American University in Paris
Class Report: Usability Study of "In The Shadow of Dinosaurs"
Course: Cultural Differences in Product Interaction Design
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Introduction

As part of the AUP course, Master of Arts students conducted usability study of the temporary exhibit at the Museum of Natural History in Jardin des Plantes, Paris: In The Shadow of Dinosaurs Exhibit. The goal of this exercise was to develop hands-on experience in applying cognitive psychology to the design of a culturally diverse space. Students were asked to evaluate the Dinosaur Exhibit based on the museum's goals and ethnographic observations and to generate a set of suggestions that can be implemented by the museum to improve visitors' experiences at this exhibit.

The following report is the synthesis of students' work. Students divided into four groups, each responsible for a particular aspect of the design and usability: conceptual, user groups, interaction, and interface. Each group generated questions for the museum staff and visitors and conducted field observations based on their particular design perspective. This report includes original student observation notes and visitor interviews. Observational photographs are available at http://www.Interfaces.com/2010_aup_photos .

Conceptual, Interaction, and Interface Design

It is helpful to breakdown the exhibit design task into three components: Conceptual Design, Interaction Design, and Interface Design.

Conceptual Design answers the question "What is this exhibit about? What are the goals for this exhibit? What does the museum hopes its visitors learn by going to this exhibit?" In the case of "In The Shadow of Dinosaurs" Exhibit, the designers had "meta" goals: education, extinction, evolution, and personal experience with actual artifacts (e.g. soft-tissue fossils of early mammals). This translated into design specifications: explain the connection between catastrophic events (vulcanism and asteroid impact) and the change in the environment with the subsequent change in the ecosystem; relate the rise of the mammals to the fall of the dinosaurs; explain extinction as a neutral event (bad for some species, good for others); and present a collection of fossils that support the desired narrative.

Interaction Design deals with "How do visitors use the exhibit? What do they do there? How do the visitors use the exhibit?" Interaction deals with how the product achieves Conceptual Design goals. Interaction Design for "In The Shadow of Dinosaurs" Exhibit specified how to showcase the artifacts that the museum had (e.g. fossils, skeletons) and the artifacts that they created (e.g. multimedia presentations, models, videos) into distinct rooms, linked thematically. Interaction design concerns with visitors' flow through the museum: don't want too many people in one room at the same time; need to insure that people have a reasonable chance of seeing and participating in the hands-on activities. The temporary exhibit room supports up to 200 people at a time.

And **Interface Design** focuses on "How does the exhibit look and feel? What is the emotional tone of the exhibit? How easy is it to see the information at the exhibit?" While Interaction Design might specify the need for sound, for example, Interface Design makes sure that the audience can easily hear it and enjoy it.

Image #117: Room One, The Hall of the Dinosaurs Skeleton Models. Most visitors are seen crowding around computer exhibits.

*User Groups**

Exhibits are designed for a specific goal and for a specific audience of visitors. People's interactions with the world around them don't happen in isolation from their previous experiences. What individuals know, what they think they know, what happened to them in the past, all contribute to how they do things and how they think. Since many different people visit the exhibit, visitors need to be grouped according to their cognitive, physiological, and cultural characteristics.

* **The User Taxonomy was never generated for this report.**

The principles outlined in this subsection, though, can be used by the museum to generate their own taxonomy. For example, consider the case of a student group, aged 10 to 17, visit to the exhibit. These form a group because these students HAVE to be there as part of their school work—it's not a personal choice. They have a teacher and perhaps an assignment that they have to complete as part of the visit. Their time is restricted by their school field trip time. They are old enough to read fluently and have some grasp of the scientific concepts covered in the exhibit. They also have a higher level language ability then younger children (in particular, students aged 8 are considered pre-reading—they have low level reading skill). And these students are local French kids. In addition, the museum does direct outreach to get these kids into the museum and their visits are free.

Now, a student group with a guide should probably form a different category—the guide direct attentional focus and manages the rate at which each exhibit is explored.

For this Exhibit, the following variables resulted in the most useful distinctions among the museum visitors for ethnographic study:

1. Group Size: How many visitors are in the group? For "In The Shadow of Dinosaurs" Exhibit, the visitors were divided into the following sets: a single visitor, a couple, a small family group, a school group, and a tour group.

2. Language: Can visitors understand French? English? According to Mme Valentin-Joly, only about 20% of the visitors to the museum are tourists from outside of France. Those tourists, presumably, have lower level French language skills. But language skills are also expertise and age dependent: the level of discourse between paleontologists is not the same as that among sales clerks; and language abilities of children are sub-par to those of adults.

Image #158: Mother and two small children rest on the bench at the end of Room One, Hall of the Dinosaurs. There are few opportunities to sit down at the exhibit: a few benches and the movie arena.

Image #164: A museum guide is leading a group of students through Room One, Hall of the Dinosaurs. Guides, teachers, parents, and guardians direct the attention of the younger visitors to what they believe is important. These adults also control the pace at which the children experience the exhibit. The guide above spent almost 40 minutes in the first room and ran out of time to show the soft tissue mammal fossils (he bolted out of the exhibit hall to meet his next group). As the result, these students didn't see those fossils as important and skipped that part of the exhibit.

3. Age: According to Mme Valentin-Joly, "In The Shadow of Dinosaurs" Exhibit was designed to target preteens and early teens: 12 to 15 year-olds. But there were many visitors younger. At around 8 years of age, we can assume that a child can read fluently. Younger children focus on concrete ideas: the size

of the dinosaur skeleton in relation to themselves; the color of walls and pedestals. Children older than 8 are more capable of understanding abstract concepts like environment, conservation, diversity, death and extinction, pollution, etc. And teenagers are more capable of understanding science issues presented by "In The Shadow of Dinosaurs" Exhibit than younger children: Is evolution good or bad? What's the time scale of extinction? Did mammas and dinosaurs coexist?

Image #83 and #61: One child brought a plastic sword into the exhibit. The sward was used to hit a skeleton specimen. The specimen's pedestal was used as a stool by another child.

4. Interest and Cultural Background: Are visitors knowledgeable about dinosaurs? Are they interested in this topic? What are their cultural attitudes towards evolution? Are they required to learn a particular topic by their teachers? Interest in dinosaurs among children typically peeks around early elementary school: 5 to 8 years-of-age. This is younger than the target audience as defined by museum exhibit designers.

Image #107 and #111: This hallway connecting the movie arena and the rooms with mammal fossils tended to stay empty but for the time when the museum guide used it as part of his lecture. The flow of visitors is clearly controlled by the guide.

5. Time: How much time do the visitors have to spend at the exhibit? The differences can be attributed to age—visitors with young children typically spend less time due to attentional physiological limitations of their kids. School and tour groups have time limitations imposed by scheduling and enforced by the tour guide (e.g. the museum guide). Tourists might feel time pressure due to overall scarceness of vacation time—they might feel the need to see the whole museum in addition to "In The Shadow of Dinosaurs" Exhibit in a single afternoon. School groups have limitations imposed on them by their schools, teachers, and parent chaperones, in addition to the age limitations of the students.

6. Motives: Some visitors use their time at the exhibit as a bonding opportunity between family members: grandparents and their grand children, for example. Other visitors come to the museum with the same motives they would go to the playground: to spend a fun afternoon with their kids (we have observed many such visitors). And then there are visitors that come specifically to learn something: school groups and researchers, for example. Depending on the motives for the visit, individuals focus their time and attentional resources differently.

Using these variables, a taxonomy of "In The Shadow of Dinosaurs" Exhibit visitors can be created. For example, one category is a small French family group consisting of grandparents and a grand child over 8 years of age. Another example is a French family of four with 2 small children in strollers (under 8 years of age). Yet another example is a non-French tourist family with two children: children too young to read; French is nonexistent and English is very limited; and time pressure of limited vacation in Paris. A class of second grade students with 4 chaperones and a teacher from a local Paris school would make another example. A large group of Russian tourists with a tour guide is yet another example. All of these users have a particular point of view and a set of cognitive and physical characteristics that strongly influence their experience at "In The Shadow of Dinosaurs" Exhibit. The section of this report entitled "User Groups" focuses of the differences between the visitors.

For this report, only a small subset of the above defined visitor categories was examined. There are several

reasons for this decision. First, due to the time of the year and day of the week—July 7th, Wednesday morning—the make up of the visitors is different from a that of the typical day during the school year. And this museum exhibit is enjoying the high publicity that is following its recent opening: "In The Shadow of Dinosaurs" Exhibit has only been opened for a few weeks. During our ethnographic observation at the museum, a lot of the observed visitors tended to be small family groups, either local (French) in origin or international tourists. Second, our class had only two hours to conduct field observations and visitor interviews. Thus there was only a very limited ethnographic data set.

Methodology

The recombinations and observations presented in this report are based on a small scale ethnographic study of visitors to the Jardin des Plantes Muséum: the Grande Galerie de l'Évolution, temporary exhibit: In The Shadow of Dinosaurs. Based on a two hour visit to the museum on June 24th, 2010, graduate students of the American University of Paris came up with a few design questions for the museum. The information gleaned from the July 5th interview of Mme Sophie-Eve Valentin-Joly, a scientist at Jardin des Plantes Muséum, the students developed a set of questions for the visitors to "In The Shadow of Dinosaurs" Exhibit. On July 7th, between 10 and 12:30 in the morning, the students conducted ethnographic observations at the exhibit. Complete data consisting of observational field notes, photographs, and visitor interviews is available as part of this report. The field notes, photographs, and visitors' answers are presented here as recorded and unedited.

Museum Staff Interviews

As part of the ethnographic study of the temporary In The Shadow of Dinosaurs Exhibit at the Paris' Museum of Natural History, we interviewed Mme Sophie-Eve Valentin-Joly. We are very grateful for her generosity of time and wisdom. Her insight provided the backbone of this report.

Exhibit Layout

The following diagram was borrowed from the Jardin des Plantes Muséum: the Grande Galerie de l'Évolution exhibit design document and is used here only for ease of comprehension of this report.

Summary of Suggestions

The following suggestion to improve the conceptual design, interaction design, and interface design of the "In the Shadow o Dinosaurs" Exhibit are explained in detail in the following sections.

1. Visitors in Shadow of T-Rex: To provide a dramatic explanation of the "In the Shadow of Dinosaur" idea, a shadow of a T-Rex can be projected on the floor of the exhibit at the exit of the mammal fossils hall. As the visitors leave that room, they will be standing in the shadow of the dinosaur. A short explanation written of a plaque placed on the floor would unify the concept of mammals' coexistence with dinosaurs and thus aid in overall comprehension of the exhibit creating an "aha" moment. A lot of visitors apparently didn't understand this fact from their experience with the exhibit.

