites have been used by teachers, and guidelines for evaluation of online resources, which includes the Evaluation Checklist. The guidelines are used by the editorial board of ED's Oasis to determine the value of all resources recommended by the organization.

**Draft Evaluation Criteria for Content-Based Web Sites.** DECCWB provides a framework originally developed to aid in the evaluation of cancer web sites browsed by the general public. The authors solicit suggestions for improvement, so the content presented should be considered a work in progress. The present draft is ideal for web site assessment for two reasons: 1) the authors have designed it to be used by web developers and users, and 2) it suggests continuous assessment and offers guidelines for overall evaluation of the site (Tweedle, Avis, et. al, 1998). DECCWB focuses on the following criteria:

- Purpose: clearly articulated, with the target audience identified;
- Authority: credibility of authors and materials;
- Content: timeliness of content and clearly dated information;
- Design: accommodation of users with special needs; appropriate tone for purpose, audience and subject matter; ease of finding information;
- Readability: appropriate level of vocabulary and use of additional media to support learning;
- Implementation: how well the site accommodates users of varying hardware/software capabilities and technical skill levels;

- Evaluation: the degree of exploitation of the adaptive nature of the Internet; evaluation of usage to aid in continuous development; and
- Conclusion: the site's appropriateness for purpose and target audience; recommendations for improvement.

All three frameworks were consulted to aid in the development of assessment materials for the present evaluation.

## **METHODOLOGY**

### **Evaluation Design**

The intent of the study was to determine the quality of the educational materials available on the site, and to analyze the usability of the site's interface; therefore, a descriptive approach was applied. The chosen strategy facilitated an emphasis on such pertinent areas as content relevance and site navigability.

### **Selection of Content**

Within the Classroom Activities section of the web site, three activities were chosen for analysis: The Weight of Water, Manatee Awareness Survey and Manatee Mansion. Collectively, they represented common themes and covered grade-levels K-12. From the Educational Resources section, the Teachers Guide's Seals, Sea Lions and Walruses, Flight for Survival and Diversity of Life were selected, the focus there being the broad range of grade-levels they addressed. The evaluator is confident that these choices well represent the range of materials offered to teachers.

### **Instrumentation**

Two instruments were used to guide the analysis. One instrument outlined criteria for examination of educational content. The other defined parameters for analysis of the interface of the web site. Both instruments employed a four-point scale to rate specific areas of interest: Needs Work-1 point, Adequate-2 points, Good-3 points, and Excellent-4 points.

Each instrument appeared in outline form. All subtopics were accompanied by supporting information for which to look. For instance, the Appeal section of the content analysis instrument focused on variety and motivational cues. The Navigation section of the interface analysis instrument focused on the degree of ease in navigating the site and availability of a site map. These instruments were

flexible, yet well-defined; they could be easily tailored to suit the unique characteristics of the site.

The instrument used for content analysis is a modified version of a structure advocated by Sullivan and Higgins (1992). It was altered by the evaluator to address issues related to the materials found in the Teacher's Guides and the Classroom Activities section. The instrument focused on five major areas regarding the educational materials: Objectives, Content, Assessment, Ease of Use, Appeal, and Target Audience.

The web site interface instrument represents a combination of select elements found in VOICES, Evaluation Checklist, and DECCWB. The criteria found in this instrument were also compiled by the evaluator, and focused on design, navigation, and technical issues.

### **Data Processing and Analysis**

The means for three sets of scores were calculated. The three sets consist of scores representing individual Classroom Activities, Teacher's Guides units, and the interface of the web site. The means were derived by adding the scores for each element and dividing the sum by the total number of elements. For example, the Classroom Activities analysis required scores for five different areas. If each area for a particular activity received a score of 3, that activity would receive a total of 15 points. Fifteen (total score) divided by 5 (total number of elements) yields a mean of 3.0. A mean of 3.0 is equivalent to a rating of "Good".

