

**Front-End Evaluation Study  
For the San Diego Natural History Museum  
New Exhibition Design Process**

Marianna Adams, Ed.D.  
Hava Contini, M.S.  
Institute for Learning Innovation  
Annapolis, MD

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**Introduction**

The San Diego Natural History Museum (SDNHM) is undertaking a major redesign and installation of its permanent exhibitions. These new displays are designed to promote understanding of the evolution and diversity of Southern and Baja California and to inspire in all people a respect for the environment. Throughout this process the staff is committed to integrating a grounded and systematic evaluation process that will build organizational capacity. In addition, evaluation will help keep the exhibition team focused and able to make informed decisions at critical junctures in the design process. To this end, the Institute for Learning Innovation (Institute), a non-profit learning research and development organization based in Annapolis, MD, had conducted a multi-tiered front-end evaluation study.

This study comprised two phases: Phase 1 sought to assess the level of visitor knowledge and interest in general topics of natural history as well as determine the delivery systems that visitors preferred to use and learn from while in museums; Phase 2 drew upon the findings of Phase 1 and focused in on the exhibition area that was a primary interest to most visitors – fossils and prehistoric change over time. The intent of this second phase was to test activity and exhibit ideas for the seven thematic areas of the fossils exhibition.

**Methodology**

Phase 1: General Knowledge and Interest Survey

Seven SDNHM staff comprised an evaluation team that worked with the Institute for Learning Innovation (Institute) researcher to develop an interview protocol, collect data, enter visitor responses in Survey Pro software, and assess implications of the findings between July 26-28, 2001.<sup>1</sup> Data collectors intercepted visitors either in the Treasures

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<sup>1</sup> The SDNHM evaluation team consisted of Nancy Owens Renner, Ruth Shelly, Bob Boze, Sandra Spaulding, Aileen Shimada, and Michael Field. Their thoughtfulness in puzzling out the myriad issues in

gallery or at the front desk and invited them to assist the museum in planning future exhibitions. Visitors were then led to a table with chairs and asked to assess their level of interest in six topics: 1) Geology; 2) Fossils and Paleontology; 3) Biodiversity; 4) Evolution and Adaptation; 5) Climate; and 6) the Scientific Process. A four-point scale was provided to visitors along which they would rate their interest in each topic, from “Not at all,” “Maybe,” “Probably,” or “Definitely” interested. For the topics they were most and least interested in, they were asked to explain their choice.

Using the same four-point scale, visitors were asked to re-sort the same topic cards in reference to how comfortable they would feel explaining each of the six topics to a 10-12 year-old child. Again, visitors were asked to explain their choices. Finally, visitors were asked to rate sixteen different information-delivery formats along the same four-point scale. These formats included interactive experiences, seeing and touching live animals, audio, video, and theater presentations, dioramas, regional resources, games, computers, books, and labels. Again they were asked to discuss some of their favorite and least favorite format choices. General demographic and psycho-graphic data was collected on all visitors participating in this study. (See Appendix A for the complete protocol and sorting cards.) As a gesture of appreciation to visitors participating in the study, they were given free passes to the museum and the children were allowed to select a small toy.

#### Phase 2: Assessing Response to Specific Activities and Exhibits in Fossil Exhibition

To assess responses to the exhibition ideas from a broad audience, a series of ten focus group interviews were conducted between October 11-24, 2001 in the boardroom of the SDNHM. Group 1 was comprised of docents of the museum; group 2 consisted of marketing and PR professionals in other museums, the zoo, and media; group 3 was made up of educators; group 4 was SDNHM staff; group 5 was comprised of senior citizens; group 6 was families with young children; group 7 was an all Spanish-speaking group of families and young singles; group 8 consisted of professionals and individuals who represent visitors with special physical, developmental, and learning needs, group 9 was the museum’s Public Programs Advisory Committee, and group 10 were youth aged 13-19. In addition, a series of naturalistic interviews were conducted with children, ages 6-10, who were involved in a separate activity/discussion while their parents were in group 6. In each focus group a SDNHM staff<sup>2</sup> used conceptual drawings to explain the seven thematic sections of the fossils exhibition and describe a variety of activities and experiences in each section. The Institute researcher then led discussion and guided participants to complete the written component of selecting their most and least favorite activities and sections. In the children’s group SDNHM volunteers conducted the interviews.<sup>3</sup> (See Appendix B for the focus group protocol and written worksheet for adults and children.)

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the development of an evaluation protocol and their ability to quickly master interview techniques as well as data entry is not only deeply appreciated but was critical to the success of this study.

<sup>2</sup> Nancy Owens Renner, Exhibit Developer, conducted all ten of the focus group presentations.

<sup>3</sup> Sandra Spaulding, Ed.D. designed and supervised the children’s interviews. Research interns Susanna Didrickson and Brad Allison from the University of California San Diego also conducted interviews.



## Description of the Sample

Phase 1: General Knowledge and Interest Survey One hundred and seven visitors participated in this study from July 25 – 29, 2001. Males and females were equally represented (50% male; 50% female). Most of the visitors interviewed were Anglo (75%; n=73), with 16 % (n=16) Latino visitors, 5% (n=5) Asian, 3% (n=3) mixed race/ethnicity, and 1% (n=1) African American. The age distribution of visitors in the sample is explained in Table 1.

**Table 1: Age Distribution Among Visitor’s Surveyed in Phase 1**

Teens	17% (17)
20s-30s	43% (43)
40s-50s	25% (25)
Seniors	14% (14)

Almost one-third (61%; n=62) of the visitors were San Diego County residents. Of the non-resident visitors, about one-third (35%; n=14) indicated they were from southern California, 30% (n=12) were from another state, 18% (n=7) were from northern California, 13% (n=5) were from Mexico, and 5% (n=2) were from other countries. The sample size for this question was only 40 indicating that not all visitors were asked this question.

About half of the visitors were first time visitors to SDNHM (49%; n=49). For those visitors who had visited previously, most (53%; n=26) said they had visited fairly recently – in the last two years, (41%; n=20) had visited three or more years ago; and 6% (n=3) said they came quite frequently, such as several times a month. Again, this sample size was small because not all visitors were asked this question. When asked how first-time visitors found out about the museum, 30% (n=20) said they had always known about it, 24% (n=16) indicated that someone had told them about the museum or suggested they should visit it, 22% (n=16) indicated they learned about the museum and/or the current exhibition through tour guides, brochures, or newspapers, 10% (n=6) said they just happened upon it while walking in Balboa Park, and the rest of the responses included a variety of reasons such as responding to the free pass that SDNHM staff had sent to various audience segments to invite their participation in the study, from television or radio advertisements, or member’s mailings. Many visitors had more than one way that they learned about the museum which explains why percentages will total over 100%.

Participants in this study who had visited the museum previously were asked what parts of the old exhibits they remembered most favorably. Almost one-third (31%; n=14) recollected the dinosaurs, 27% (n=12) described the mine tunnel, 20% (n=9) described the walk-through desert diorama, 20% (n=9) liked the whale exhibits, 18% (n=8) mentioned the pendulum, 13% (n=6) remembered the gems and rocks exhibits, 13% (n=6) noted the bug exhibits, and 9% (n=4) referred to the bear exhibit. Other small clusters of responses included exhibits that related to the ocean, beach, sea coast, or

ocean floor, birds, the redwood slab, or stuffed animals. Only two people who had previously visited said they could not remember anything about the old museum.

Previous visitors were asked what aspects of the museum were not favorable. Most people (37%; n=11) said there was nothing about the old museum that they didn't like. Those visitors who did remember weaknesses about the museum noted the following aspects:

Space was dark, gloomy	(30%; n=9)
Space was too small, cramped	(20%; n=6)
Exhibits were not interactive enough	(20%; n=6)
Exhibits did not change enough	(7%; n=2)
Other: (visitor amenities, live roaches)	(7%; n=2)

\*Note percentages will total over 100% as multiple responses were accepted to this question.