2. Floor Signs: A small plaque on the floor of the Dinosaur Hall can point out the flying dinosaur skeletons displayed above the visitors heads—a lot of visitors missed those artifacts.

3. Lit Captions: Introduce lighting on captions. Spot lighting will make the captions easier to read and will draw attention to the information. People were looking for them and read them, but it was adults who knew to look. Adults were observed having to crouch or lean and get very close to the captions in order to read them.

4. Supplementary Learning Materials: Create inexpensive supplementary learning materials that would guide groups throughout the exhibition and augment the learning experience. Information packets can be developed for download online. Parents and teachers can then distribute them to their children. These would serve to help maintain focus and structure throughout the exhibit, and provide a souvenir of the experience. These packets can also be made available at the front desk for those who are unable, unaware, or have not printed them.

5. Microscope: These devices need to be made easier to adjust or already set to optimum magnification. Perhaps introducing a computer-based microscope that can be adjusted by an adult while many visitors observe the results on the monitor: http://www.bodelin.com/proscopehr/proscope_mobile/

ProScope Mobile Model by Bodelin

6. Adjustable Booster Blocks: We suggest adding a handle for ease of transport. And a handle will make it more obvious that these blocks are intended to be moved. Make different size blocks to accommodate different needs (height, width).

7. Increased Visibility: The tank-like cases could be replaced with glass ones with see-thru sides. Small children would be able to see what is inside without having to be picked up or use the stools. The stools could still provide a different vantage point, but a clear case would ensure ease of access. Placing the pictures of the mammals next to the reassembled skeletons (rather than above the tables) would allow visitors to touch the picture and trace the skeleton with their fingers while looking at the real fossil. This would help kinesthetic learners understand the information better.

8. Video with Voice-over: Videos should have sound or subtitles not only to communicate what is being viewed but also to attract attention to it. Since most of the visitors speak French, we recommend a voice-over in French with subtitles in English. This is especially recommended for the video next to the soft-tissue fossils.

9. Interactive Games: Currently, the computer interactive games on display are aimed at children younger than six years old. But kids of this age couldn't even reach them to play; they were too high. We recommend creating games at different heights to match the age level of the intended audience. The games should more closely reflect the content of the surrounding exhibits. One visitor commented that some of the exhibit games resembled video games played at home—not what was expected or desired at a museum exhibit. To address this, the interface of the games should not resemble a home video game but rather they need to be more educational and/or flashy.

10. Adjustable Rate for Exhibit Tickets: Many visitors expressed their disappointment with the price of admission to the exhibition. Since the exhibit was targeted for an older audience, perhaps younger visitors can be let in for a substantially lower price or free, reliving some of the pressure from the exhibit to perform better for that audience.

11. Grand Admission Ticket: Create a new class of ticket which allows a family to visit ALL of the attractions at Jardin des Plantes: The Grand Gallery of Evolution, the Zoo, the Comparative Anatomy Museum, the Room of Mineralogical Treasures, the Botanical Garden Conservatory, and the Cabinet of Curiosities, in addition to the various free attractions through out the park. This would encourage visitors to spend the whole day at the gardens, greatly increasing the overall enjoyment of this treasured place. Most visitors won't be able to do the whole tour in one day, thus coming back again and again to experience the different attractions. The ticket price would be significantly higher, but commensurate with the rewards.

12. Family Ticket: Create a new category of tickets for a family group—one price for all the members of the family, independent of the number of people in that family. A family of four might find the current pricing for the exhibit and museum prohibitively expensive. It's cheaper for a family of 3 than for a family of 5, creating unequal access for large families. A family ticket would provide for more equality of access.

13. Magnifying Glasses: Place magnifying glasses hanging next to important fossils, signaling to the visitors to take a look and pay attention.

2010

Conceptual Design

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Introduction

Conceptual design involves the process and explanation of initial questions that must be answered when designing a product. What does the product do and what problem does it solve? Who else is doing it and how is it different? The ideas behind the product and presentation influence how the product will be received by the public.

As part of this class, we analyzed the conceptual design of this exhibit. We used ethnographic studies based on our trip as visitors, then a follow-up interview where we formulated our questions based on personal observations and the exhibit itself. From the interview and our personal observations we developed a set of conceptual design questions that we asked visitors to the museum.

Methodology

June 24th – Day 1. 10am, Observation as Visitors

Our first experience of the "In the Shadow of the Dinosaurs" Exhibit was as visitors. We walked through the exhibit and interacted with the artifacts, observed visitors, and took notes in order to gain an understanding of the concept of the exhibit. Based on our interaction with the exhibit and our observations of its visitors, we were able to formulate questions in order to interview the Reception Director, Mme Sophie-Eve Valentin-Joly.

July 5th – Day 2. 10am, Interview with Sophie-Eve Valentin-Joly

The interview with Mme Sophie-Eve Valentin-Joly was based on observations from our initial visit to the exhibition. The purpose of the interview was to understand the conceptual design ideas behind the exhibition from the museum's perspective.

From this interview, we gathered that the design of the exhibit was focused on a specific scientific concept: the majority of dinosaur exhibits focus on the extinction of dinosaurs, whereas this exhibition is centered around the idea of the rise of mammals in the dinosaur extinction era. (Please refer to data for interview questions.)

While the museum intended to communicate new information about mammals through the presentation of mammal fossils, it understood that the concept of "dinosaurs" will attract more people to the museum.

The exhibit serves to give a modern take on old ideas, mainly showing visitors new information about a topic they are already familiar with, and possibly things they can't see in their own country. It is an extension of their permanent collection.

As this is a travelling exhibit, created in Paris by the Museum of Natural History in Jardin des Plantes, it will go to other countries starting from June 2011.

July 7th – Day 3. 10am, Questionnaires at the Museum

From the information obtained from the July 5th interview and original observations on June 24th, we came up with a set of 6 questions to gauge how successful the conceptual design of the exhibition was. The questions focused on what the visitors' opinions of the goals for the exhibition and their understanding of the information provided. We were able to administer an ethnographic questionnaire to 10 randomly selected visitors (many represent families, school groups, etc).

As observers, rather than visitors, we composed field notes and took photos. (Please see data section.)

Results

Though museum visitors found the exhibition interesting and well executed, based on the results of our findings, we have come to the conclusion that the conceptual design—portraying the dual existence of dinosaurs and mammals—needs to be emphasized more.

9 out of the 10 visitors we interviewed were under the impression that the exhibition was solely about dinosaurs. Due to this, we can conclude that the subject matter of the exhibition was not successfully communicated and visitors' expectations were not met. Because of this mis-match of expectations, the visitors we interviewed expressed that the most interesting part of the exhibition was the first room with the dinosaur skeletons.

6 out of the 10 people surveyed did not learn that mammals lived at the same time as dinosaurs. Of the 4 individuals who know that mammals coexisted with dinosaurs, 3 were teachers and already knew this fact—they did not get this information from the exhibition.

8 out of the 10 people interviewed concluded that the 9 minute film in the middle of the exhibition was about evolution. The remaining two people didn't watch the movie.

Based on data gathered from the questionnaire, most people we interviewed were citizens of France who lived outside of Paris. The exhibit allowed individuals to experience and come in contact with rare artifacts not found in their own regions of the country.

Based on the questionnaire, those interviewed ranked the most interesting parts of the exhibition as the dinosaur skeletons. In terms of perpetuating the conceptual design and the ideas of coexistence of mammals and dinosaurs, the most significant artifacts were the bat and soft tissue fossils, which were overlooked.

Images #87 and #88: A family group consisting of two mothers: one with two boys—one in a wheelchair and one with a broken arm; the other with a daughter in a stroller. Mark Waters and Anne Landsberger interview one of the mothers, while Anne Malhotra talks with the boy in a wheelchair.

Recommendations

We understand that the concept of "dinosaurs" is a crowd-pleaser, and that the name of the exhibition touches on the mammal/dinosaur connection. However, we feel exhibit needs to emphasize the significance of the mammal presence during the time of dinosaurs.

The name of the exhibition, "In the Shadow of Dinosaurs" is a clever metaphor that has the potential to show the significance of the mammal/dinosaur connection. However, we felt that there was not enough of a connection between the name and the actual content of the exhibition. Perhaps a projector placed at the exit of the exhibit (under the whale skeleton) can cast a shadow of a T-Rex on the floor of the exhibit. The visiting mammals leaving the room with soft tissue fossils would **step into the shadow of the dinosaur**—a direct experiential connection to the ideas of the exhibit. This simple theatrical device is easy to implement and cheap to manufacture. This would be a good way to connect the evolution hallway at the end with the rest of the exhibition, and also lengthen exhibition time.

Data

We have interviewed 10 individuals at the exhibit. The table below shows the basic characteristics of these users.

User ID	*Sex*	*Group*	*Age Range*	*Background*
C-User 1	Male	Family	3-40	Local
C-User 2	Female	Family	2-40	Tourist
C-User 3	Female	Family	3-40	Tourist
C-User 4	Female	School Group	15	Tourist
C-User 5	Female	Family	8-40	Local
C-User 6	Male	Family	6-40	Local
C-User 7	Male	Family	8-40	Tourist
C-User 8	Female	School Group	7-40	Local
C-User 9	Male	Couple	20-40	Local
C-User 10	Female	School Group: Handicapped Children	7-15	Local

We asked the following questions:

1. What did you think the exhibit was about?
2. Did you understand that mammals were around at the same time as dinosaurs?
3. Did you have a chance to watch the film, if so what did you think it was about?
4. What do you think was the most interesting artifact in the museum? Why?
5. Do you think the exhibit was aimed at you?

Tables below organize the answers we received. The interviews were conducted in English.