## FINDINGS

### Classroom Activities

#### *The Weight of Water*

Criterion	Comments	Score
Objective	The objective suggests that students will come to understand that salt water is more dense than fresh water. The intent of the objective is justified, but it does not specify what the learner will be able to do after completion of the activity. Teachers reading the objective will have a better understanding of the intended outcomes if the objective explicitly describes observable behaviors. For example: The learner will be able verbally explain why salt water is more dense than fresh water. If the learner can perform the specified behavior, the teacher will know that the activity has been successful.	Good 3
Content	The content corresponds to the intent of the objective. The list of required materials is complete and intelligible. The sequence of events is logical and easy to follow, and will likely facilitate attainment of the objective.	Excellent 4
Appeal	Students are motivated by the opportunity to test their initial beliefs about which items will float and which will sink.  The Deeper Depths section adds variety to the activity by suggesting that the teacher allow the students to experiment with the items that initially sank. The teacher is also instructed to add more salt to the solution to simulate the buoyancy of the Dead Sea.	Excellent 4
Ease of Use	All required materials are common and easy to obtain. The actions required to complete the activity are easy to perform.	Excellent 4
Target Audience	The content of the activity is suitable for the intended audience (K-3). The concepts "density" and "buoyancy" are clearly associated with heaviness and an object's ability to float, respectively, and should be easy for a teacher to explain to the target audience.	Excellent 4
<b>Total</b>		<b>Excellent 3.8</b>

*Manatee Awareness Survey*

Criterion	Comments	Score
Objective	<p>The objective describes the forthcoming activity rather than what the learners will be capable of doing at the conclusion of the activity. It seems that the intent of the activity is to enable students to conduct a survey. As written, the objective goes beyond identifying what the learner will be able to do by offering additional information about why they are conducting the survey (...to investigate the public's manatee awareness...). Restating the objective will make it easier for teachers to focus on specific behaviors that should be exhibited by the learner. For example: The learner will be able to conduct a survey about the public's knowledge of manatees and produce a graph that displays their findings.</p>	<p>Adequate 2</p>
Content	<p>Academically, the content corresponds to the objective. However, how likely is it that the persons responding to the questionnaire will know enough about manatees to be able to respond with any answer other than "I don't know"? If the vast majority of the responses are "I don't know," the purpose of the graphing portion of the activity will be defeated. Comparisons between groups cannot be observed on a graph if the data tends to be confined to a singular response. The overall structure of the activity is solid, but perhaps it would serve the learner better if the subject (manatees) was replaced with a topic more familiar to the general public.</p> <p>The introductory activity sufficiently describes how to graph data. The steps for the graphing activity and subsequent actions are logical and easy to follow.</p>	<p>Adequate 2</p>
Appeal	<p>The additional suggestions of using a spreadsheet application to display data, and producing a cumulative graph of all findings add variety to the activity. Both suggestions maintain the spirit of the activity and give the students an opportunity to develop new skills (spreadsheet use and collaboration).</p> <p>Some students may be motivated by the opportunity to communicate with the public to collect the data. Students may also look forward to producing the manatee awareness materials (posters, flyers, newspapers, etc.).</p>	<p>Excellent 4</p>
Ease of Use	<p>The steps required to complete the activity are easy to follow and the items on the materials list are easy to obtain.</p>	<p>Excellent 4</p>

<b>Criterion</b>	<b>Comments</b>	<b>Score</b>
Target Audience	The activity is appropriate for grades 4-6, but should be modified to include more complex activities for grades 7-8. The activity could be used as an opportunity to introduce grades 7-8 to Likert-style survey items. Perhaps the activity could require grades 7-8 to use a spreadsheet application to present their data. The activity targets grades 4-8, which is a fairly broad. Some suggestions should be made to help the teachers scale the activity to the appropriate grade level.	Adequate 2
<b>Total</b>		<b>Good</b> <b>2.8</b>

*Manatee Mansion*

<b>Criterion</b>	<b>Comments</b>	<b>Score</b>
Objective	Rather than describing what the learner will be able to do at the conclusion of the activity, the objective provides instructions for the teacher. As written, it appears that the intent of the objective is to enable students to demonstrate their understanding of manatee habitats by constructing a model. The objective needs to be restated to clarify its intent, and to focus on observable behaviors of the learner. For example: Given building materials and a list of required elements, the learner will be able to construct a model of a manatee habitat.	Needs Work 1
Content	The content corresponds to the intent of the objective. Directions are given for planing the exhibit, and lists of materials and required elements are provided.  There are a few issues, however, regarding the <i>Materials</i> section. How likely is it that many of the items on the materials list are found in most high school classrooms (e.g. paint, sand, clay, and foam rubber)? Also, the list of materials includes several items that require clarification. What kinds of clay, sticks and paint are needed? What are material scraps?  The activity is ambiguous; the objective is directed towards the teacher, but the directions are directed towards the learner.	Adequate 2