Visitors were asked why they came to the museum that day. Responses were categorized across the following five dimensions:

<b>EDUCATION</b> Seeking a learning experience, want information (general or specific) or cultural content	41% (41)
<b>PLACE</b> A destination or attraction; To see something specific such as the new building or the Epidemic exhibition	35% (35)
<b>ENTERTAINMENT</b> Seeking fun, an enjoyable thing to do	32% (32)
<b>SOCIAL EVENT</b> An outing with friends and/or family	27% (27)
<b>PRACTICAL</b> In the area, had the time	16% (16)

\*Note percentages will total over 100% as multiple responses were accepted to this question.

This finding is supported by other research conducted by the Institute, which strongly suggests that visitors come to the museum for a variety of reasons that they do not perceive to be conflicting. Museums often engage in an internal debate about whether the experience should be focused on education or on entertainment. The research suggests that this is a non-debate. Visitors come fully expecting both kinds of experiences, as well as to fulfill a need to see something specific and to share that experience with family and friends.

Most of the visitors (44%; n=43) participating in the study attended the museum in a family group with children under the age of 18. Another large social group cluster was the all-adult family group (34%; n=33). Eleven percent (n=11) of the sample attended

just with friends, 6% (n=6) attended the museum alone, and 5% (n=5) attended as part of an organized group.

Visitors were asked what types of museums they typically liked to visit when they went to museums. The distribution of responses was as follows:

Natural History Museums	47% (46)
Science Centers	42% (41)
Zoos, Aquaria	38% (37)
Art Museums	35% (34)
History, Anthropology Museums	31% (30)
All Kinds of Museums	19% (18)
Children’s Museums	2% (2)

\*Note percentages will total over 100% as multiple responses were accepted to this question.

### Phase 2: Assessing Response to Specific Activities and Exhibits in Fossil Exhibition

A total of 84 people of the 101 who participated in the ten focus groups completed the written surveys; the participants in group 4 were not asked to complete the written survey as the questions were not appropriate for SDNHM staff. Twenty-one children were interviewed by SDNHM volunteers. Attendance numbers at each focus group was as follows.

Group 1 – Docents	8
Group 2 – Marketing and PR	8
Group 3 – Educators	18
Group 4 – SDNHM staff	16
Group 5 – Senior citizens	8
Group 6 – Families with young children	12
Group 7 – All Spanish-speaking group of families and young singles	7
Group 8 –Special physical, developmental, and learning needs	7
Group 9 – Public Programs	6
Group 10 – Youth/teens	11
<b>TOTAL</b>	<b>101</b>

Almost three-fourths (70%, n=57) of those who completed the written demographic data were female and 30% (n=25) were male. Most of the participants were in their 40s (24%, n=19), with an almost equal percentage of people in their 30s (19%, n=15); 17% (n=13) were in their 50s, 14% (n=11) were teens, 14% (n=11) were in their 60s, 12% (n=9) were 70 and older, and 5% (n=4) were in their 20s. Almost all of the participants were Caucasian (66%, n=54) with 16% (n=13) Latino, 11% (n=9) mixed race, 5% (n=4) African American, and 2% (n=2) Asian.

## PHASE 1: Interest In and Knowledge Of Topics

What is probably most interesting is that so few visitors rated any of the topics as not at all interesting to them. Only 13 of 107 (12%) visitors said that any of the topics were of no interest to them. This finding suggests that all of the topics are interesting to most visitors, at least on some level. A weighted mean was computed for the topic ratings to arrive at a ranked list of topics by interest.<sup>4</sup> Visitors' self-rated ability to explain the six topics was computed in the same way. The topics were rated as follows:

**Chart 1: Weighted Mean Scores for Interest and Ability to Explain**

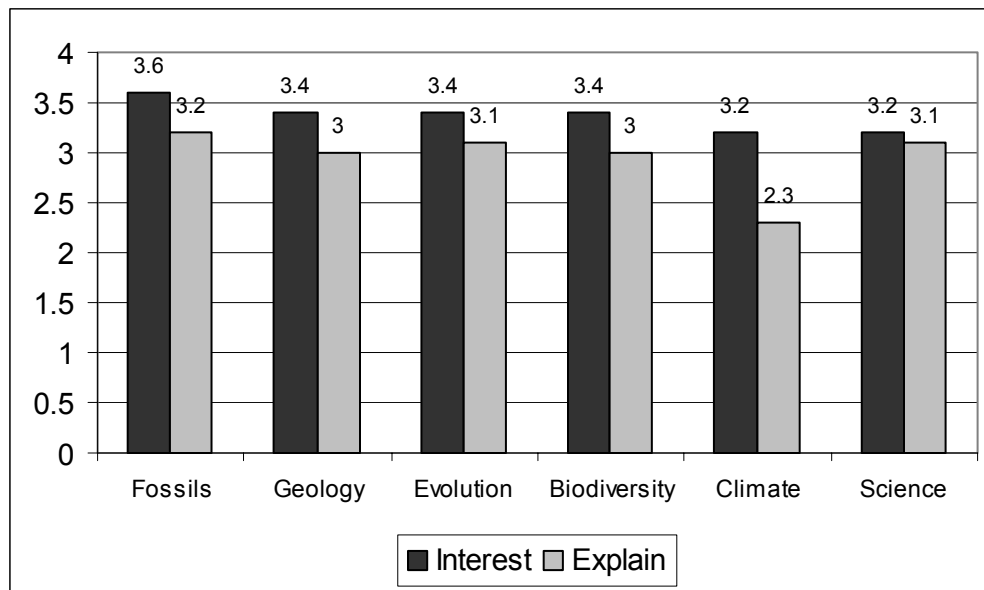
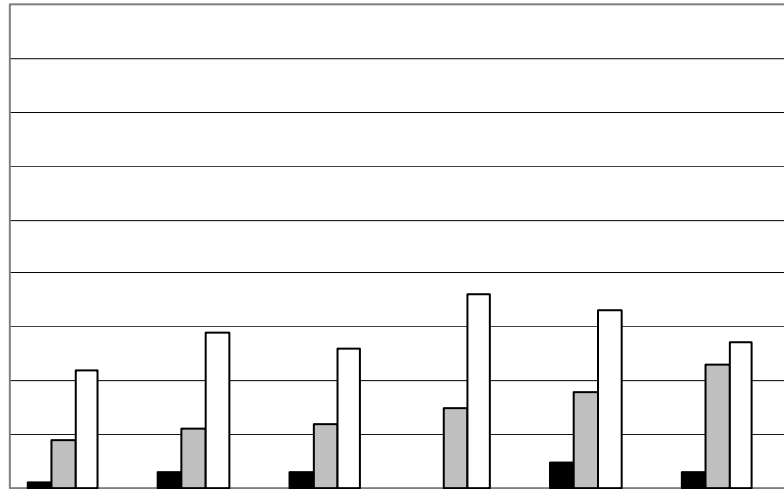


Chart 2 breaks out visitor responses according to how they rated their interest in each topic along the four-point scale. This helps to clarify visitor interest to a finer degree. Specifically, the topics of Fossils, Geology, and Evolution had a wider range across the four-point scale. On the other hand, for the remaining three topics more visitors sorted the cards along the middle two scales of “Probably” and “Maybe.”