User ID	**1. What did you think the exhibit was about?**
C-User 1 Male, part of a family group, with age range 3-40 Locals	Dinosaurs
C-User 2 Female, part of a family group, with age range 2-40 Tourists	Dinosaurs—very impressionable, made for kids
C-User 3 Female, part of a family group, with age range 3-40 Tourists	Dinosaurs—thought there would be more dinosaurs
C-User 4 Female, part of a school group, with students approximately 15yrs Tourists	Evolution—very interesting, interactive
C-User 5 Female, part of a family group, with age range 8-40 Local	Dinosaurs—well done, wheelchair accessible, good for kids, interactive
C-User 6 Male, part of a family group, with age range 6-40 Locals	Dinosaurs—exhibit is good, easy to go through quickly
C-User 7 Male, part of a family group, with age range 8-40 Tourists	Dinosaurs—very good, child wanted to see dinosaurs
C-User 8 Female, part of a school group, with students approximately 7 yrs Local	Dinosaurs, Evolution
C-User 9 Male, part of a couple, approximately 20-40 Local	Dinosaurs—interesting
C-User 10 Female, part of a handicapped school children group, with students approximately 7-15 yrs Local	Very fun and interesting for the children

User ID	**2. Did you understand that mammals were around at the same time as dinosaurs?**
C-User 1 Male, part of a family group, with age range 3-40 Locals	No
C-User 2 Female, part of a family group, with age range 2-40 Tourists	Yes
C-User 3 Female, part of a family group, with age range 3-40 Tourists	No

User ID	**2. Did you understand that mammals were around at the same time as dinosaurs?**
C-User 4 Female, part of a school group, with students approximately 15yrs Tourists	No
C-User 5 Female, part of a family group, with age range 8-40 Local	No
C-User 6 Male, part of a family group, with age range 6-40 Locals	Yes (because I'm a teacher)
C-User 7 Male, part of a family group, with age range 8-40 Tourists	No
C-User 8 Female, part of a school group, with students approximately 7 yrs Local	Yes (because I'm a teacher)
C-User 9 Male, part of a couple, approximately 20-40 Local	No
C-User 10 Female, part of a handicapped school children group, with students approximately 7-15 yrs Local	Yes (because I'm a teacher) but the children don't understand

User ID	**3. Did you have a chance to watch the film, if so what did you think it was about?**
C-User 1 Male, part of a family group, with age range 3-40 Locals	Evolution—it was too long
C-User 2 Female, part of a family group, with age range 2-40 Tourists	Extinction, Evolution
C-User 3 Female, part of a family group, with age range 3-40 Tourists	Evolution—interesting, complicated for kids, too much text
C-User 4 Female, part of a school group, with students approximately 15yrs Tourists	Evolution—good but long
C-User 5 Female, part of a family group, with age range 8-40 Local	Evolution—it was good
C-User 6 Male, part of a family group, with age range 6-40 Locals	Evolution

User ID	**3. Did you have a chance to watch the film, if so what did you think it was about?**
C-User 7 Male, part of a family group, with age range 8-40 Tourists	Evolution—very interesting, really liked it
C-User 8 Female, part of a school group, with students approximately 7 yrs Local	No, too long
C-User 9 Male, part of a couple, approximately 20-40 Local	Evolution—too long
C-User 10 Female, part of a handicapped school children group, with students approximately 7-15 yrs Local	No we did not watch

User ID	**4. What do you think was the most interesting artifact in the museum? Why?**
C-User 1 Male, part of a family group, with age range 3-40 Locals	Dinosaur Skeletons
C-User 2 Female, part of a family group, with age range 2-40 Tourists	Dinosaur Skeletons at the beginning
C-User 3 Female, part of a family group, with age range 3-40 Tourists	Dinosaur Skeletons—the exhibit was short
C-User 4 Female, part of a school group, with students approximately 15yrs Tourists	Dinosaur Models
C-User 5 Female, part of a family group, with age range 8-40 Local	The film, the last room and the Dinosaur Models
C-User 6 Male, part of a family group, with age range 6-40 Locals	-
C-User 7 Male, part of a family group, with age range 8-40 Tourists	Dinosaur Models
C-User 8 Female, part of a school group, with students approximately 7 yrs Local	Dinosaur Skeletons
C-User 9 Male, part of a couple, approximately 20-40 Local	Dinosaur Skeletons

User ID	**4. What do you think was the most interesting artifact in the museum? Why?**
C-User 10 Female, part of a handicapped school children group, with students approximately 7-15 yrs Local	The computer interfaces, keeps the children occupied

User ID	**5. What was the most valuable artifact? Why do you think it was the most valuable? Do you think they communicated that well?**
C-User 1 Male, part of a family group, with age range 3-40 Locals	No idea
C-User 2 Female, part of a family group, with age range 2-40 Tourists	No idea
C-User 3 Female, part of a family group, with age range 3-40 Tourists	Dinosaur Skeletons
C-User 4 Female, part of a school group, with students approximately 15yrs Tourists	No idea
C-User 5 Female, part of a family group, with age range 8-40 Local	No idea
C-User 6 Male, part of a family group, with age range 6-40 Locals	Huge Dinosaurs
C-User 7 Male, part of a family group, with age range 8-40 Tourists	No idea—educational
C-User 8 Female, part of a school group, with students approximately 7 yrs Local	Dinosaur Skeleton—impressive
C-User 9 Male, part of a couple, approximately 20-40 Local	Dinosaur Skeleton—for the kids
C-User 10 Female, part of a handicapped school children group, with students approximately 7-15 yrs Local	Dinosaur

User ID	**5. Do you think the exhibit was aimed at you?**
C-User 1 Male, part of a family group, with age range 3-40 Locals	Yes
C-User 2 Female, part of a family group, with age range 2-40 Tourists	Everybody—should be more dinosaurs
C-User 3 Female, part of a family group, with age range 3-40 Tourists	Older children—for under 5's the interactive part is too complicated
C-User 4 Female, part of a school group, with students approximately 15yrs Tourists	For 10 years and up
C-User 5 Female, part of a family group, with age range 8-40 Local	For 9 years and up—smaller children couldn't understand things
C-User 6 Male, part of a family group, with age range 6-40 Locals	Yes, but more for children
C-User 7 Male, part of a family group, with age range 8-40 Tourists	Very interesting for children
C-User 8 Female, part of a school group, with students approximately 7 yrs Local	Yes, but more for children
C-User 9 Male, part of a couple, approximately 20-40 Local	Yes
C-User 10 Female, part of a handicapped school children group, with students approximately 7-15 yrs Local	No, more for the children

Conceptual Design Group Observations: General Field Notes

The Entire Exhibit, July 7, 2010 10 a.m.

Most people interacting with screens are children with adults helping them.

The text mentions mammals slightly but puts major focus on dinosaurs (beginning)—casing and tech screen appeal to draw lots of attention. Younger kids are drawn to the touch screens whereas the older teenagers look at models first then the touch screens.

When going through exhibit with a guide and an explanation it appears more time is dedicated to the story. The guided tour appears to have taken more than an hour. The tour moves at a much slower pace than the normal visitors.

Seems like the adults have to do a lot of explaining to the kids, if it's written for 8-12 year olds. The text seems to rely heavily on terminology that is very scientific. This might pose comprehension problems for younger kids.

Focuses on dinosaurs a lot at the beginning and appears that the exhibit will focus heavily on dinosaurs. As the exhibit continues the amount of dinosaur artifacts decreases.

The older people interact with the computer better.

The soft tissue fossils and the bats are not communicated well at all.

Families—little kids look excited, running around and looking at things.

Most families—2 parents, 2 kids—kids want to go forward and back through exhibit, parents must guide them.

A lot of children have cameras on them

Interactive online games, difficult for younger children to play with

Room One

More people here now that school is out than previous week. Family—parents/grandparents with kids. Teen group.

Strollers/ 2 kids in wheel chairs

Tour guide—explaining entrance to exhibit to a teen group. Tour lasts about an hour—longer than individuals going through exhibit

Computer touch screen is stuck in English, French speakers don't understand what to do because not able to easily change language.

Teens—no one is reading text at small displays

Teens choosing to look at the artifacts over the touch screen computers.

More than one group is able to participate at large touch screens

Kids alone are touching the screen without knowing what to do—they are just touching to see what happens, but disregarding the information that pops up. Kids with parent/ grandparent are waiting to have the information read to them by the adult after touching the screen and something pops up.

Child noticed baby flying dinosaur and pointed it out to his parent, another grandparent points out the dinosaurs on ceiling to his grand kid.

Parent explains what is in case to child. Child leans on the case pointing to what he wants to know about. "ca et ca?"

Flagship Mollusks—kid touches this big fossil—parents pulls his hand away as says "no, look it says don't touch this" (translated from French). Another kid touches same fossil, again parent pulls his hand away to keep him from touching.

Film Room

Parents with kids – lots of murmuring, parents are reading what is happening on the screen to their kids.

Suggestion: the voice over sound needs to be louder for a more dramatic feel.

Movie is more adult friendly with text and complicated words—people come in and out at the end of the movie and don't get the full story.

Film is being narrated by parents because younger children cannot read.

Child in a wheelchair wasn't able to stay for the whole movie, he did not have a good view

Room Three

People are walking through the frame boxes not around them—kids walk under the bars not through the entrances.

Little girl swinging around bar of frame. Kids climbing under bars—hiding and running around. kids hiding behind columns playing cops and robbers. Another kid has a fake sword hitting the frames with it.

Kid in wheelchair able to turn the crank interaction tool—at the right level for someone sitting.

Kids use the last room (the structure) as a play ground.

Kid slammed into railing, alarm set off on wall casing from a child tapping the case, and two children went missing—layout isn't very successful.

Interview Notes

The exhibit is not solely about dinosaurs, most dinosaurs museums are about the "end of dinosaurs"

The focus of the exhibit is centered around providing scientific information, a way to ask scientific questions and to get answers.

Modern in conception but the ideas are not modern

Visitors: are suppose to get New information, and to see new things

New information about mammals this can be seen through the film, the show cases etc.

The originality of the exhibit is to show fossils of mammals—this is rare.

There are three competing dinosaur exhibits happening simultaneously through out Paris right now.

2 adults and 2 children—biggest user and also scholar (school groups).

No more than 20% are foreign—most visitors are from around Paris

The exhibits aim to travel and to serve the hosting exhibit itself.

The museum owns the exhibit and rents its out for travel museums to multiple locations

CONCEPT: It's not about extinction of Dinosaurs & the rise of mammals. Yes, end of dinosaurs was a catastrophe, but there is more to that.

Budget: 2 million euro

Best time for exhibit: April & Feb. Low time: September and June

French users touch everything in museums

There is a lot of scientific information—so the origami hallway is meant for one to make their own interpretations.

They have in house guides and groups that bring their own guides.

The bat fossil is most important artifact in the exhibit. Hope that people leave knowing that.

Interaction Design Group

Student Researchers: Bianca Wachtel, Aurelie Arsouze, and Valerin Lopez

Introduction

The following report is intended for the Musée Nationale D'Histoire Naturelle based on a compilation of observations and interviews regarding the interaction design element of the temporary exhibition: "Dans L'Ombre des Dinosaurs."