<b>Criterion</b>	<b>Comments</b>	<b>Score</b>
Appeal	The activity is inherently motivational because it gives students the opportunity to apply what they have learned.  No suggestions are offered for adding variety. The potential exists to significantly enhance the activity. Students could be given a budget to guide their decisions, or be allowed to develop their plans using a computer graphics program.	Good 3
Ease of Use	Many of the items on the materials list require clarification, and some materials may not be available at most high schools. No directions are provided to guide the teacher in the administration of the activity; all instructions are directed towards the student.	Adequate 2
Target Audience	The activity is appropriately matched to the intended audience. It is not necessary to scale the activity.	Excellent 4
<b>Total</b>		<b>Adequate 2.4</b>

### **Teacher's Guides**

#### *Seals, Sea Lions, and Walruses*

<b>Criterion</b>	<b>Comments</b>	<b>Score</b>
Goal / Objectives	The goal explains what the students will do while working through the unit. To clarify for the teacher what is expected of the students, the goal should be restated to reflect what students will be able to do after they complete the unit. For example: The learner will be able to describe the natural history of pinnipeds and the relationship between humans and the ecosystems of pinnipeds.  The objectives are useful and support the goal. Objectives 5 and 6 may need to be restated to emphasize observable behaviors; "explore" and "express" are very abstract terms.	Adequate 2

Criterion	Comments	Score
Content	<p>Most of the content and activities relate to the issues raised by the objectives.</p> <p>Six topics appear within the <i>Contents</i> section that do not appear to be related to any of the objectives: <i>Pups and Calves</i>, <i>Growing Up is Hard to Do</i>, <i>Just Squidding Around</i>, <i>One for You, Two for Me</i>, and <i>Who Eats Whom?</i>. The inclusion of unrelated material disrupts the cohesiveness of the unit.</p> <p>Objective 6 is not addressed within the content. Objectives 1 and 3 are addressed in sections containing background information (<i>What are Seals, Sea Lions, and Walruses</i>, and <i>Where They Live</i>). However, these sections are written for the teacher and no direction is provided for how to use the content in a K-3 classroom. These objectives should be associated with specific classroom activities.</p>	Needs Work 1
Appeal	<p>Students are likely to be motivated by the opportunity to participate in the activities. The activities are engaging and related to their studies.</p> <p>The unit does not offer enough resources to give the teacher an opportunity to interject variety. Each objective has only one activity associated with it; therefore, the teacher is limited in what s/he can do to address the objectives. Also, if a particular activity does not appeal to a teacher, or is not practical for their specific circumstances, s/he will have no alternative approach for ensuring that the objective associated with that activity is addressed.</p>	Adequate 2
Ease of Use	<p>Vocabulary, background information and activities are available, but it may be difficult for teachers to decide how to best use these resources together. Some teachers may wonder if it matters in which order the activities are completed. Other teachers may wonder how to optimize usage of the background information.</p>	Adequate 2
Target Audience	<p>Most of the activities are appropriate for the target audience, but <i>Polar Passport</i> includes content that may be too advanced for K-3.</p> <p>The sections containing background information (e.g. <i>Pinniped Picks</i> and <i>Where They Live</i>) are written for teachers rather than K-3 students, but it is never made clear how teachers should incorporate that information into the K-3 curriculum.</p> <p>Objective 4, <i>...find locations on a globe/map using longitude and latitude</i>, may be too advanced for K-2.</p>	Adequate 2