<sup>4</sup> A weighted mean is computed by assigning ascending values to each level on the 4-point rating scale. For example if 10 visitors rated a topic not at all interesting, the topic received 10 points (one point for each rating), if 10 visitors rated the topic “maybe” it received 20 points (2 points for each rating (20 points), if 10 visitors rated a topic as “probably” it received 30 points (3 points for each rating (30 points) and if 10 visitors rated a topic “definitely” it received 40 points (4 points for each rating (40 points). The total was then divided by the total number of visitors rating the topic and a weighted mean was computed (100 points divided by total responses of 40 = 2.5 overall rating.

**Chart 2: Number of Responses on 4-point Scale Across Topics for Interest**



competent in being able to explain the topic to a 10-12 year-old child. However, as Chart 3 illustrates, visitors not only felt slightly less able to explain a topic than their rated interest level but the variation in their rating of their ability across a 4-point scale was much more varied. This was especially the case for the topics of Geology and Climate. Interestingly, the topic rated least interesting to visitors (Scientific Process) received the second highest rating for ability to explain it (Chart 1).

When the ratings of interest and ability to explain were cross-tabulated by the variables of gender and age, a few patterns did emerge. First, there were no differences between males and females either in rating of interest or ability to explain. However, there were some interesting differences across age groups. These differences will be reported in the specific topic discussions below.

**FOSSILS:** Fossils and paleontology were clearly the main reason that visitors said they came to a natural history museum. For example, a man (30s) said, *“It’s why we came. This category is related to dinosaurs and that’s a big interest to the kids.”* Many visitors also thought that this topic was also particularly interesting to children. Some visitors aptly articulated why the topic was so interesting as indicated in the following quotes:

*“I want to understand about the process of paleontology; how we know what we know (e.g., time periods) not just what is it and when it lived.”* (male, teen)

*“I love fossils and bones because they show what happened millions of years ago.”* (female, teen)

*“Fossils is my favorite area. I’m in a zoology class right now but I would like to learn more about other areas.”* (female, 20s)

*“I really enjoy this, I would even like to take part in a dig.”* (female, teen)

*“I’m really interested in fossils. (wife: “I never knew that.”) Yeah, I have a friend in the desert who found a shark’s tooth and is pulling out the whole skeleton. I love that.”* (male, 30s)

Young (20s-30s) and middle-aged (40s-50s) adults were more likely to indicate a very high interest in the topic of fossils and paleontology, than were teens and, to a lesser extent, seniors. Seniors were less likely to say they could definitely explain this topic, than were the other age groups. This finding needs to be interpreted cautiously however, as the sample size of seniors was only 14% of the total sample. When visitors described why they felt competent to explain the topic of fossils, they usually referred to their experience and long-term interest in the area. Many visitors indicated that their interest in this topic began as children and remained so throughout their lives.

**GEOLOGY:** Visitors also felt that this topic area was one that was an expected subject area in a natural history museum. Many visitors noted that the area lent itself to BIG things, such as volcanoes and earthquakes, that were concrete and, in the case of earthquakes, personally relevant to residents. Many of the pleasant associations that visitors had with this topic came from enjoyable experiences in a school setting. Conversely, some visitors who did not like this topic also referred to a school setting, but one that carried unpleasant memories. Interestingly, seniors were most likely to say they could definitely explain this topic, while teens were least likely to feel competent to explain geology.

**EVOLUTION and ADAPTATION:** This topic was of general interest to most visitors but there was some evidence that people were thinking of the topic in a variety of rather specific ways. For example, one visitor focused on the process of reproduction when she said she could explain this topic. Another visitor thought about the relationship between how organisms and cultures adapt. This study did not seek in-depth information about how visitors interpreted this topic but it may warrant further study to better understand the degree to which visitors do or do not have a common understanding of what this topic encompasses.

Visitors who had less interest in this topic often responded from a religious viewpoint. For example, one female teen said, *“I like this less because of my religious beliefs. I believe that things evolved but I also believe in creation. I’d see an exhibition on this but it wouldn’t be my favorite.”* However, there did not appear to be any significant level of strong religious opposition to the topic of evolution.

Interestingly, teens were more likely to express a definite interest in this topic than were the other age ranges. However, there was no difference across age ranges in visitors’ self-reported ability to explain the subject.

**BIODIVERSITY:** Many visitors found this topic to be of interest equal to that of Geology and Evolution. Some visitors were particularly interested in the diversity within the local region as illustrated by this young man’s (20s) comment: *“We had a native plant garden at my High school. It was cool to see flowering plants and cactus. I thought, “Hey, those live in the same place?”* Visitors were also interested in diversity beyond the local area as suggested by this woman (senior): *“Our region is of interest but I really want to know more about other areas.”* Several visitors mentioned that local biodiversity was not a subject covered in school so they would look to the museum to fill in that education gap for them. There were no differences in interest or ability to explain this topic across age groups.

**CLIMATE:** When visitors indicated an interest in this topic, they often referenced the global interactions that affected local weather and ocean conditions. However, many

adults who were interested in this topic said that they feared children would be much less interested in it because it was too abstract. They couldn't "touch" the weather in the same way they could touch a dinosaur bone or a crystal. Understanding the subtleties of this topic was, visitors felt, beyond children's ability to grasp. To support this finding, teens were the least likely age group to say they could explain this topic sufficiently. For example, only one teen said she could explain it with any confidence.

**SCIENTIFIC PROCESS:** This topic was the least interesting topic for most visitors although many visitors felt quite comfortable in explaining the basic concepts. Some representative comments about this topic do the best job of explaining the range of responses to the topic:

*"In a natural history museum science is more technological, it's important but not the primary purpose of the museum – I see it more in a science museum."* (male, 50s)

*"We are not here for science, we are here for history."* (female, senior)

*"This is more general information, it relates to everything, it covers all these other topics."* (female, 40s)

*"I don't relate to science."* (female, teen)

*"When we go to the science center, it's hard for me because I have to read it all and then translate it to my son, but he loves science. The classes are great because the teachers know how to explain it."* (female, 30s)

*"My father is a physics professor so I've learned a lot from him, and I've done graduate work in geology, but even so, I have problems at the Science Center, comprehending and explaining the concepts to my son."* (female 40s)

There were no differences in interest or ability to explain across age ranges.

### **PHASE 1: Preferences for Exhibition Formats**

Many visitors expressed a preference for a large variety of exhibition formats. Clearly, they like to receive information on a variety of levels and in many different learning modalities. Table 1 presents the weighted mean scores for exhibition formats. A selection of quotes that illustrate the ways that visitors talked about each of these formats follows the table.

**Table 1: Preference for Exhibition Formats**

<b>Ranking</b>	<b>Format</b>	<b>Score</b>
<b>1</b>	Walk-through Scenes	<b>3.9</b>
<b>2</b>	Hands-On Demonstrations	<b>3.7</b>
<b>3</b>	Live Animals	<b>3.6</b>
<b>4</b>	Mechanical Model Short Video Listen to Narration Talk with Interpreter	<b>3.3</b>
<b>5</b>	Theater Presentation Diorama Read Labels Get Information About Natural Sites	<b>3.2</b>
<b>6</b>	Get Information from a Computer	<b>3.0</b>
<b>7</b>	Play a Game with Family or Friends Audio Tours	<b>2.9</b>
<b>8</b>	Play a Computer Game	<b>2.8</b>
<b>9</b>	Read Books in Museum for Information	<b>2.3</b>

### **1. Walk-Through Scenes**

*“I like the things that get you involved, make you feel like you are there.” Walk-through scenes: Referred to Victoria, BC Museum that did these very well. (male, 40s)*

*“I love the visual part of this, it creates a mood.” (male, teen)*

*“Gets you more involved in the exhibition; it allows you to use to your imagination.” (Female, 60s)*