Research conducted by this group is focused on the interactions between museum visitors and the exhibits. Interaction design is a term used to describe how a product behaves and strives to answer the question, "how does the product function?" In this case, it deals with how visitors interact with the different exhibits.

Using various principles of product design, this report contains our recommendations that aim to improve the overall use and functionality of the exhibition based on its conceptual objectives. In order to formulate these recommendations, an ethnographic study of the visitors at the exhibit was conducted. The recommendations are included in the "results" section of this report.

Image #1: The first room of the exhibit. It's pretty crowded with many visitors interacting with various exhibits in the room.

Methodology

This research was conducted in four stages: Museum Visit 1, Museum Staff Interview, Museum Visit 2, and Analysis of Ethnographic Data.

Museum Visit 1: Museum Field Notes from June 24, 2010

The first visit took place on Wednesday, June 24, 2010 and consisted of two main objectives: (1) Navigation of the exhibit and personal observations regarding the conceptual, interactive, and interface design. (2) Observation and analysis of how visitors are interacting with the exhibition. Field notes obtained on this day were used to inform further site visits and interviews.

Museum Staff Interview: Interview with Sophie-Eve Valentin-Joly from July 5, 2010

Based on the initial observations and field notes, we were able to generate a set of questions for Sophie-Eve Valentin-Joly, a scientist at the museum. The following questions were formulated for the hour-long interview, conducted on July 5, 2010:

How has the exhibit evolved or changed since the opening? Specifically the user interaction parts?

What do you think about some exhibits that are more hands on?

Are there any special support materials distributed to school groups, or other tour groups?

Could you please make some comments about the design itself. Do you feel that people are taking the time to read all the captions? If not, why?

What are some of the main problems you have noticed in the exhibit. What isn't working?

Could you please make some comments about the videos.

How important is the role of computer technology when designing the exhibit?

Could you please tell us a bit about the main video on the cinema screen?

Were you thinking of doing an audio-guide?

Museum Visit 2: Interaction Design Visitor Interviews, July 7, 2010

Based on the conversation Mme Valentin-Joly, as well as the initial field notes, we formulated a list of questions to pose to museum visitors as part of an ethnographic study. The study took place on July 7, 2010 and the following questions were asked to a random sample of visitors:

Gender? Age range in the group?

1. Where are you from? What language do you speak?
2. Were you able to visit all the parts of the exhibition that you wanted to?
    - What was your favorite part?
    - What didn't you like?
3. Did you know what to do with all the exhibits?
    - What did you think of the computer screens and microscopes?
4. What did you think about the information about the exhibits?
    - Were they easy to find/read/watch?
    - Did you find the text (information plaques) helpful?
5. Did you watch any or all of the videos?
    - What did you think of the main video?
    - What did you think of the small videos in the green box structures?
6. Was the exhibit easy to navigate?
7. Did your parent/teacher/adult have to help you with anything?
    - What level do you think this exhibit was aimed at?
    - Was anything to difficult or to easy for you to use?

8. How did you hear about this exhibit?

On this day, some more observational field notes were taken as well as photographs of visitors using and interacting with the exhibit.

Results

Overview of Sample Groups

We interviewed seven different groups of museum-goers. Of these, two groups were part of a school excursion, two groups consisted of one adult accompanying a child, and three were families made up of a mother, father and one or more children. There were nine adult interviews, three adolescents, two children between the ages of eight and eleven, and five children younger than eight years old. All of the visitors spoke French and three groups spoke some English. The average duration of time spent in the museum was ninety-six minutes per group with the lowest being forty-five minutes and the maximum two hours.

Analysis of Data

The ethnographic data collected indicates an overall positive response by visitors in the following cases:

Space design: There was a distinct path throughout the exhibit that followed a clear timeline making the exhibition easy to navigate.

Knowledge and Learning: The visitor knowledge was enhanced through a multitude of artifacts, textual information, and computer games.

Technology: Information and learning goals were presented in a contemporary and fun way using computers and other interactive devices.

Problems Revealed During the Ethnographic Study

Space Design

The layout and design of an exhibition influence the way visitors will interact with the individual exhibits. According to observations and interviews, our group found that while the exhibition was easy to navigate (seven out of seven visitor groups found it easy to move through the exhibit), the physical placement of information was not always easily accessible. In some cases, certain exhibits impeded the flow of movement through the exhibition. For example, with only two microscopes available, people were standing around waiting to use the device. Another example is the narrow space next to the cinema, where people were often forced to wait for the next showing, causing significant congestion.

We observed that in many instances, parents and guardians had to lift the children in order for them to see an exhibit, often placing them on information plaques and obstructing the visibility of other visitors. One visitor commented that, “I had to lift up our son to see a lot of the exhibits and it was a bit crowded for our daughter who was little.” In other instances, some exhibits went unnoticed because they were too high or parents were too distracted to notice important elements of the exhibition. For example, according to the conceptual design group, very few understood the importance of the soft-tissue bat fossils.

Images #13 & #15 (top) and #24 (left): Visitors find novel ways to sit, kneel, and lean on the exhibits. In the top left image (#13), the child is sitting on the exhibit and covering up explanation text.

Our observations and interviews indicate that some of the exhibitions were difficult to understand and necessitated help from someone older. Often, the language used was not accessible for young children, which meant that key science concepts needed to be explained to them. The exhibit then becomes compromised because young children become dependant on someone else to understand the information provided there first and then provide a personal interpretation. More educated guardians and guardians with prior knowledge and interest in science can do this better. Younger parents, which tend to be college-educated, thus have an advantage over older generation in being able to help their children understand science and the scientific method.

We observed that the information on the labels was often paraphrased, resulting in misinformation of key exhibit concepts. For example, one visitor expressed that, "Maybe the information in the video was a bit too specific and difficult for an eight year old." Another visitor commented that, "…her cousin is older and helped her read the texts."

According to Mme. Valentin-Joly, the target audience is 8-12 year olds. However, according to the eighteen people we interviewed, only three children were between eight and twelve years old and five

were under the age of eight.

Throughout the two site visits, we noticed many school groups and a number of guided tours. There appeared to be a lack of supplementary printed materials to guide the visit. Parents and guardians were paraphrasing information in order to relay it to their younger children. One visitor noted that, "In the main video, everything was written and not spoken, so we had to explain everything to the kids." Another visitor explained that her child, "liked the video," but it was all written text so she had to explain it orally to her as the video was playing. Also, tour guides have a limited amount of time (one hour) to move through the exhibit. One visitor stated, "…we started off with a guide, but the girls ran off ahead. Then the tour finished abruptly and we starting looking on our own."

Technology

The exhibition makes good use of modern digital technology to enhance the overall interactive experience. While this is often a strength, technology brings with it certain inherent problems. Our data shows that the computers were often difficult to use and, again, required significant help from someone older. The following statements from museum visitors demonstrate how the technology became problematic:

> "My son liked playing with the touch screens but I had to help him."
>
> " I had to help him. We didn't use the microscopes…they were too difficult for a five year old."
>
> "I had to help them with all of the touch screens. After five minutes of trying to get the same animal into the vegetation, the boys and I gave up. We were all getting frustrated, it wasn't working."
>
> "It was hard to get the computer screens back into French, they seemed to be stuck in and English and were a little bit difficult to use."

Sometimes, the attention paid to technology was at the expense of the fossils themselves. Visitors were often more engrossed with the touch screens, as opposed to interacting with the fossils.

Recommendations

Based upon a close analysis of all the data collected, we were able to formulate some key recommendations to help improve the visitor interaction experience with the exhibition.

The following suggestions are based on some of the target areas identified through visitor interviews and observational studies. Some of these recommendations are designed to address multiple problem target areas; i.e. space design, learning and knowledge, and technology.

Information can be presented in a way that can be easily understood and accessed by children. This way, they will not be dependent on someone older to communicate the information. The target group for the exhibition was 8- 12 year olds. However a few simple changes can easily allow for the participation of younger children (who are often more interested in dinosaurs than children 8-12 years old):

Constructing different heights of computer screens would allow younger children access to the computer technology with parents needing to lift them up to see and use the exhibit.

Creating different heights of information plaques with language and information will make the exhibit more accessible and easier to understand for younger children.

Videos can be created with less text and narration. For example, cartoons and animated videos might hold young kids' attention and convey scientific information.

Interaction can also be achieved through the communication of information in a non-linguistic or technology based approach:

Magnifying glasses hanging next to important fossils.

Activities that are more "hands-on." For example, fossil rubbings, paleontologist role-playing in sand boxes, or audio stimulation through listening stations.

The projection of the microscope images on to a screen is an inexpensive way to entertain those waiting to use them, and a way to increase group involvement in an activity.

Availability of inexpensive supplementary learning materials can guide groups throughout the exhibition and augment the learning experience. Information packets can be developed for download online. Parents and teachers can then distribute them to their children. These would serve to help maintain focus and structure throughout the exhibit, and provide a souvenir of the experience. These packets can also be made available at the front desk for those who are unable, unaware, or have not printed them.

Another main problem voiced to us by parents was their preoccupation with their young children (under the age of 7). Although there was an abundance of information provided next to each exhibit, parents and older children could not read it if they were busy taking care of younger children. The museum experience would be more enjoyable for all if the attention of these younger children were occupied. This could be achieved through the provision of coloring books (5 pages of recycled paper or less), crayons, and clipboards that are dropped off at the exit. For example, printing the coloring books that are available on the website (http://dinos.mnhn.fr/) and having them available at the front desk where tickets are purchased.

We noticed that the website was well-designed and provided good supporting material. It would be beneficial for this and future exhibits to have computer kiosks set up in the main lobby connected to the website (i.e. http://dinos.mnhn.fr/). This way visitors could interact with the exhibition before actually entering the physical space.

Images #133 and #34: Parents carry their children to help them see better and to alleviate exhaustion.

Data

User ID	*Description*	*Language*	*Age Range*	*Time Spent in the Exhibit*	*Physical Limitations*
IA-User 1	Mother and Son	French	Adult with 5 year old Son	45 minutes	N/A
IA-User 2	School Group, 2 Adolescent Girl Students	French, some English	Ages 12 and 16	1.5 hours	N/A
IA-User 3	Family; Mother, Father, and 3 boys	French	2 Adults, 6 year old Son, 4 year old Son, and baby	1 hour	Baby in a stroller and 2 young children
IA-User 4	Female, adolescent	French, some English	17 years old	1.5 hours	N/A
IA-User 5	Family, Mother, Father, Son and Daughter	French	2 Adults, 5 year old Son, and 3 year old Daughter	About 1 hour	Had a stroller for young child
IA-User 6	Grandmother and Grandson	French	Adult, 8 year old boy	About 1.5 hours	N/A
IA-User 7	Family: Mother, Father, Daughter and Cousin	French, some English	2 Adults, Daughter 7 years old, Cousin 11 years old	2 hours	N/A

We asked the following questions:

Where are you from? What language do you speak?