Criterion	Comments	Score
Assessment	<p>Most of the content and activities correspond to the items listed in the <i>Pre/Post Assessment</i> section. However, the following two items require more support:</p> <ul style="list-style-type: none"> <li>• How do people affect seals, sea lions, and walruses?</li> <li>• Are any seals, sea lions, or walruses endangered? Why?</li> </ul> <p>The only section to address these issues is <i>Pinniped Picks</i>. This section offers a link to the definition of <i>endangered</i>, and mentions the Marine Mammal Protection Act and the Convention on International Trade in Endangered Species of Wild Fauna and Flora. The content is very abstract, and covers issues that are beyond the scope of the assessment items in regards to a K-3 classroom. Also, the two assessment items appear to be connected to Objective 6 (expression of concern), but the content provided in the <i>Pinniped Picks</i> section does not support the objective. <i>Pinniped Picks</i> offers descriptive information, but nothing specifically intended to enable the students to express concern.</p>	Adequate 2
<b>Total</b>		<b>Adequate 1.8</b>

*Flight for Survival*

Criterion	Comments	Score
Goal / Objectives	<p>The goal describes what students will do as they work through the unit rather than what they will be able to do after completion of the unit. It would be helpful to the teacher if the goal illustrated an observable performance to be exhibited by the learner. For example: The learner will be able to describe the adaptations of birds and the challenges they experience.</p> <p>Although Objectives 3 and 6 (from the top of the list) are worthwhile, they do not facilitate attainment of the goal.</p>	Adequate 2
Content	<p>Most of the content corresponds to the objectives. However, the <i>Powerful Words</i> activity is not related to any of the objectives.</p> <p>The following objectives are not addressed in the unit:</p> <ul style="list-style-type: none"> <li>• Discuss reasons why species become endangered.</li> <li>• Share their learning experiences with family and friends.</li> </ul>	Adequate 2

Criterion	Comments	Score
Appeal	<p>The activities provided are interesting and include motivational elements.</p> <p>The unit offers a variety of activities for addressing the objective concerning adaptations. The same variety does not exist for the remaining objectives. Also, some of the other objectives are not covered.</p>	Adequate 2
Ease of Use	<p>Some teachers may find it challenging to work through the unit. The unit consists of background information, a vocabulary list, and various activities. The unit does not provide guidance for how to bring all of these elements together to form a cohesive lesson. For example, teachers may wonder if the <i>Birds</i> section is written for them or their students. The section provides important information, but it is not clear how the teacher should use it.</p>	Adequate 2
Target Audience	<p>The background information found in the <i>Birds</i> section may be too advanced for grades 2-4, but is appropriate for grades 5-8 if it is intended to be read by the learner. The activities provided in the unit may also be too advanced for grades 2-4, but are appropriate for grades 5-8. It would be helpful for teachers if suggestions were available for how to scale the activities down for younger learners.</p>	Adequate 2
Assessment	<p>The following assessment items are not addressed in the objectives or content of the unit:</p> <ul style="list-style-type: none"> <li>• Besides recycling, what else can you do to help wisely manage natural resources?</li> <li>• How do you think a scientist studying birds might use math? Can you give examples?</li> <li>• How have humans depicted birds throughout history? Give as many examples as you can.</li> </ul> <p>Because the learner is not exposed to any information concerning these items, the answers on the post-test will not differ from those given on the pre-test.</p> <p>The remaining items are related to the content and objectives of the unit.</p>	Adequate 2
<b>Total</b>		<b>Adequate 2.0</b>

*Diversity of Life*

Criterion	Comments	Score
Goal / Objectives	<p>The intent of the goal is justified, but it is not clear what the teacher should look for to determine goal attainment; it is difficult to be sure if a learner "recognizes" something. Restating the goal to focus attention on an observable performance would be more helpful to a teacher. For example: The learner will be able to explain the importance of diversity and the role that interdependency plays in the environment.</p> <p>The list of objectives are relevant and focus on observable behaviors. Objective 8 is useful, but it does not support the goal.</p>	<p>Good 3</p>
Content	<p>The content thoroughly covers most of the objectives. However, none of the background information or activities address Objective 8, <i>...share their learning experience with family and friends.</i></p>	<p>Good 3</p>
Appeal	<p>The unit offers a variety of activities that are engaging and motivational, and cover most of the objectives.</p>	<p>Excellent 4</p>
Ease of Use	<p>There are no clear directions for how the teacher should use the content found in the <i>Diversity of Life</i> and <i>Kingdom Animalia</i> sections. Teachers may wonder if they should direct the students to the information, or somehow take from it what is needed and incorporate that information into the unit as they see fit. If teachers are expected to use these sections for more than just background information, suggestions should be available for how they can best be exploited.</p>	<p>Good 3</p>
Target Audience	<p>The content and activities available are appropriate for grades 7-12.</p>	<p>Excellent 4</p>