*“This makes me think of Williamsburg.” (female, 40s)*

*“I love these.” (Researcher: Have you seen something like it in another museum?) “Yes, at the NMNH in DC. They’re so cool. I know it’s an artist’s interpretation but it’s fascinating to see the hair, plants, dress, tools of old cultures. When you are a visual person, like me, I see it, take it in and then later when I’m reading something I go right back to that scene in my mind.” (female, 30s)*

## **2. Hands-On Demonstrations**

*“It gets you more involved in the exhibition, allows you to use to your imagination.” (female, 60s)*

*“I like when you participate in things because I think I could understand it more if I saw it and did it.” (female, teen)*

*“I like interactive as long as it’s informative and not a game.” (male, 30s)*

*“I prefer interactive over non-interactive.” (male, 40s)*

## **3. Live Animals**

*“The kids love live animals.” (female 30s)*

*“I would definitely look at the live animals but I wouldn’t touch them.” (female, 30s)*

*“Live animals should be in a zoo not a museum.” (male, 30s)*

## **4. Mechanical Model**

*“Hands-on, mechanical model, and computer game – Our kids love this kind of thing.”(male, 40s)*

*“Provides enticement to get involved.” (female, 60s)*

*“This is great because kids get to do what they want.” (female, teen)*

*“I’m mechanically inclined (HVAC repair). I like to see how things work.” (male, 30s)*

## **5. Short Video**

*“This is good, we saw the movie today and my son (age 7) did fine with a 30 minute presentation. It gets him involved.” (female, 30s)*

*“Video gives me a good summary.” (female, senior)*

*“Videos are good tools for information.” (male, 30s)*

*“I like short videos, they really help.” (female, teen)*

## **6. Listen to Narration**

*“We were at the museum under the arch in St. Louis and they had these great figures that when you moved towards them they started moving and talking to you. It was wonderful. I stood there and listened, entranced, so did the kids.”(female, 40s)*

*“I don’t like listening to things like this. This doesn’t work well in the Museum of Man either.” (female, 60s)*

*“This is more home/internet-suited and can be a distraction rather than an enticement in the museum.” (female, 60s)*

*“This is an older way of explaining exhibits.” (male, 30s)*

## **7. Talk with Interpreter**

*"I like to ask questions of real people." (female, 30s)*

*"Docents help me to get more in-depth knowledge." (female, senior)*

*"This type of activity can be done well or very poorly." (male, 30s)*

## **8. Theater Presentation (No quotes available)**

## **9. Diorama**

*"Gets you more involved in the exhibition, allows you to use to your imagination."  
(female, 60s)*

## **10. Read Labels**

*"Provides enticement to get involved." (female, 60s)*

*"That's the main thing I do in museums." (female, 30s)*

*"My vision is not so good, make them large enough to read easily and place them at the  
right angle for my bifocals." (male, senior)*

## **11. Get Information about Natural Sites**

*"Oh, yeah, I would love to know what is close by that I could go see." (male, 20s)*

*"This is more home/internet-suited and can be a distraction rather than an enticement in  
the museum." (female, 60s)*

## **12. Get Information from a Computer**

*"This is more home/internet-suited and can be a distraction rather than an enticement in  
the museum." (female, 60s)*

*"I would use the web site before I come and after I visit." (female, 40s)*

*"I'm not a computer person." (female, teen)*

## **13. Play a Game with Family or Friends**

*"I like to play games, to interact with other people. I think I learn better with others."  
(female, 20s)*

*"The game would not be fun for our family."*

*"This is more home/internet-suited an can be a distraction rather than an enticement in  
the museum." (female, 60s)*

*"It depends on how long the game would be, maybe if it's very short (female, 30s)  
Games should not be part of the museum environment." (male, 30s)*

#### **14. Audio Tours**

*“This is OK, I especially like it in the art museum. I haven’t done the one in the Epidemic exhibition yet so I don’t know how that works in this museum.”*

*“Audio tours help me to get more in-depth knowledge.” (female, senior)*

*“This is more home/internet-suited and can be a distraction rather than an enticement in the museum.” (female, 60s)*

*“These don’t hold my interest, I’m more of a visual person.” (female, 40s)*

*“This is an older way of explaining exhibits.” (male, 30s)*

#### **15. Play a Computer Game**

*“I’m not a game person, it’s impersonal.” (female, 60s)*

*“I like things that keep you focused on the exhibition, for example a computer game can get you distracted from the objects but getting more information on a computer about the objects can keep you focused.” (male, 20s)*

*“The museum is not a place for computers.” (male, senior)*

*“Games should not be part of the museum environment.” (male, 30s)*

#### **16. Read Books in Museum for Information**

*“It would seem odd to have a book next to a case in the museum. I probably wouldn’t look at books in the museum but might browse in a reading room or center.”*

*“We buy books when we leave the museum but we wouldn’t sit and read them. I’m interested in seeing and doing something we don’t have at home.” (female, 40s)*

*“I don’t want to stand and read. A museum is not a place to sit and read.” (male, senior)*

*“It would take too much time but I would do this at my leisure, at home.” (male, 30s)*

## PHASE 2: Response of Focus Groups to Fossil Exhibition Ideas

Focus group participants were asked to respond to a list of five title ideas for the entire fossils exhibition. The titles were:

1. Mysteries from the Past
2. Fossil Detectives
3. Prehistoric Puzzles
4. Ancient Clues
5. Fossil Mysteries

There was no clear pattern as to a favorite title choice either within or across focus groups. For every person who liked a specific title, there was someone who felt there were problems in message or meaning with it. Participants were then asked to suggest key words that were important as the exhibition team considered a title. Below are some excerpts from the focus groups about each title and some general comments. Following these excerpts is a summary of findings about the exhibition title.

### 1. Mysteries from the Past

*Boring (marketing)*

*Too dull (educator)*

*Seems like a major category while the other*

*titles seem like sub-categor*

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## 5. Fossil Mysteries

*OK if add “of San Diego County and Baja California” (docent)*

*The kids are into mystery literature, e.g., Harry Potter (educator)*

*Good for kids (families)*

*Like mysteries, relates to Scooby Doo and Harry Potter, gets their curiosity going (special needs)*

## Regional Focus

*If someone understands the institutional regional focus, you don’t need “regional” in the title but if you don’t say it’s local, you’re raising expectations of world-wide fossil finds. (marketing)*

*The fact that it’s local is neat – maybe in the tag-line. (marketing)*

*Need to define our region. Can’t say “our region.” We’re like an island. Need to attract a person’s attention. (docent)*

*Regional reference not required in the title. (staff)*

*I would think it’s parochial. (staff)*

*Our subject matter is world-wide. (staff)*

*If it’s local stuff only, people aren’t interested. (staff)*

*Title doesn’t need to say that these are regional. (seniors)*

*To say that these are regional could work against us – it doesn’t matter if you leave it out. (seniors)*

*On the other hand, to say, “this is ours” is neat. Would be good to have some kind of clue. (seniors)*

*It’s a source of local pride. (seniors)*

*It should say that they’re about San Diego. That would make it more interesting. (Families)*

*It very important. It will raise children’s expectations and they will have buy-in (special needs)*

*Maybe carrying something about regional in the sub-title. (special needs)*

*Regional is a double-edge – parochial vs. local pride. (special needs)*

## Overall comments

*Don’t like any – a walk through the past and it’s our region. (docent)*

*This is a scientific establishment, not a theme park. (docent)*

*None of these titles relay a global experience in a specific time frame. (staff)*

*Need action words “ing”. (staff)*

*Titles don’t bring you to the present. (staff)*

*Prehistoric is a key word, over ancient. (seniors)*

*Get dinosaurs in the title. (seniors)*

*Concept of time is important but hard to grasp. (seniors)*

*Need a concrete way of understanding time. (seniors)*

*These titles would work for kids, don’t have a problem with these as an adult. (seniors)*

*Like anything with fossils. (special needs)*

## Suggestions

*Fossil History of San Diego and Baja California (docent)*  
*I liked "Journey Through the Past" (docent)*  
*San Diego's Rich Past (docent)*  
*Our Region's Rich Past (docent)*  
*Backyard Fossil Detectives (educator)*  
*Journey Through Ancient Times (staff)*  
*Fossils: Mysteries of the Past (Spanish-speaking)*  
*Fossils Beneath Your Feet (special needs)*

Summary Observations about Exhibition Title: Despite what seemed like equally conflicting opinions and responses across focus groups, there were some patterns in the way focus group participants talked about the title issue even if those patterns were that there was a split in opinion.