—the responses to these questions were incorporated into the data table above

1. Were you able to visit all the parts of the exhibit that you wanted to?

    1a. What was your favorite part?

    1b. What didn't you like?

2. Did you know what to do with all of the exhibits?

    2a. What did you think of the computer screens and microscopes?

3. What did you think about the information about the exhibits?

    3a. Were they easy to find/read/watch?

    3b. Did you find the text (information plaques) helpful?

4. Did you watch any or all of the videos?

    4a. What did you think of the main video?

    4b. What did you think of the small videos in the green box structures?

5. Was the exhibit easy to navigate?

6. Did your parent/teacher/adult have to help you with anything?

6a. What level to do you think this exhibit was aimed at?

6b. Was anything too difficult or too easy for you to use?

7. How did you hear about this exhibit?

The tables below organize the visitor answers to the questions above.

User ID	**1. Were you able to visit all the parts of the exhibit that you wanted to?** **What was your favorite part? What didn't you like?**
IA-User 1 Adult with 5 year old Son; French	My son like the touch screen and playing with the images, but I had to help him.
IA-User 2 Ages 12 and 16; French, some English	Our favorite part were the computer screens because you could learn by touching and seeing.
IA-User 3 2 Adults, 6 year old Son, 4 year old Son, and baby; French	N/A
IA-User 4 17 years old female; French, some English	I liked one of the first touch screens, with the dinosaurs at the beginning of the exhibit.
IA-User 5 2 Adults, 5 year old Son, and 3 year old Daughter; French	N/A
IA-User 6 Adult, 8 year old boy; French	The film was my favorite!
IA-User 7 2 Adults, Daughter 7 years old, Cousin 11 years old; French, some English	Everything! I really liked the first and last touch screens.

User ID	**2. Did you know what to do with all of the exhibits?** **What did you think of the computer screens and microscopes?**
IA-User 1 Adult with 5 year old Son; French	I had to help him. We didn't use the microscopes, they were too difficult for a 5 year old.
IA-User 2 Ages 12 and 16; French, some English	N/A
IA-User 3 2 Adults, 6 year old Son, 4 year old Son, and baby; French	(Mother) I had to help them with all of the touch screens. After 5 minutes of trying to get the same animal into the vegetation, the boys and I gave up. We were all getting frustrated that it wasn't working.
IA-User 4 17 years old female; French, some English	It was obvious what to do.
IA-User 5 2 Adults, 5 year old Son, and 3 year old Daughter; French	N/A

User ID	**2. Did you know what to do with all of the exhibits?** **What did you think of the computer screens and microscopes?**
IA-User 6 Adult, 8 year old boy; French	It was hard to get the computer screens back into French, they seemed to be stuck in English, they were a little bit difficult to use. But I really liked learning about the fossils and on the screens when they change from tissue to fossils when you get an answer right.
IA-User 7 2 Adults, Daughter 7 years old, Cousin 11 years old; French, some English	N/A

User ID	**3. What did you think about the information about the exhibits?** **Were they easy to find/read/watch? Did you find the text (information plaques) helpful?**
IA-User 1 Adult with 5 year old Son; French	I didn't have time to read the plaques because I was watching my son.
IA-User 2 Ages 12 and 16; French, some English	There was a good amount of information. We were able to learn a lot.
IA-User 3 2 Adults, 6 year old Son, 4 year old Son, and baby; French	N/A
IA-User 4 17 years old female; French, some English	The best information was about the volcanoes and the meteorites. But there was a lot of it.
IA-User 5 2 Adults, 5 year old Son, and 3 year old Daughter; French	N/A
IA-User 6 Adult, 8 year old boy; French	N/A
IA-User 7 2 Adults, Daughter 7 years old, Cousin 11 years old; French, some English	N/A

User ID	**4. Did you watch any or all of the videos?** **What did you think of the main video? What did you think of the small videos in the green box structures?**
IA-User 1 Adult with 5 year old Son; French	We watched one video about how dinosaurs eat.
IA-User 2 Ages 12 and 16; French, some English	No
IA-User 3 2 Adults, 6 year old Son, 4 year old Son, and baby; French	N/A

User ID	**4. Did you watch any or all of the videos?** **What did you think of the main video? What did you think of the small videos in the green box structures?**
IA-User 4 17 years old female; French, some English	I watched the main video in the sort of cinema. It was okay, I thought it could have been more exciting. It felt like a movie with subtitles.
IA-User 5 2 Adults, 5 year old Son, and 3 year old Daughter; French	We watched most of the videos. In the main video everything was written and not spoken so we had to explain everything to the kids.
IA-User 6 Adult, 8 year old boy; French	N/A
IA-User 7 2 Adults, Daughter 7 years old, Cousin 11 years old; French, some English	(Child) I liked the main video. (Mother) But it was all written so I had to explain it all to them.

User ID	**5. Was the exhibit easy to navigate?**
IA-User 1 Adult with 5 year old Son; French	Yes
IA-User 2 Ages 12 and 16; French, some English	N/A
IA-User 3 2 Adults, 6 year old Son, 4 year old Son, and baby; French	N/A
IA-User 4 17 years old female; French, some English	Yes.
IA-User 5 2 Adults, 5 year old Son, and 3 year old Daughter; French	Yes, even wit the stroller.
IA-User 6 Adult, 8 year old boy; French	Yes.
IA-User 7 2 Adults, Daughter 7 years old, Cousin 11 years old; French, some English	Yes. We let our daughter go off with her cousin to look around and play. We started off with a guide but the girls ran off ahead. Then the tour finished abruptly and we finished looking on our own.

User ID	**6. Did your parent/teacher/adult have to help you with anything?** **What level to do you think this exhibit was aimed at? Was anything too difficult or too easy for you to use?**
IA-User 1 Adult with 5 year old Son; French	I think it was obvious how to use everything.
IA-User 2 Ages 12 and 16; French, some English	It is very family oriented.
IA-User 3 2 Adults, 6 year old Son, 4 year old Son, and baby; French	The screens were not easy to use. At one point we had to give up because they were too difficult.

User ID	**6. Did your parent/teacher/adult have to help you with anything?** **What level to do you think this exhibit was aimed at? Was anything too difficult or too easy for you to use?**
IA-User 4 17 years old female; French, some English	I was here with our teacher, but my friends and I walked through on our own.
IA-User 5 2 Adults, 5 year old Son, and 3 year old Daughter; French	(Dad) I had to lift up our son to see a lot of the exhibits and it was a bit crowded for our daughter who is little.
IA-User 6 Adult, 8 year old boy; French	The information in the video was maybe a bit to specific and difficult for an 8 year old.
IA-User 7 2 Adults, Daughter 7 years old, Cousin 11 years old; French, some English	The girls got along fine without us through the exhibits. Her cousin is older and helped her read the texts.

User ID	**7. How did you hear about this exhibit?**
IA-User 1 Adult with 5 year old Son; French	We wanted to spend the morning in a museum and found this on the internet.
IA-User 2 Ages 12 and 16; French, some English	N/A
IA-User 3 2 Adults, 6 year old Son, 4 year old Son, and baby; French	N/A
IA-User 4 17 years old female; French, some English	We are here on a school trip.
IA-User 5 2 Adults, 5 year old Son, and 3 year old Daughter; French	Our son loves dinosaurs and we were here in Paris on vacation.
IA-User 6 Adult, 8 year old boy; French	We came because we are spending the day together while his parents are at work.
IA-User 7 2 Adults, Daughter 7 years old, Cousin 11 years old; French, some English	We come regularly to Paris from the south of France and like to visit this museum.

Student Researchers: Theresa Bruketta, Cecila Grissa, and Anne Malhotra

Introduction

Interface design is the study of how a product looks and feels. As part of our summer graduate course, "Product Design" we did an ethnographic study of the interface of "In the Shadow of the Dinosaurs" Exhibit at the Jardin des Plantes in Paris. Based on our personal experience and ethnographic studies at the museum, we have generated this report with a few recommendations to improve the overall interface of the exhibit as well as a summary of our findings.

Methodology

We visited the museum initially as visitors to the exhibit on June 23rd, followed by an interview with the museum scientist Mme Valentin-Joly on July 5th. We generated ethnographic questions from our personal experiences and observations during our visit and based on the interview we had with Mme Valentin-Joly.

The visit of the exhibition: On Wednesday, the 24th of June, we went to the exhibit to observe as visitors regarding conceptual, interaction and interface design. Through the observation made and the way in which people interacted with the exhibit gave us a starting point to sharpen our focus. Our observations fueled the way we were going to interview staff and visitors in the coming days.

Interview with museum staff: On Monday, the 5th of July, we interviewed Sophie-Eve Valentin-Joly in her office based on our observations in the exhibition and our personal research on the website and what was happening concerning dinosaurs in Paris at the same time. We focused on some questions:

What was the motivation behind creating opaque boxes rather than invisible glass boxes to display some fossils?

What were some of the considerations in the lighting design and the spotlight direction?

What was the main focus of the captions and their function? Do you privilege discretion of writing or do you strive to find a balance in between the two?

Field work at the museum and visitor interview: On Wednesday, the 7th of July, we conducted ethnographic studies at the museum, taking field notes and interviewing the visitors. We asked the following questions:

1) A. What was the tone of the overall exhibit?

1) B. What did you think of the tone of the last room? Did it change? What do you remember most?

2) A. What did you think of the signs and labels?

2) B. Did they help you better understand the exhibit?

3) Did your kids have problems seeing anything in the exhibit?

Our purpose was to figure out what the visitors thought of the look and feel of the exhibit and if there was a clear coherence in the atmosphere created by the exhibit and how it could be improved if needed.

Results

We split up the results section into information about things that worked and things that didn't work at the exhibit.

Things That Worked

The ambience with sounds in the background was a success. Every person referred to it almost at some point in the interviews. They were seeking an immersion to get in the world of dinosaurs: hearing the birds, the atmosphere in which dinosaur may have been living was appreciated.

The screens at the beginning and the end of the exhibit which showed the "rewinding time." It was interesting to see people stop and even kids try to press the button and feel part of the exhibit as it were.

The movie was appreciated for its tone and it's structure, among children especially. Adults found it a little simplistic.

The first hall had a good structure and took people's immediate attention through screens and with giant

dinosaurs.

The lighting was good. Not many complaints were made concerning the darkness because it created a certain ambiance.