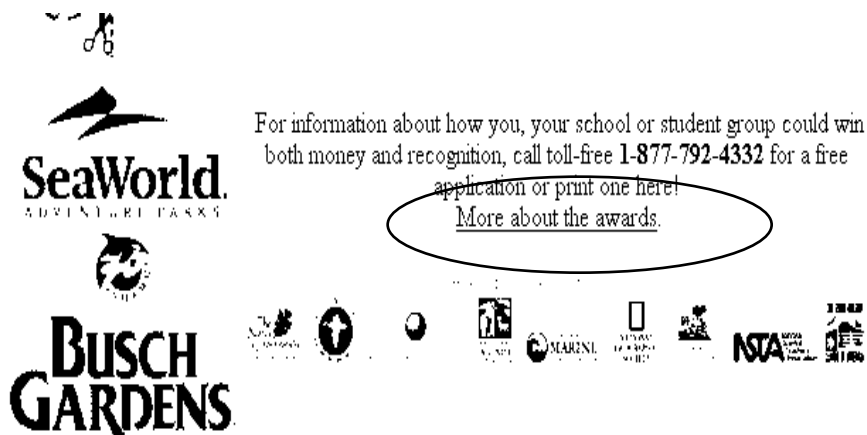
Criterion	Comments	Score
Assessment	<p>Assessment items are useful and relevant to the content presented in the unit.</p> <p>The following assessment items are addressed within the content, but are only mentioned in the <i>Diversity of Life</i> section, which consists of descriptive information.</p> <ul style="list-style-type: none"> <li>• Describe a gene pool in an environment.</li> <li>• Explain the process of natural selection.</li> <li>• Describe an animal by stating the adaptations it has for survival in its environment.</li> </ul> <p>It is not clear how the student will access the information in the <i>Diversity of Life</i> section. Also, it may be more beneficial for the learner if the issues raised by these items were presented in the form of activities.</p>	<p>Good 3</p>
Standards	<p>Several of the standards described by <i>Project 2061</i> are addressed within the unit.</p> <p>Most of the information that relates to the standards is found in the background information (<i>Diversity of Life</i>). The majority of the activities (in accordance with the objectives) focus on classification strategies, which comprise but one component/element of the AAAS standards. The unit would be more effective if the range of activities matched the diversity of the standards.</p> <p>There is no conveyance that the unit will help students meet the Benchmarks for Science Literacy as described in <i>Project 2061</i>. Also, there is no identification of which standards can be met by completing the unit (as in the <i>Flight for Survival</i> unit). Such information would be very useful to teachers.</p>	<p>Adequate 2</p>
<b>Total</b>		<p><b>Good 3.1</b></p>

**Interface of seaworld.org**

Criterion	Comments	Score
Clarity of purpose	<p>On the first page, the <b>seaworld.org</b> logo with "Animal Information Database" establishes that the site is a resource for information about animals.</p> <p>The site never explicitly identifies its purpose or identifies a target audience. It would be helpful to present the site as more than a resource for animal information. The links alone do not clarify the purpose. To inform the visitor about what is available on the site, the links that connect to related information could be organized into groups with descriptive subtitles. Narrative (one or two paragraphs) can also be used to highlight the intentions of the site.</p>	Adequate 2
Originality of design	<p>The pages within the site contain images that support the content.</p> <p>The design elements of the site are not unique. There is no consistency between pages and no common theme exists between the various sections. The site does not exhibit the character of SeaWorld because the pages only consist of content and images tied directly to the content. Relevant images are important, but more must be done to give the site originality. For example, if the ocean was the theme of the site, seashells could be used as navigational buttons. A very simplistic example has been provided, but the point is to isolate something that is unique about SeaWorld and incorporate it into the design of the site.</p>	Needs Work 1
Opportunities to submit feedback	<p>An email address and phone number appear on the initial page.</p> <p>With the exception of the home page and the <i>Our Company Web Sites</i> page, contact information is difficult to find. Many users enter <b>seaworld.org</b> without necessarily viewing the home page. It would be more convenient for users if all pertinent contact information was placed on one page and a link to that information appeared on the first page of each major section (Shamu TV, Educational Resources, etc.).</p>	Adequate 2