Many people noted that the word "ancient" made them think of ancient cultures such as ancient Egypt or Rome. They did not associate "ancient" with prehistoric times. The only group that did not have a problem with the word "ancient" was the group composed of SDNHM staff. Consequently, exhibition staff needs to think about whether or not that word is the right one to use in large exhibition or thematic section titles since so many people think of something other than fossils and dinosaurs when they hear the word "ancient."

Many people felt that the word "fossil" needed to be in the exhibition title. They felt it was a commonly understood word that expressed most accurately what the exhibition would be about. Many people believed that fossils are what people come to see in such an exhibition.

There was mixed response to the words mystery, detective, and puzzle. Some people liked those words because it felt interactive to them – that there would be something for people to figure out. Other people disliked these words because it made them think of a theme park or felt titles with these words would be better for educational material or as sub-titles, than for an exhibition. For some people, the titles with these words seemed geared too much towards children. Some adults felt that would be off-putting for adults and other adults said it might appeal to the inner child in adults.

There did not seem to be any consensus to whether or not a regional reference should be in the exhibition title. Some people felt it was definitely important for it would make visitors feel pride in their region. Many people thought this was something most people did not know. Other people thought that there should be "truth in advertising" and not imply that there would be fossils from all over the world. Some people felt it was not important or not advisable – that people might feel "local" was not interesting and might put people off.

When thinking about the response to titles across all of the focus groups, it seemed that people liked the interactive aspect of the titles but, by and large, those titles were not considered to be very explanatory of what was to be in the exhibition. It seems clear from the Phase 1 study that people will come to a natural history museum to see and do interesting things and their primary interest in fossils and dinosaurs – prehistory. The title of the exhibition is probably not as important for visitors as it is for exhibition designers – as a way to keep them focused in the design process. Most visitors are not that attentive to specific exhibition titles. They will still ask, “Where are the dinosaurs?” and once they get in that area will enjoy it. In the same vein, the issue of whether to include a regional reference either in the title or as a tag line, is also probably not that important to visitors. The experience in the exhibition will sell itself. Visitors will tell other visitors about the unique and enjoyable visit they had at the SDNHM and that there are “cool things to see and do.” Chances are, if you asked visitors what the title of the exhibition was after they finished going through it, they would not be able to tell you.

### **Exhibition Sections**

Each focus group was somewhat unique in the way they responded to the ideas for the fossil exhibition yet, there were clear patterns about why they liked or did not like an activity or exhibit idea. Table 2 provides an overview of the ways participants rated the various activities in each section on a three-point scale with 1 being low and 3 being high. In addition there is the rating for each individual section. The ratings were ranked “Hot,” “Warm,” and “Cool.” A hot rating means that the activity was well received and there were very few concerns or problems with the idea. A warm rating means that many people liked it but almost as many had some serious concerns about it. A cool rating means that most people did not like it or had serious concerns or problems with it. It is important to remember that people were asked to make a forced choice of the most and least liked activities. Many people did not list any least liked activities or indicated that they only listed something in a least liked column because they had to.

**Table 2: Summary of Participant Rating of Activities within Sections**

<b>SECTION 1 - UNEXPECTED DINOSAURS</b>		
B - skeleton of dinosaurs	2.9	<b>HOT</b>
F - video viewscope	2.8	
D - climb nodosaur	2.5	
E - nodosaur clues animation	2.5	
A - life-size dinosaur scene	2.2	<b>WARM</b>
C - interactive maps	1.9	
G-interpreter ammonite shell	1.6	<b>COOL</b>

<b>SECTION 5 - SHIFTING LANDSCAPES</b>		
B. 3-d map	2.8	<b>HOT</b>
D. Large shark	2.8	
G. Aquarium	2.6	
A. computer model	2.4	
F. Gulf fossils	2.0	<b>WARM</b>
C. Compare LA/SD	1.8	
E. Desmostylus	1.6	<b>COOL</b>

<b>SECTION 2 - GLOBAL FORCES</b>		
A. multi-media show	2.8	<b>HOT</b>
F. Shine sun	2.7	
B. assemble earth	2.7	
C. heat core	2.6	
E. evolution whales	2.0	<b>WARM</b>
G. El Nino	2.1	
H. Computer global warm	1.9	
I. Seismograph	1.9	
D. vote extinction theory	1.7	

<b>SECTION 6 - KNOW YOUR NICHE</b>		
A. View skeleton/model	2.7	<b>HOT</b>
C. Match shark teeth	2.6	
G. Food web game	2.3	<b>WARM</b>
H. Interpreter	2.2	
E. Map ancient bay	2.1	
B. Walrus	2.0	
F. ID sea birds	2.0	
I. Compare horse prints	1.9	
D. Compare/construct	1.9	

<b>SECTION 3 - PICTURE PAST LIFE</b>		
A. Eocene scene	2.8	<b>HOT</b>
F. Compare strength/agility	2.7	
C. Mechanical models	2.4	<b>WARM</b>
B. Compare fossils/skeletons	2.3	
D. Microfossils	2.0	
E. Computer construction	1.7	

<b>SECTION 7 - GOING, GOING, GONE</b>		
I. Latest fossils	2.9	<b>HOT</b>
C. Who remains?	2.6	
A. Face off	2.6	
B. Bite	2.5	
D. Map of extinction	2.5	
F. Models of sea change	2.5	
G. Ice Age relicts	2.2	<b>WARM</b>
H. Packrat midden	2.0	
E. Explore theories	1.7	

<b>SECTION 4 - RACE FOR SURVIVAL</b>		
A. Eye-level scene	2.8	<b>HOT</b>
B. Compare vision, etc.	2.8	
G. Scene change	2.7	
D. Treadmill	2.5	
F. Extinct volcanoes	2.3	<b>WARM</b>
C. Assemble skeleton	1.9	
E. Computer balance	1.4	<b>COOL</b>

<b>SECTION RATINGS</b>		
Section 2	2.6	<b>HOT</b>
Section 7	2.5	
Section 1	2.5	
Section 3	2.5	
Section 4	2.0	<b>WARM</b>
Section 5	1.8	
Section 6	1.3	<b>COOL</b>

When people gave reasons for why they liked or did not like an activity, the answers usually fell into a category of “general positive” or “general negative.” This means that people just liked what they saw and heard, it appealed to their interests, and/or they liked the general way it was presented. It is not unusual for people to be general in their reasons. Many museum visitors do not know exactly why they do or do not like something, they just know IF they do or do not like something.

When people gave more specific reasons for why they liked or did not like an activity, their responses fell into seven basic categories as illustrated in Table 3.