The screens in the last hall were successful "by default" among very young kids who could not see much of the real fossils.

Things That Didn't Work

In The Shadow of Dinosaurs: Through our observations and from the data collected, we discovered that the theme of the "shadow of the dinosaur" was lost. Visitors were expecting more dinosaurs than they were given. Visitors also spent more time with the larger skeletons and took photos of the large skeleton replicas while smaller exhibits were generally overlooked. From the title, one is expecting to be a in the shadow of the skeleton of a dinosaur. The metaphor, designed to evoke the transition from the world populated by dinosaurs to the world populated by mammals, seemed lost on the visitors.

As Sophia-Eve mentioned during our interview with her, using dinosaurs in a title attracts more attention and thus more visitors—every child loves dinosaurs. If visitors are expecting dinosaurs and are only shown a few large skeletons (in fact skeleton replicas) then their expectations are not met.

By observing the visiting children, it is clear that their main desire is to see dinosaur skeletons, especially because the exhibit starts out with such large dinosaur replicas. From the onset, visitors are only focused on dinosaurs and their structures. This is also evident when the children got to the last room and went straight to the small water mammal skeleton.

The visitors were also intrigued in the end by the large whale skeleton on the ceiling in the last room. Few focused on the origami pieces. This led to some confusion: the whale was not part of the exhibit but actually part of the permanent exhibition. It wasn't labeled and it took away from the origami art pieces.

As Sophie-Eve mentioned, the last room was the artistic view of evolution. Obviously energy was spent to make these creations. Yet the way they were presented, at the very end of the exhibit, made them seem separate from "In the Shadow of the Dinosaur" Exhibit and they were sadly overlooked.

The Tone of the Exhibit: In regards to the tone of the exhibit, we felt there needed to be more updated videos in the last room—a man from the 70's explaining something with no sound or subtitles was highly ineffective for any visitor.

We felt that the last room was made to seem like a playground for children. We observed kids running around, playing games, hitting the skeletons, and becoming uncontrollable. The colorful structures suggested the look and feel of a playground which may have contributed to this behavior. The behavior of the children took visitors' attention away from the less interactive pieces in this room.

The yellow/green boxes were useless (this is a direct visitor quote). We observed a guard tripping on these boxes, people hitting their heads, and skeletons were shaken as people moved around and operated a crank (an exhibit to show locomotion). Despite being the most valuable part of the exhibit, the bat and soft tissue fossil samples were completely lost and overlooked because at that point the children were out of the control and the parents didn't really have the patience to stay very long in the room. Maybe if this room hadn't been so bright and stayed true with the tone of the rest of the museum this playground atmosphere

could have been avoided.

Games: As far as the interactive games, we felt they were too easy for the targeted age group of 12 and should have been more educational. As we know games children play at home are much more intense, the attraction to these simple interactive games was not as attractive for the children. Perhaps screens at multiple heights could vary in their difficult: the shortest positioned screens for the youngest group, taller screens for the older kids.

Instruments: Microscopes are very complicated to function, even for adults and especially with no prior knowledge. The exhibit assumes that 8-12 year olds will be able to do it is. But most kids using them were younger. Parents had a hard time helping their children use these devices—there was no way for them to see what their children were seeing to make the necessary adjustments.

Flow Through the Exhibit: This exhibit does flow, but there are peaks in population of visitors at the beginning and the end. Additionally, there are peaks in the energy of the children. But the overall flow of visitors from the first room to the end was very clear and easy.

Signage: The last critique we had was on the lighting on the labels. Visitors had to be very close to read the labels because of their small font size and the lack of sufficient light. Having spot lighting on each label might make reading them easier. The labels also tended to be extremely scientific for the target age group (12 years-old).

We also felt there should have been a sign on the floor below the pterodactyl maybe saying “LOOK UP” because it was not evident that there was this skeleton on the ceiling. It would be good to label the whale skeleton at the end of the exhibit.

Image #81 and #91: Kids playing hide and seek behind the boxes and exhibits in the last room. Several children were reported lost. Guards at first refused to help located them. The kids were hiding behind the walls shown above.

Recommendations

• **Microscope:** need to be made easier to adjust or already set to optimum magnification. Perhaps introducing a computer-based microscope that can be adjusted by an adult while many visitors observe the results on the monitor: http://www.bodelin.com/proscopehr/proscope_mobile/

ProScope Mobile Model by Bodelin

• **Captions:** Introduce lighting on captions. Spot lighting will make the captions easier to read and will draw attention to the information (people were looking for them and read them but it was adults who knew to look. Adults were observed having to crouch or lean and get very close to the captions in order to read them).

• **Booster Blocks:** Add a handle for ease of transport. Additionally, a handle will make it more obvious that these blocks are intended to be moved. Make different size blocks to accommodate different needs (height, width).

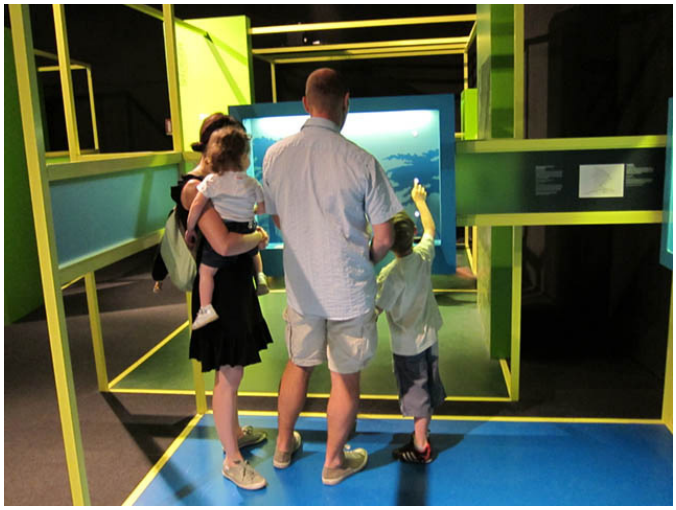
• **Visibility:** The tank-like cases could be replaced with glass ones with see-thru sides. For smaller children, they would be able to see what is inside without having to be picked up or use the stools. The stools could still provide a different vantage point but a clear case would ensure the contents would not be as likely to be overlooked. Also, placing the pictures of the mammals next to the reassembled skeletons rather than above the tables would allow visitors to touch the picture and trace the skeleton with their fingers while looking at the real fossil.

• **Video:** Videos should have sound or subtitles not only to communicate what is being viewed but also to attract attention to it. Since most of the visitors speak French, we recommend a voice-over in French with subtitles in English. This is especially recommended for the video next to the soft-tissue fossils.

• **Interactive games:** Currently, the computer interactive games on display are aimed at children younger than six years old. But kids of this age couldn't even reach them to play; they were too high. We recommend creating games at different heights to match the age level of the intended audience. The games should more closely reflect the content of the surrounding exhibits. One visitor commented that some of the exhibit games resembled video games played at home and was not what was expected or desired at a museum exhibit. To address this, the interface of the games should not resemble a home video game but rather they need to be more educational and/or flashy.

Cecila Grissa conducted field observations at "In the Shadow of the Dinosaur" Exhibit at the Jardin des Plantes in Paris on July 7th, from 10:25 to 12 in the morning. During this time, she focused specifically on six groups while also noting broad observations. Her field notes are below.

IF-User #1: French Family of Four



Images # 62 and #94: A French family visiting the museum—father, mother, 2-year-old daughter and a 6-year-old son. They had a stroller for young child with them.

My first focus group was a French family of four (mother, daughter, father and son, see image 62, 94). The mother mainly held her daughter, who was maybe around 2; while the father was a constant guide for his (approximately) 6 year old son. In the first room, the father made sure to bring the son to every area and every label, read it to him and then explained the content. The son was very interested in the skeletal dinosaur structures and his father would lift him up, in order to see everything to its full advantage, especially the one on the ceiling. The mother and daughter were more apt to be sitting on the central bench, watching and waiting for their other family members to finish. They spent about 20 minutes in the first room and didn't leave until they had seen every artifact. Only at the end, did the father look at the interactive screens, his son never looked and had no interest.

In the second room, the same thing occurred: the son and his father looked and read everything, and tried to use the microscope before entering to watch the movie. They watched the entire movie and only briefly looked at the red wall before entering the third room.

In the third room, because the son was so tiny, he was unable to see above the first layer of fossils and without his father's lead he probably would have gone much faster through this room. His father picked him up at this point because he was feeling tired. Upon entering this last room, one could tell the children were getting tired. But they went to every area again. And in this section, they did look at a couple interactive games, but the son was again more interested in the actual specimens.

Images #60: Father, mother, son, and daughter looking at the exhibit in the last room—the room with soft tissue mammal fossils.

First room: The children only wanted to look at the interactive games, spent maybe 5 minutes, did not look at everything offered

Second room: Again tried the microscope but couldn't hold their attention

Movie: They did watch the entire movie

Third room: The son had his father lift him up to touch the back of the dinosaur skeleton printed on the wall.

Fourth room: They stayed on the game with the joystick for a very long time, children using it with the help of their father. The boy touched the skeleton of the water creature multiple times, even though his father told him not to.

These children were very energized and much more interested in the interactive tools in the exhibit.

Image #10: The grandmother is wearing a red shirt, the girl is standing on a booster block for better view. The grandmother was very actively involved with helping her grand daughter interact with the exhibit.

I was unable to follow them entirely, but in the first room they read every label and didn't partake in the interactive screens.

Second room: They looked at everything and the daughter tried the microscope

Image #77: The grandmother is actively pointing out something at the exhibit to direct attentional focus of the child. This was a commonly observed behavior between guardians and their chargers.

Movie: they watched the entire movie

IF-User #4: An elderly man

First room: he observed every label for a good 10 mins, took notes before moving on

IF-User #5: Father and his daughter

First room: The father would read the labels to his daughter as well as kneeling down to her level to help her with the interactive games

IF-User #6: Grandmother and her two grandchildren, a boy and girl

Images #36: The grandmother and a child are looking at fossil display.

First room: The grandmother made sure they were always close together and looked at everything offered. The grandmother was taking photos (with flash) of the dinosaur skeletons and was scolded for it by the security guard. After which I never saw her take another photo.

Second room: the grandson was interested in the microscope, not the granddaughter. They did the same throughout the exhibit, looking at everything while her grandchildren only used a few of the interactive games in the last room.

Overall Observations

1. Everyone had to get very close to the labels in order to read them, either due to the small font, the dim lighting or both.