Criterion	Comments	Score
Visual appeal	<p>Only text is used to identify links. The graphics that appear on the site only serve as logos or visual support for the content. Such a layout limits the visual appeal of the site. If graphical buttons were used instead of text, or images were used not only to illustrate the content, but to add to the character of the site, then the site would potentially be more aesthetically pleasing.</p> <p>The site is also visually inconsistent. There are a total of four different logos which appear as headings throughout the site. The appearance would be more consistent if only one logo was used.</p>	Needs Work 1
Instructions for locating and installing plug-ins	<p>The <i>Great Ape Cam</i> section requires RealPlayer and provides a graphical link that is labeled "Free RealPlayer". When users click the link, they are sent to the RealPlayer site which consists of 15 links (including three in an additional pop-up window) directing the user to RealPlayer Plus, but only one link, which is relatively small, to RealPlayer Basic. The purpose of the sight in which users are currently sent is to encourage visitors to purchase RealPlayer Plus. This is potentially confusing to the novice, especially after clicking on a link which says "Free RealPlayer". It would probably serve users better if the current link was changed to direct visitors to the RealPlayer Basic page. RealPlayer Basic is free and the page does not contain any marketing information.</p> <p>Within <i>Animal Resources</i>, the <i>J.J. the Gray Whale</i> section has movie clips that require the QuickTime plug-in. No link is available to send users to a download site to get the plug-in. Instead, users are presented with the following: "These clips are in .mov format. If you're not sure what to do, please find out more about movie players." In the preceding sentence, "movie players" is a link to a Yahoo! directory listing of several sites related to QuickTime. It would be more convenient for users if they were sent directly to a page where the plug-in was accessible for downloading. Also, the current text is somewhat ambiguous. A QuickTime logo or more precise text (e.g. "Click here to get the QuickTime plug-in") should be used to direct the user to the plug-in.</p>	Adequate 2
Currency of content	The site content is up-to-date.	Excellent 4
<b>Design Subtotal</b>		<b>Adequate 2.0</b>

Criterion	Comments	Score
Ease of moving between sections	<p>In several of the sections accessible from the home page, once users enter the section and view several pages, it is difficult for them to return to the home page of that section. For example, if the user goes into the <i>Environmental Excellence Awards</i> (Figure 1) section, additional links are available to them. After the user clicks on "More about the awards" (Figure 2) and subsequently "Application", "Commonly asked questions", or "More information about our conservation and education partners", they are never presented with a link to the home page of the <i>Environmental Excellence Awards</i> section. The absence of a "Return to Environmental Excellence Awards" link may make it difficult for users to remain aware of their current location in the site and will force them to reorient themselves by use of their browser's "Back" button. Using the "Back" button within <i>Environmental Excellence Awards</i> may not cause much confusion because the section only consists of a few pages, but the absence of a link to the home page of a larger section, such as <i>Zoological Park Careers</i> in the <i>Career Information</i> section may make navigation a tedious chore.</p> <p>The pages within <i>Zoological Park Careers</i> do not provide a link back to the section's home page. It is easy for users to get "lost" within this section because it consists of several pages.</p> <p>The design of the navigational links within <i>Zoological Park Careers</i> assumes that users will view the pages in a linear fashion. For example, if the user clicks on the second link within the list (Animal Services), they are presented with links 3 through 11 (Aquarium through Other Careers) following the content. If the user clicks on link 3, s/he is presented with links 4 through 11. The problem with this design is that users will not always have access to all of the content. The person who has just clicked link 3 can no longer view the information that precedes his/her current location. Also, users will not necessarily read the information in the order it appears; they will give priority to the information that interests them. If the user begins by clicking on link 5 and subsequently link 7, only the content of links 8 and 9 remain available for viewing. The user will then be compelled to use the "Back" button of the browser to navigate to the home page of the section, and access information from there. The <i>Zoological Park Careers</i> section would be easier to navigate if the user had access to all links on every page.</p> <p>Some pages (e.g. Amazing Animals found in the Animals Abound Teacher's Guide) present navigational links horizontally at the bottom of the page. Individual links are separated by vertical bars, but in most cases the links are difficult to read because there is not enough space between each one. Adding more space between links will make them easier to read.</p>	Needs Work 1