**Table 3: Categories of responses to activities within exhibition sections**

Positive Responses	Negative Responses
<b>Minds-on:</b> challenging, engaging, imaginative, open-ended, compare & contrast	<b>Unclear:</b> confusing, too hard, too much work
<b>Hands-on:</b> interactive, touch, manipulate	<b>Passive:</b> not interactive, no engagement
<b>Ah-ha:</b> new, full perspective “see,” overview, abstract to concrete, important information, informative, instructional	<b>Not Interesting:</b> Won’t hold attention, not new or unique (been there, done that)
<b>Wow!:</b> new, unique, different, latest, curious, exciting, immersion experience	<b>Concern about User-Friendliness:</b> Takes too long, a bottleneck, maintenance problem
<b>Appeals to Many Ages/Types:</b> a multi-age experience, something for everyone	<b>Doesn’t Appeal to Many Ages/Types:</b> Only for kids, or only for adults, not age appropriate

Table 4 provides a listing of the percent and number of times people in the focus groups gave one or more of the specific reasons for liking or disliking a section activity described in Table 3. It is encouraging to note that the positive specific reasons were almost twice as frequent as the negative specific reasons. Clearly, most people liked most activities suggesting that the exhibition design team is on the right track. Following the table is an interpretation of the data by each section.

**Table 4: Percentage of response categories by section**

		SECTION →	1	2	3	4	5	6	7
POSITIVE	Minds On		38%; 21	27%; 15	42%; 22	33%; 20	30%; 14	42%; 18	26%; 10
	Hands On		38%; 21	29%; 16	31%; 16	20%; 12	19%; 9	5%; 2	15%; 6
	Ah Ha!		16%; 9	21%; 12	14%; 7	23%; 14	13%; 6	5%; 2	26%; 10
	Wow!		9%; 5	9%; 5	15%; 8	20%; 12	12%; 10	2%; 1	13%; 5
	Many Ages		34%; 19	34%; 12	17%; 9	15%; 9	13%; 6	5%; 2	5%; 2
NEGATIVE	Unclear		14%; 8	13%; 7	4%; 2	5%; 3	9%; 4	9%; 4	5%; 2
	Passive		20%; 11	7%; 4	6%; 3	7%; 4	2%; 1	7%; 3	3%; 1
	Not Interesting		14%; 8	8%; 7	8%; 4	5%; 3	11%; 5	9%; 4	8%; 3
	Not User Friendly		5%; 3	14%; 4	14%; 7	10%; 6	-	2%; 1	-
	Not Multi Age		16%; 9	10%; 5	10%; 5	12%; 7	2%; 1	5%; 2	3%; 1
	Depends/Other Form		4%; 2	2%; 1	6%; 3	13%; 8	11%; 5	12%; 5	15%; 6

**SECTION 1: UNEXPECTED DINOSAURS<sup>5</sup>**

This section was a favorite choice for many people and all but one activity idea was rated either hot or warm. When people provided reasons for why they liked various activities, 50% of the responses (n=28) were general-positive in nature. As indicated in Table 4, people liked this section because it was “Minds-on” and “Hands-on.” It also appealed to people because they felt that there was something interesting for every age. The idea of seeing a “fleshed-out” dinosaur and then being able to go around the other side to see the skeleton was a very appealing idea for many people (Activity 1-A&B). They said it helped them understand how paleontologist made sense of bones. That the interpreter with the ammonite shell (Activity 1-G) was least liked by many visitors probably had more to do with the ammonite shell than with the idea of an interpreter.

- *Love the title (staff)*
- *Indicated new discoveries (staff)*
- *They want dinosaurs first and we deliver some surprises (staff)*
- *I like title (families)*
- *Need to explain why they're unexpected (families)*
- *Confusing, especially for the first exhibit (families)*
- *This is experiential – Experience Unexpected Dinosaurs (families)*
- *Means you should be prepared for a surprise (families)*
- *Unexpected how? But that might be a drawing card (seniors)*
- *Title doesn't grab me (special needs)*
- *Needs clarification (special needs)*
- *I like it but might be hard for students to understand, to grasp that it happened here (special needs)*

## **SECTION 2: GLOBAL FORCES**

(Revised, now Section 3: Dynamic Spheres)

This section was highly rated by people on the response sheet but received some of the lengthiest discussion in the focus groups. The general response was that people liked the multi-media approach but as they began to think it about it more and more they realized they did not really understand what the overall point was in this section. People who provided specific reasons for liking this section liked it because it was minds-on, hand-on, appealed to many ages, and helped them understand something that was abstract. They were less likely to say they liked it because it was an “oh wow!” experience. When they did not like it, the most frequent specific reason was that they were concerned about the over-use of technology, that it might be a bottleneck in terms of visitor traffic and that the stations might frequently break down. Many groups did not think that voting was the appropriate way to look at the issue of extinction theories. While they liked the idea of visitors pondering over different theories, the act of voting implied that one theory would “win” by popular vote and that is misleading. The following comments from people about the section indicate the ways in which they thought about this section.

- *Drawing was confusing (staff)*
- *Too much going on in a small space (seniors)*
- *Seems like a lot going on in a small space (families)*
- *Doing too much, especially for a child to grasp (special needs)*
- *My kid's going to go nuts. It's too much to focus on (special needs)*
- *Be sure there is a visual separation between the theater and outside displays (special needs)*
- *Need to set limits on where you could direct the sun, for example (special needs)*
- *Over-stimulating (special needs)*
- *Shelter the activities one from another, have physical barriers so you are doing one thing at a time (special needs) (maybe one-way glass?)*

- *Needs to be very sequential, providing the tools, ADHD kids do not filter out competing stimuli (special needs) [And I would argue than many museum visitors do not either. MA]*
- *Kids are totally focused with headsets, gets the stimuli gone (special needs)*
- *Should be a more subdued earth in space feel vs. Reuben H Fleet, but remember to not go from strong light to dark to light for visually impaired (special needs)*
- *I'm not sure a subdued environment is appropriate for dynamic geology (special needs)*

Because there was so much discussion about the overall section, there were few comments about the title. Since people did not quite understand what the section was about, but it did seem interesting all the same, they could not comment on the title. Two comments are included below.

*Title is dull (educators)*

*Needs action in the title, something more enticing – e.g. “Movers and Shakers” (educators)*

### **SECTION 3: PICTURE PAST LIFE**

(Revised, now Section 4: Compare/Contrast—Present/Past)

This section was rarely noted as being a most-liked or least-liked section. It seemed to fall somewhere in the middle. Those people who did note it on the written response sheet, liked it. Although most people just gave a general reason for liking it, those who provided a specific reason liked it because it was largely minds-on. They responded particularly well to the immersion scene (Activity 3-A) and the opportunity to compare their strength and agility with prehistoric animals (Activity 3-F). The hands-on aspect also appealed to them. Many of those who did not like it felt that it might not be particularly user-friendly, there would be bottlenecks in visitor traffic or activity stations might not accommodate groups of visitors very easily. In addition, there was concern that some of the more technology-based stations would have maintenance problems and frequently break down.

The title for this section was generally disliked. People did not find it very descriptive or expressive of action; it seemed passive. People wanted a more specific title and gave many suggestions for titles or key words. Below are some comments and title suggestions.

- *I like that it makes you feel like you are there. (Spanish-speaking)*
- *The title for this section is very flat. (marketing)*
- *The title needs to be an invitation, not passive. (marketing)*
- *The word “picture” is more passive, maybe “experience” or another action word. (educators)*
- *I'm not sure of the title. Kids don't use the term “picture” like we do. (seniors)*
- *Your Surprising Past (marketing)*
- *Step Back in Time (marketing)*
- *Journey Through the Past (marketing)*
- *Animal Attraction (marketing)*

- *Passage to the Past (marketing)*
- *How do we travel back in time? (educators)*
- *Build a Beast (staff)*
- *Viewing Past Life (staff)*
- *Imagine Past Life (seniors)*
- *Exploring Past Life (seniors)*
- *Time Travel, Adventure, Travel to the Past – but you don't want it to sound like Disneyland. (seniors)*

## **SECTION 4: RACE FOR SURVIVAL**

(Revised, now Section 5)

In the first two focus groups the working title for this section was “Ecological Arms Race.” In light of recent developments in the world, people felt this was an inappropriate reference. Consequently, the working title was changed to “Race for Survival” starting with the third focus group. Once the title had been changed the response was better although there were many concerns about the term “race” signifying a winner and a loser. Many people knew that the predator-prey relationship was an issue of balance and felt it would be misleading to imply otherwise.