2. Children with parents were much younger than 12 years old.

3. Boys were more interested than girls in the microscopes and interactive games as well as touching the

skeletons, even when their parents told them not to.

4. By the third room children wanted to be carried, due to either boredom or exhaustion.

5. A group of older, high school aged children, used the interactive games in the first room.

6. The last room seemed like a playground, with parents unable to keep an eye on their boys, as girls stayed close, there were a number of games with three to four kids crowded around. Seemed more like a playground than educational.

7. In the last room, the artistic room, no one paid any attention to the sequence of origami earths and the progression of evolution from desolate to industrial. Instead, children asked what kind of skeleton was hanging, as there was no label, many parents changed the subject, or they focused on the projections of machinery.

Theresa Bruketta conducted visitor interviews at the museum and collected the field notes. Her notes are shown below.

- Mom with baby, small child, and another woman enter purple room and walk straight through to the final room without stopping.
- Mom and young boy walk through purple room and head to skeleton replica in yellow box. Mom takes a picture of the replica then they watch the video. Mom is hunched over, son crawls under bar/panel of the structure towards another screen in another box, stands on stool while mom looks over his shoulder (boy blocks most of the screen from view).
- Guard trips over corner of yellow box.
- Mom with two pre-teenage boys goes directly to cat skeleton in purple room.
- Little girl and boy lean on exhibits, the height of the boxes in the purple room matches resting position of their arms.
- Three kids try to stand on stool, only two can fit so two decide to get off and run back to the movie theater.
- Mom explains cat skeleton to her son, takes him to the box/tables and the height of the boxes is at his chin so she points to a picture on the wall instead. He tries to hang from the table. They spend more time with the wall displays.
- Teen girl takes picture of table exhibit while two friends lean on it, third friend stands on toes to try to see but then quickly walks away.
- Mom and son play with bat light matching game. Mom looks at bat fossils for less than one second and doesn't look at signs.
- Two kids stand on one of the steps/blocks with one only half way on and mom also has one foot on the same block while another kid stands behind the group and his view of the screen is blocked.
- Pre-teen kid in a wheel chair reaches up to touch a caption and points to it, then wheels under the box panel/divider over to the arm/wheel crank.
- Mom turns one of the stepping boxes on its side to make the box taller for her daughter then helps her

jump down.

• Old man sees fossil video, takes out glasses to see better, his wife joins him.

• Two adults play joy-stick game while a boy watches outside the box then joins woman outside the next box as he watches the video. He does not enter the boxes.

• Two girls walk up to fossil film and quickly walk away over to joy-stick game.

• Two adults lean on table/box displays to get closer to the wall to see the picture.

• Woman puts face to glass of big cat skeleton and bends over, cupping her hand around her face as she tries to read the caption behind the glass. She then walks to the fossil video but reads the caption and doesn't watch the video.

• Two teens block screen of the fossil video by standing about one foot away, their shadows cover the written words on the wall next to the screen.

• Guided group of teens gather around the bird skeleton on the wall and block the walkway making it difficult for other people to pass through. Boy on the outside of the crowd turns around and takes photo of cat skeleton, walking away from the guided group.

User ID	**1a) What was the tone of the overall exhibit?** **1b) What did you think of the tone of the last room? Did it change?**
IF-User 7 Middle age man with wife and 8 year old daughter	1a) Very good, for the young. 1b) Less interested in this room, it is more scientific.
IF-User 8 Three teenagers, ages: 16, 17, and 17	1a) More for children, the videos in the last room for example. 1b) Tone didn't change.
IF-User 9 Middle age woman with husband and two children ages 5 and 3	1a) Nice, saw another exhibit recently and this one had less sound, son was more interested in bones. 1b) More complicated for the kids, although there were interactive tools they were not for the five year old.
IF-User 10 Grandmother about 70 years old and 8 year old granddaughter	1a) Not too crowded. 1b) The structures in the last room were not useful.

User ID	**2a) What did you think of the signs/labels?** **2b) Did they help you better understand the exhibit?**
IF-User 7 Middle age man with wife and 8 year old daughter	2a) Very good, should be lower for kids. 2b) Yes.

User ID	**2a) What did you think of the signs/labels?** **2b) Did they help you better understand the exhibit?**
IF-User 8 Three teenagers, ages: 16, 17, and 17	2a) Did not read all of them, they were too long. 2b) Yes.
IF-User 9 Middle age woman with husband and two children ages 5 and 3	2a) Not too bad but didn't really read because the kids were small they have to keep running somewhere else.
IF-User 10 Grandmother about 70 years old and 8 year old granddaughter	2a) Well done, didn't read the signs.

User ID	**3. Did your kids have any problems seeing some of the exhibits?**
IF-User 7 Middle age man with wife and 8 year old daughter	3) No.
IF-User 8 Three teenagers, ages: 16, 17, and 17	3) No.
IF-User 9 Middle age woman with husband and two children ages 5 and 3	3) No, everything was accessible, can't count the youngest (3 year old). Son liked the big skeleton the most.
IF-User 10 Grandmother about 70 years old and 8 year old granddaughter	3) No. The granddaughter used the step boxes but found the microscope very difficult to use. It was very blurry. They enjoyed the movie the best because it told the history.

Anne Malhotra conducted visitor interviews at the museum in French and collected the field notes. Her notes are shown below.

June 24th, 10 am. Visitor Observation.

My observations began at 10.25 am in the exhibit. I focused on the group of kids coming with their teacher to the exhibit. These observations were as visitor.

When entering the exhibit, the kids rushed to the interactive screens of the first hall waiting that other fellows would come to look at the screens with them. They paid little attention to the fossils and to the skeletons reproduced. None of them read the captions and none saw the bird dinosaur hanging on the roof.

Kids gathered to see the reproduction of what the dinosaurs looked like and their pace. They had paperwork to do with questions to answer and drawings to make but no place to put the paper and do it.

In the next hall, children had a hard time seeing the fossils in the sand. The teacher and the people accompanying could not watch all the kids and explain every element of the exhibition at the same time which made for choices.

The video was a mitigated success in getting young people's attention. In fact, no wording asked for more attention skills which made for a noisier atmosphere with the kids chatting and giving comments.

In the room with the German collection of bird fossils, the alarm rang when somebody leaned on the box to see more clearly the fossils. A kid will have a hard time seeing the fossils as it is not transparent on the sides. Having to lean however would make the alarm ring.

The kids used the last hall as a playground to run and laugh loud and pay less attention to the videos. They however scattered in the hall to play the different games. Kids tried to watch the video but they couldn't focus with the man talking in a funky language about dinosaurs.

Image #57: Older students are playing games and turning their back to the bat fossils. Emphasis on the playing in the last room.

June 5th, 10 am. Interview with Mme. Sophie-Eve Valentin-Joly

The interview took place in the morning. Sophie-Eve received us in visitors' office. Some points came up in her discourse as related to interface design.

First, she emphasized on the scientific dimension of the exhibit the aim of which is to display the latest discoveries and share the new information and the questions unveiled. The aim was to shed light on the extinction of the dinosaurs which remains a mystery along with the existence of mammals at the time. The script revolved around an intended focus on the fossils of the mammals. The message had to be made accessible. It was about the extinction more than on the animals themselves.

Another focus was to present some pieces here only for a time with a certain notion of exclusivity as well as to introduce some other pieces that were going to transition in the permanent collection.

The museum designed and fabricated this exhibition. They had a budget of around two million euros that came from the state and from private donations: individuals, corporations, and associations.

September and June are low in visits and February and April are high in frequency of visits.

They have to face a cultural problem: France is not soft with public things and tend to destroy them. French visitors are not very gentle when it comes to handling the artifacts.

The lightening was a big issue as the light deteriorates the amber specimens and pigments on the artifacts.

The museum had a hard time making the elevators indication visible enough. The elevators are located at the exit and guards had to escort the visitors to the beginning of the exhibit.

The maximum capacity of the exhibit being 200 people at one time.

Sophie-Eve believes it is important to finish the exhibition with an artistic touch, to “lighten the head” of the visitors who received a lot of serious information.

Sophie-Eve highlighted the constant problem in finding just the right tone to give to the exhibition a balance between showing and protecting the valuable artifacts.

The boxes were meant to be created for an average height of visitors.

Image #18: A grandmother and her granddaughter watch the movie. All the seats are taken. The stroller is blocking access to the entrance of the movie hall.

June 7th: Interview with Visitors of the Exhibit and Observations

My observations lasted from 10h15 am till 12h20 pm. I stayed for half an hour in the last room waiting for people to come as they were still mainly in the first hall or watching the movie. Around 10 in the morning, 35 kids and families started spreading in the last hall.

Parents try to help their children to play the games. Some parents try to explain the life of some dinosaurs but some did not have any clear visible caption so parents had to switch to something else boldly.

The guard tripped over the structure of the huge boxes when crossing the room. Kids get very close to the reconstitutions with water in their hands.

A mother with her son goes through all the animations moving the little boxes to elevate the kid so he can

see the screens. She explains every video and grabs the kid's attention. It is the same for a French tour guide who highlights the "cortège des disparus" with drawings of mammals. Without him nobody paid attention to them.

A couple tries to help their children play the final game with the animals that have to be moved.

Kids play hide and seek in the last section of the exhibition. Around five kids leaned on the boxes. Adults more than kids pay attention to the bird fossils, but few people stop to examine the artifacts. A father holds up her daughter to show her all the bird fossils.

The alarm rings and nobody shows up.

I go back to the first room. There is a group of kids over a microscope. An old man leans hard struggling to read the caption. Kids from a group start running as soon as they get in the exhibition. They start jumping everywhere.

Walking back to the place where the movie is, an old woman enters the overcrowded room. People are sitting on the floor on the sides and mothers with prams have a hard time getting in, and so did a boy in a wheelchair. An old lady notes that there is no place to sit in the hall and walks away.

A grand-mother, a mother and a daughter try to understand the explanations on the wall in front of the movie section.

An alarm rings in the bird fossils room but nobody shows up to stop it. A kid asks what the noise is about. His mother looks at him and says "well just an alarm ringing".

An old woman complains there is not enough space to sit. By 11.30 there are people from every age around the screens of the exhibition in the last hall. People rest on the infrastructure in the last hall which makes it shake.

Three kids play the game concerning the bats turning their back to the actual fossils.

A father explains to his daughter how cool the bird fossils are as they contain soft tissue.

A kid in wheelchair leans under the infrastructure to go from one box to another in the last room. Then he lifts himself up from the chair to see and read the whole of the fossil description.

Image #73: A boy in a wheelchair tried to get a better view of the exhibits by sitting up on the rails of his wheelchair. At one point, he tried to support himself by his arms only by leaning on the exhibit.