SeaWorld/Busch Gardens Animal Information Database  
[www.seaworld.org](http://www.seaworld.org) / [www.buschgardens.org](http://www.buschgardens.org)

Figure 1.

forget. Write it down. Tell friends. Tell your dog. Just don't miss it. It's a cool way to win cool cash! [More questions?](#)

[Legal stuff](#)

All winners will be notified by mail. Any award notification returned to the sponsor or its agencies as undeliverable will result in disqualification and the presenting of that award to an alternate winner. Neither Busch Entertainment Corporation nor any of its agencies are responsible for lost, late, damaged, incomplete, postage due or misdirected entries. All application packets submitted become the property of Busch Entertainment Corporation, and none will be returned.

Winning schools must select three (3) students and one (1) teacher/chaperone to represent their group. The three (3) students and one (1) teacher/chaperone will be flown to Busch Gardens Tampa Bay. Video production crews may visit the winners at their schools to produce taped segments of the award-winning projects.

All school representatives will be flown round-trip, coach class from the gateway city nearest to their hometown. Transportation will be provided to and from the airport, hotel and park. Double-occupancy hotel accommodations will be provided for a maximum of three nights per person as needed. Winning schools that are unable to send representatives during the specified time will forfeit their entire award. School representatives will be required to complete release forms. In the event that representatives do not complete and return the release form prior to the trip, the school will forfeit its entire award. No substitution of awards will be offered, non-cash prizes may not be redeemed for cash value, and no transfer of awards to a third party will be permitted. By accepting an award, all school representatives agree to permit BEC to use their name, voice, picture or other likeness for advertising, marketing, public relations or other promotional purposes in connection with the awards program or otherwise without further compensation. Federal, state and local taxes on awards, if any, are the responsibility of the school representatives.

- [Commonly asked questions](#)
- [Application](#)

Figure 2.

Notice that both figures do not include links back to the home page of *Environmental Excellence Awards*.

Criterion	Comments	Score
Consistency of navigation	<p>There are currently four different navigational designs at work within the site. The following lists each arrangement with a corresponding example:</p> <ul style="list-style-type: none"> <li>• List appearing at the top-left of the page (Educational Resources)</li> <li>• List appearing at the bottom-left of the page (Contents of "Guide to Zoological Park Careers" within the Career Resources section)</li> <li>• Horizontal arrangement appearing at the bottom-center of the page (Amazing Animals in the Animals About Teacher's Guide)</li> <li>• List within frame appearing on the left side of the page (Contents of <i>Whales</i> Teacher's Guide)</li> </ul> <p>The site would be easier to use if only one navigational design was incorporated. The implementation of additional designs should occur only if the new design allows the user to view the content more efficiently, or the uniqueness of the content warrants an alternative interface.</p>	Needs Work 1
Presence of site map/index	The site currently does not have a site map or index. The site is very large so it may difficult for some users to find information they need. The addition of a site map will also serve to introduce users to what is available on the site.	Needs Work 1
<b>Navigation Subtotal</b>		<b>Needs Work 1.0</b>
Reliability of links	<p>Most links on the site are reliable and only a few do not work properly (404 errors).</p> <p>There are problems with many of the links that result from use of the search tool (available at <i>Search the Animal Information Database</i>). For example, searching for <i>gorilla</i> yields several links, which when clicked produce several lines of incomprehensible text. Similar links result when searching for <i>manatee</i>.</p>	Good 3

<b>Criterion</b>	<b>Comments</b>	<b>Score</b>
Compatibility with accessibility aids	The site includes several text links that will facilitate navigation by use of a screen reader. Also, alt text to provide verbal descriptions for images.  Some images throughout the site either do not provide meaningful descriptions (e.g. "Diversity of Life illustration"), or do not provide descriptions at all (e.g. images found in "Guide to Zoological Park Careers").	Excellent 3
Compatibility w/ older computers and browsers	The site does not rely heavily on plug-ins or other technology-intensive applications. Users with older computers should be able to view most of the content without any significant problems.	Excellent 4
Reasonable loading time	Most pages consist of only text and images. Most images are not very large and the pages load within a reasonable amount of time.	Excellent 4
<b>Technical Subtotal</b>		<b>Excellent 3.5</b>
<b>Total</b>		<b>Adequate 2.2</b>

## **CONCLUSIONS AND RECOMMENDATIONS**

The present evaluation was initiated for the purpose of finding out more about ***seaworld.org***, with an ultimate goal of deriving suggestions for improvement. An analysis of the site's interface and educational content has been conducting and issues raised by the evaluation questions can now be addressed.