Although this section ranked in the “Warm” category there were many activities that were well liked, particularly the eye-level scene, the comparison of vision, the “Pepper’s Ghost” scene change, and the treadmill (Activities 4-A, B, G, D). Even though the treadmill was popular some people felt there might be problems with it. Some seniors felt it would be a “big noise-maker with screaming kids.” Some parents and educators were concerned that kids might hurt themselves but felt that the designers could figure out a way to have the fun of it without danger. There were some questions about what “eye-level” meant – Eye level for whom? But the idea of having a pop-up bubble in the middle of the scene was well-received. Many adults said they would want to do it as well so to not make it just for children. Some comments about the title are as follows.

- *The word “race” implies that someone will win and that’s a value judgement that is inappropriate. It’s really a balance, if one “wins” everyone loses. (staff)*
- *Who’s going to win? Is a misleading question. (seniors)*
- *It’s more of a dance than a race. (families)*
- *Dynamic Balance (families)*

## **SECTION 5: SHIFTING LANDSCAPES**

(Revised, now Section 6: Movers and Shakers)

Although specific activity ideas were well-received, this section was not highly ranked among focus group participants. The 3-d map of the region and the large shark model were well liked. Some people suggested that the large shark would be a great photo opportunity if it were placed correctly. One person suggested letting kids crawl inside the shark. Many people liked the idea of having living fish in the area. When people noted

specific reasons for liking certain activities they were most likely to respond positively to the “minds-on” aspect and less to the other positive specific reasons. Most people who did not particularly like activities in this section just made general negative comments. The few specific negative comments revolved primarily around a concern that stations would not draw visitor interest. In addition, many people noted that some of the activities would be better in another form, such as on the museum’s web site rather than in the gallery. A number of people in several groups felt that the content would be above the heads of many children. The low ranking of this section may have had something to do with one of the conceptual drawings being a rather rough black and white image. It seemed that some people had difficulty understanding that drawing. Some comments about this section and title follow.

- *Liked that it is pertinent to the region, we can finally relate to where we are. (Spanish-speaking)*
- *It’s not engaging and doesn’t indicate the change in the oceans. (marketing)*
- *I don’t like the title, it seems to suggest landscaping. (educators)*
- *The exhibits are more exciting and active than the title. (families)*
- *I don’t like the term ‘landscape.’ It makes me think of someone’s garden. (families)*
- *On the Move or Continents on the Move. (families)*

## **SECTION 6: KNOW YOUR NICHE or PLAYERS ON A STAGE**

(Revised, now Section 7: Paleo Puzzle Pieces)

This section ranked last in the ratings. People did not seem to grasp what this section was about and they felt it was “scattered.” People liked looking at the combination skeleton/model similar to the approach in Section 1. They also enjoyed the food-web game and matching the shark teeth to marks on a bone. When people gave specific reasons for liking an activity they were most likely to respond to the “minds-on” aspect of the exhibits. Very few people commented that the “hands-on,” “ah-ha,” “oh-wow,” or appeal to multiple ages were reasons for liking an activity in this section. When people gave specific reasons for not liking an activity they most often reflected that the exhibit was unclear, it would not catch visitors’ attention, or it was passive. Several people noted that some activities would be more effective in another form, such as on the museum’s web site. One person noted that something about the section reminded her of Sea World and that might cause people to skip this section. Almost no one liked either of the working titles for this section and they offered a number of quite thoughtful suggestions as indicated in the following comments.

- *This is a community not an environment. (educators)*
- *The title doesn’t convey that it’s ancient ecology, some confusion about what’s past and present. (staff)*
- *A stage has a beginning and an end, the earth doesn’t. (staff)*
- *I don’t know about the word ‘niche.’ Older people might know what it means, not sure about younger. (seniors)*
- *I like anything where I can imagine, like create an animal. (Spanish-speaking)*
- *I like knowing where the fossils came from. (Spanish-speaking)*

- *Key words: Connections, diversity (educators)*
- *Bay Watch (marketing)*
- *Bringing it All Together (educators)*
- *Change Over Time (educators)*
- *Fossils: The Connection of Time (educators)*
- *Tooth or Dare (educators)*
- *Wet and Wild (educators)*
- *Ancient Bay-bottom Ecology (staff)*
- *Who Were the Players? (staff)*
- *Swimmers on a Stage (staff)*
- *Evolving Marine Ecosystems (families)*

## SECTION 7: GOING, GOING, GONE

(Revised, now Section 8)

This section ranked very high in the over rating of sections and there were a number of activities and exhibit ideas that people responded positively to. The changing exhibit of new fossil finds was appealing to many people. They felt it would encourage them to come back to the museum over and over. People in the seniors group suggested that visitors might enjoy predicting which species might be next for extinction. This might be a good place for a conservation message and that the process is still at work today. There was much interest for a behind-the-scenes look at how paleontologists work. People were interested in where fossils were found in the region. As was the case with other sections, people felt that voting for a theory was not appropriate; a winning vote does not necessarily make the best or right answer. Perhaps visitors could be encouraged to think about which evidence most convincingly supports different theories. There was little interest in seeing how other people “voted.” Most English-speakers also liked the title. It made sense to people and it was “catch but not too cute.” The Spanish-speaking focus group found this title translation (and some others) awkward and confusing, reminding exhibit planners of the importance of cultural context and syntax in language. Titles and exhibit text will not be successful if translated literally.

## Overall Suggestions

As the focus groups progressed, people often made suggestions and comments that pertained more to the exhibition as a whole than to specific sections or activities.

### Regional Location

Many people responded very favorably to the location of the exhibit. They felt that the location was very convenient and that it was a good place for a conservation message. They also felt that the location was a good place for a behind-the-scenes look at how paleontologists work. People were interested in where fossils were found in the region. As was the case with other sections, people felt that voting for a theory was not appropriate; a winning vote does not necessarily make the best or right answer. Perhaps visitors could be encouraged to think about which evidence most convincingly supports different theories. There was little interest in seeing how other people “voted.” Most English-speakers also liked the title. It made sense to people and it was “catch but not too cute.” The Spanish-speaking focus group found this title translation (and some others) awkward and confusing, reminding exhibit planners of the importance of cultural context and syntax in language. Titles and exhibit text will not be successful if translated literally.

prehistory was well-received. This is perhaps the strongest way to get visitors excited about their regional history.

Another way that people sought to make personal connections to the exhibition was to suggest ways for the museum to bring in the community. For example, some people suggested indicating the descendants of prehistoric animals that are on view at the neighboring zoo. It's possible that the zoo could have a complementary indication that an old ancestor of an animal lives at the SDNHM. Some people suggested that for an activity such as the treadmill, the museum could work with some health clubs or running clubs to feature the predator/prey issue.