In response to the question, "Is the site designed well?", analysis showed the following:

### **Design**

Conclusion: There is room for improvement concerning the aesthetics of the site.

Recommendation: Navigational links do not have to be limited to text. Often a simple rectangle with a drop-shadow makes a very attractive link. Also, images do not always have to be directly related to the text that appears on the page. Sometimes images can be used within a site just to set a mood.

Conclusion: The design, content and navigational elements of the site are not well integrated.

Recommendation: Develop a consistent theme that permeates the site. Themes are often used to tie navigation and content together. The ocean or the jungle are potential themes for ***seaworld.org***.

### **Navigation**

Conclusion: Navigation in some areas is confusing. Also, several navigational designs are employed throughout the site.

Recommendation: Develop a solid, consistent navigational system that can meet most of the needs of the site.

Conclusion: A site map is not available.

Recommendation: Because of the size of ***seaworld.org***, making a site map available to users would be an added convenience.

## **Technical Issues**

Conclusion: Several links that result from use of the search tool lead to meaningless text.

Recommendation: Correct any problems with the search tool.

In response to the question, "Are the scholastic elements educationally sound?" analysis showed the following:

Conclusion: Many of the objectives need to be refined.

Recommendation: Objectives should be stated to focus on the individual learner, not several learners.

Recommendation: Objectives should be stated to illustrate the expected observable behavior of the learner.

Recommendation: Objectives should state what the learner will be able to do after instruction, rather than what the learner will be doing during instruction, or why the learner is participating in the instruction.

Conclusion: Goals within the Teacher's Guides need to be refined.

Recommendation: Goals do not have to be as specific as objectives, but should still focus on observable performance.

Conclusion: Several activities and Teacher's Guides are targeted at very large age groups without suggestions on how to scale the content.

Recommendation: Target lessons to a smaller range of grade-levels.

Recommendation: Provide suggestions for scaling when necessary.

Conclusion: Currently, teachers cannot easily determine if the Teacher's Guides or specific Classroom Activities correspond to American Association of the Advancement of Science (AAAS) standards.

Recommendation: Post a notification near all Teacher's Guides and Classroom Activities that identifies the content as complying with AAAS standards.

Recommendation: Post information that clearly identifies which standards are met by each Teacher's Guide and Classroom Activity.

## **RESOURCES**

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## **APPENDIX 1: EVALUATION CRITERIA FOR EDUCATIONAL CONTENT**

### Objectives

- Clarity and quality of objectives

### Content

- Correspondence between content and objectives

### Assessment

- Correspondence between assessment and objectives

- Correspondence between assessment and content

### Target audience

- Relevance to intended audience

- Degree of necessity for adapting materials to intended audience

- Degree of assistance in adapting materials to intended audience

### Appeal

- Degree of variety in activities

- Presence of motivational cues

### Ease of Use

- Clarity and logic of directions

- Feasibility of directions

- Comprehensiveness of required materials

### Standards

- Correspondence between content and AAAS standards

- Presence of information identifying content as complying with AAAS standards

Adapted from Sullivan and Higgins (1992).

## **APPENDIX 2: EVALUATION CRITERIA FOR INTERFACE OF SEAWORLD.ORG**

### Design

- Clarity of the purpose
- Originality of design
- Opportunities to submit feedback
- Visual appeal
- Instructions for locating and installing plug-ins
- Currency of content

### Navigation

- Ease of moving between sections
- Consistency of navigation
- Presence of site map/index

### Technical

- Reliability of the links
- Compatibility with accessibility aids
- Compatibility with older computers and browsers
- Reasonable loading time

Adapted from Gray (1997); Twedde, Avis, Wright, & Waller (1998); and Rutkowski (1999).