### **Heightening the Immersion Effect**

Many visitors responded very positively to the immersion effect of sections in the exhibition. They went on to offer suggestions for ways to create a full-body experience as indicated by the comments below:

- *Having the temperature for each time period would be interesting, either as a label or in reality – the weather report for each section (marketing)*
- *Consider having things on the floor, e.g., prints, impressions, large footprints to see scale, especially for little children. (families)*
- *Provide an overall sensory feel in the exhibition, e.g., humidity, ground-fog, things on the ceiling and floor, to plunge people into that world, even sounds. (families)*

### **Discovery Learning & Making the Abstract Concrete**

People responded very positively to the idea of discovery. They were intrigued with the idea of taking on the role of a paleontologist. There is great interest in understanding how scientists know what they know. Some people suggested having some mysteries or puzzles that thread through the entire exhibition. For example, one staff member suggested putting an oyster in every section to see if people notice that oysters change very little.

Again, the issue of abstract to concrete applies here. People do not always understand how scientists take what seems to the visitor to be a small shred of a fossil and identify it as a certain animal or plant in a certain time period. Whenever people felt like an exhibition activity or idea would help them grasp an abstract concept, they were very enthusiastic. People were also very interested in personal stories, e.g., who found the fossils, how did they find them.

### **Continuity and Thematic Consciousness**

It was interesting that people in the focus groups did attend to how the various activities related to the section title and overarching questions. They would note when some activities seemed not to fit with the overall theme of a section. And it would trouble them. Interestingly, prior research at the Institute suggests that when people are actually in an immersive, interactive museum environment, they are not very likely to remember what the title of the exhibition is nor are they likely to be conscious of when they move from one thematic section to another. Given the early layout design for the exhibition it

appears that one section flows seamlessly into the other. Despite all of the attractive things designers try to do to note the change from one theme or time period to another, such as change color schemes or have identifying logos, it is much too subtle for visitors to pick up. This does not mean that the sections should not have a unifying theme. They definitely should for the exhibition must be academically valid. It does mean that visitors very likely will not be specifically conscious of the underlying framework. If a framework or theme is deemed important by the exhibition designers, such as the backbone of chronology running through the sections, then there must be very overt strategies to draw visitors' attention to those concepts. And the messages must be repeated in many different ways, through a variety of communication modes. For example, they cannot all be text labels, but should be a combination of labels, images, audio, and live interpreter.

### **Computers**

People in all of the groups were very cool towards the idea of computers in the exhibition. There were several reasons. Many people were concerne53(r)-9.cer0.3ep.3( -20.3(e.6(t)-3-21

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cannot get somewhere else. They certainly do not want the museum experience to be anything like an entertainment theme park (e.g., Disneyland).

That being said then, how much information do they want? It varies. Some people want to “feel” or experience an exhibition and soak up whatever they happen to soak up. These people tend to want highlights but not much text or specific information. They would like to know how to find other information if they should want it. Some people do want specific factual information and they want it at their fingertips, but this seems to be a smaller group of people. Many people responded positively to the availability of random access audio devices. While this hampers group experiences to a degree, it seemed to strike people that this was a good solution to providing more information for those who want it without filling the exhibition with text panels.

Families were interested in having access to questions they could ask their children as they go through the exhibition. They were also interested in having interpreters who could answer questions directly. Many parents and educators expressed an interest in take-away materials. Some parents said they would be willing to purchase some of the more sophisticated materials.

### **Lessons from special needs visitors**

Special needs group provided some very helpful information about how people with visual, physical, and processing problems respond in a museum. Prior research by the Institute suggests that this is not just an issue for special needs visitors. Many people are over-stimulated by visual and aural cacophony of a large interactive exhibition.<sup>7</sup> As a result visitors start skimming or skipping around exhibits and have trouble focusing. It is a difficult balance to strike, however. The museum needs to feel like a place where much is going on, where there are a variety of things to see, do, and learn for a variety of ages and learning styles. However, if it is so active and intense that people are overwhelmed, then, learning will suffer. Certainly an exhibition cannot be totally accessible to all visitors with every type of special need, but the conversation with seniors and those representing visitors with special needs provided a number of suggestions for making the experience better for all visitors. A few comments from visitors reflect the ways that an exhibition can accommodate visitors with special needs.

- *Make sure that signs and labels are easy to read – both in terms of contrast between type and background – no gray on dark gray or something. And don’t put them too low. It’s hard to stoop down to read them through bifocals. (seniors)*
- *Really like the touching but it’s difficult for special needs children to connect what they’re touching to the larger scene – need some directional – lights etc. (special needs)*
- *Consider sound effects with the narration but not both at one time – a choice for one or both (special needs)*
- *Be sure to have pull-under space for wheel chairs (special needs)*

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<sup>7</sup> Adams, M & Simmons Jordan, M (2001) *Louisville Science Center World Within Us Exhibition Evaluation*. Annapolis, MD: Institute for Learning Innovation.

- *Some people have trouble with planar shifts – remember to have the fossil oriented as it is in the mural and have labels tilted at angle of head- normal reading pitch (special needs)*
- *Consider small models of the large dinosaurs for the visually impaired to touch and relate to the big thing (special needs)*

## Conclusions

Clearly, people are very interested in the content of the fossil exhibition as they are in the broader issues central to a natural history museum. The reasons or criteria that people gave for why they liked the content or delivery approach of an exhibit could be used to help the exhibition design team. As the team revisits the exhibition activities and components, the findings from this study could be reconfigured into a checklist.

These criteria can be used by the exhibition design team as a series of tests to determine whether or not to include certain components. As themes and activities are developed, submit each idea to a rigorous test using the criteria. Certainly, not all exhibition components will achieve ultimate success in all of the criteria checkpoints but the exhibition team can make conscious choices about what and what not to include and work to achieve a balance across sections. This could be developed in the form of a matrix such as the model below with themes and topics rated along six criteria. The rating scale below in Table 5 is one suggestion. The design team and Institute researchers could work together to develop a more sophisticated rating system. In any case, if used as a discussion guide, such a matrix would help the design team make informed decisions about components as well as identify areas that need work and/or further testing with potential visitors.

A possible rating scale might be the use of words such as, “high,” “medium,” and “low.” High could mean that there is much of this criteria in use in an activity, medium could mean that there is some degree of that criteria evident in the activity but there are limits, and low would mean that there is very little of that criteria evident. Or the matrix could be filled out using descriptive explanations such as was done for the last column “User Friendly” in Table 5. In any case, this approach is designed to stimulate discussion and to keep the team focused.

**Table 5: Prototype for Exhibition Design Criteria Matrix**

	<b>Minds-On</b>	<b>Hands-On</b>	<b>Ah Ha!</b>	<b>Wow!</b>	<b>Appeals to Many Ages/Styles</b>	<b>User-Friendly, Low Maintenance</b>
<b>Section 1</b>						
Activity A	Medium	High	High	Medium	High	Might be long cues
Activity B	High	High	Medium	Low	Low	Question reliability of technology
Activity C	Medium	High	High	High	High	Easy to use & repair

This front-end study was designed to provide ongoing feedback to the exhibition design team. The team made full use of the iterative character of this study and made adjustments to the design throughout the course of the data collection and analysis. As strong trends emerged, the team was attentive and flexible to the findings and immediately incorporated them into their overall design. The following table indicates specific details of those changes and accurately describes the current conceptual design of the fossils exhibition and new working titles.

**Table 6: Description of changes to exhibition outline as a result of front-end study**

<b>Exhibit Sections Prior to Focus Groups</b>	<b>Exhibit Sections After Focus Groups</b>
1: Unexpected Dinosaurs	1: Unexpected Dinosaurs
2: Global Forces	2: An End and a Beginning 3: Dynamic Spheres
3: Picture Past Life	4: Compare/Contrast—Present/Past
4: Ecological Arms Race	5: Race for Survival
5: Shifting Landscapes	6: Movers and Shakers
6: Know Your Niche / Players on a Stage	7: Paleo Puzzle Pieces
7: Going, Going, Gone	8: Going, Going, Gone