The alarm rings again. Nobody shows up.

Image #106: A girl is jumping and putting her whole body weight on the exhibit to be able to see it better.

Kids gather around the final interactive game and start chatting to know each other's names. They have a hard time playing the game. It seems not to work.

The movie room becomes very silent. The movie starts and people are concentrated. A child notices the background sounds and tells his parents to listen.

Only two youngsters and one couple with their two children stopped to look at the art work at the very end and a total of 3 kids and a young girl in wheelchair came to the exhibit while we were there. Not many people understood that with the same ticket they could visit the whole museum.

Image #154: Younger kids are bored by the exhibits, making it harder for their parents see what they want.

Interviews with Visitors Conducted in French

IF-User 11: Father in his thirties with his wife and their two kids in a group of people coming from Marseille.

IF-User 12: A father, his wife in their thirties and their 11 year-old daughter from Marseille.

IF-User 13: A young Lady with her mother and her three children between 4 and 6 years for two of them and one who was less than 1 year.

IF-User 14: A young boy in a wheelchair around 10 year-old.

IF-User 15: An old lady who lost her grand-daughter in the exhibit at some point

IF-User 16: An old lady sitting on a bench to the exhibit with her husband and her grand-sons.

IF-User 17: Middle-aged woman from Guadeloupe with her children.

IF-User 18: Two men in their mid twenties.

User ID	**1a) What was the tone of the overall exhibit?** **1b) What did you think of the tone of the last room? Did it change?**
IF-User 11: Father in his thirties with his wife and their two kids in a group of people coming from Marseille.	1a) On a bien aimé les bruits de fonds : l'eau, les oiseaux. Ca permettait une immersion. Mais bon c'est un peu court pour une expo et pour le prix. Mes enfants ont regardé 5 fois le film quand même. Ils ont l'air d'aimer. Ils étaient très attentifs à la vidéo surtout qu'il n'y a pas de dialogue ou de voix off dedans. 1b) Bon, la dernière salle est quand même différente oui. C'est beaucoup plus interactif. Les enfants, ça leur rappelle leur ordinateur et les jeux qu'ils peuvent avoir dessus. C'est un peu dommage. Autant les premiers écrans étaient ludiques et intéressants au niveau du contenu autant ceux là sont pas très pratiques en plus. The elder son : j'ai beaucoup aimé les dinosaures immenses au début. Le meilleur c'était le début.
IF-User 12 Father in his thirties with his wife and their two kids in a group of people coming from Marseille.	1a) L'ambiance était un peu lugubre et les bruitages étaient sympas. C'était assez agréable de marcher. Les fossiles étaient impressionnants. 1b) our les enfants surtout. Le présentateur dans les vidéos est vraiment bizarre. On dirait qu'il est sorti tout droit des années 1970. Son humour est particulier. Je trouve que l'atmosphère était de moins en moins intéressante au fil de l'expo. C'était impressionnant d'avoir deux gros dinosaures au début et des fossiles et tout. Les écrans étaient intéressants. Mais après c'était un peu flou et trop sombre même par moment. Me dites pas que l'expo est finie là ? C'est court !
IF-User 13 A young Lady with her mother and her three children between 4 and 6 years for two of them and one who was less than 1 year.	1a) Les sons et lumières sont biens. Ca donne un côté zen et reposant. L'exposition est quand même très courte. Mes enfants ont entre 4 et 6 ans et je trouve qu'ils sont encore trop jeunes pour cette expo. Mais j'essaie de les intéresser. Ils ont vu deux fois le film pour bien comprendre. 1b) Mes enfants aiment bien passer du temps dans cette pièce. Ils sont petits donc ils ne voient pas grand chose et les écrans sont un peu plus accessibles. Ca prend du temps de regarder chaque écran et chaque activité. Les enfants écoutent peu pendant l'expo. Même si on essaie de leur expliquer. Donc les écrans sont biens pour eux. Il aurait dû y avoir plus de squelettes et des reconstitutions car c'est ce qu'il y a de plus impressionnant.
IF-User 14 A young boy in a wheelchair around 10 year-old.	1a) je veux être paléontologue donc cette exposition j'adore. Bonne ambiance. Ca permet d'apprendre plein de trucs. En fait je connais déjà des choses donc j'arrive à prendre d'autres informations. 1b) La dernière salle est marrante. Je regarde un peu chaque truc. C'est pas la salle la plus intéressante. Je préfère les fossiles et les reconstitutions. Le film était sympa et donnait des informations intéressantes. Mais les vidéos à la fin ne sont pas intéressantes. L'homme dans la vidéo est bizarre.
IF-User 15 An old lady who lost her grand-daughter in the exhibit at some point	1a) Il y a trop de monde. Je me retourne et je ne trouve plus ma fille. Bon grâce à vous on l'a retrouvé donc tout va pour le mieux. J'ai entendu parler d'une exposition sur les dinosaures à porte de Versailles. Il paraît que c'est autre chose quand même. Ici il n'y a pas beaucoup de dinosaure. L'exposition est un peu légère. 1b) Ma petite-fille en a profité pour jouer à cache-cache. Elle a bien aimé je pense. Je suis plus préoccupée par la foule et ma petite-fille que je suis partout. User 6 : Mes petits-enfants sont très concentrés sur les jeux dans cette salle. Ca les occupe et ils restent plus calment comme ça. Je trouve ça bien d'avoir des jeux. Ils sont jeunes quand même. Au moins ils s'intéressent doucement.

User ID	**1a) What was the tone of the overall exhibit?** **1b) What did you think of the tone of the last room? Did it change?**
IF-User 16 An old lady sitting on a bench to the exhibit with her husband and her grand-sons.	1a) Eh bien écoutez très chère, il n'y a pas beaucoup de places pour s'asseoir ici pour des personnes comme nous. Don dès qu'on voit un petit coin libre on s'assied ! Je suis là avec mes deux petits-fils et mon mari. Moi je n'y connais pas grand-chose aux dinosaures. Mais les enfants c'est dans leur culture. Il y a des dinosaures partout sur les biscuits, les brosses à dents, les dentifrices, les pyjamas. Je ne suis pas trop l'exposition. Je surveille mes bambins pour qu'il ne leur arrive rien. C'est surtout mon mari qui connait les fossiles et tout ça qui leur explique et qui lit toutes les légendes et regarde bien tout pour tout expliquer. 1b) N/A
IF-User 17 Middle-aged woman from Guadeloupe with her children.	1a) L'ambiance est originale et les activités et atmosphères sont variées. On ne s'ennuie pas. Mes enfants aiment bien les jeux dans cette salle [dernière salle]. C'est quand même chère de venir pour voir que ça. 1b) Ils aiment bien mes enfants. Le contenu est varié et ils ne s'ennuient pas. Il y a beaucoup de vidéos et de jeux.
IF-User 18 Two men in their mid twenties.	1a) L'ambiance était étrange plutôt pour les enfants. Le film était bien mais un peu naïf. 1b) Les messages un peu simplets par moment. L'ambiance dans la dernière pièce était proche de la cour de récréation. C'est dommage car il y a du contenu intéressant. L'homme dans les vidéos est asse étrange. Il essaie de faire des blagues qui ne marchent pas trop. Pourquoi la traduction est faite par une femme vous savez ? Par contre l'expo est un peu légère au niveau contenu.

User ID	**2. What did you think of the signs/labels? Did they help you better understand the exhibit?**
IF-User 11: Father in his thirties with his wife and their two kids in a group of people coming from Marseille.	Les légendes étaient relativement accessibles. Il y a une où je n'ai pas vu de légendes. Parfois elles étaient trop petites ou trop loin donc c'était pas pratique mais dans le global c'était bien. Les lumières n'aidaient pas toujours la lecture mais en même temps les lumières donnent une atmosphère à l'exposition. Il faut s'adapter. C'est pas les enfants qui s'adaptent. On essaie de leur lire les explications un peu mais la concentration n'est pas toujours là.
IF-User 12 Father in his thirties with his wife and their two kids in a group of people coming from Marseille.	C'était facile de lire et suivre les explications au fil de l'exposition dans le global. Les légendes sont bien faites. Elles donnent beaucoup d'information. C'est surtout pour l'adulte en fait. Après on essaie d'expliquer à l'enfant. Car il n'a pas le vocabulaire pour tout comprendre, il n'a pas la bonne taille, et pas la concentration !
IF-User 13 A young Lady with her mother and her three children between 4 and 6 years for two of them and one who was less than 1 year.	Les légendes sont biens. Elles sont surtout pour les parents. Les enfants ne vont jamais lire ça ! C'est trop compliqué et trop long. En plus, c'est trop haut pour mes enfants. Ils vont plus vers les choses plus ludiques comme les jeux.
IF-User 14 A young boy in a wheelchair around 10 year-old.	Les légendes sont intéressantes. Je connais déjà pas mal de truc donc je sélectionne. Je suis obligée de me lever mais ça me dérange pas. C'est tellement intéressant. Je suis obligée de m'adapter tout le temps donc ça va.

User ID	**2. What did you think of the signs/labels? Did they help you better understand the exhibit?**
IF-User 15 An old lady who lost her grand-daughter in the exhibit at some point	Vous savez à mon époque on disait que les dinosaures se sont battus entre deux clans ennemis et que c'est ce qui a entraîné leur extinction ! Aujourd'hui ils nous disent que c'est toujours un mystère. Après vous ne trouvez pas que c'est un peu petit vous les légendes ? On ne peut pas tout lire.
IF-User 16 An old lady sitting on a bench to the exhibit with her husband and her grand-sons.	Mon mari lit tout en détail ça l'occupe et il aime expliquer à ses petits enfants. Moi je me concentre pour surveiller. Mes petits enfants sont trop petits pour pouvoir lire les légendes. On a passé le plus de temps dans la salle du film et dans la dernière pièce là parce qu'ils peuvent mieux suivre.
IF-User 17 Middle-aged woman from Guadeloupe with her children.	Les légendes sont biens faites mais pas toujours lisibles. Parfois dans le noir. Je n'ai pas tout lu pour être honnête. Donc mes enfants ont dû lire encore moins je pense.
IF-User 18 Two men in their mid twenties.	Les légendes étaient bien faites mais assez espacées. On trouve qu'il n'y avait pas beaucoup de contenu écrit. C'était assez direct et les explications allaient à l'essentiel mais parfois c'était trop simpliste. L'exposition était plutôt légère. On a tout regardé, même les jeux mais c'est vrai que c'est une exposition pour les jeunes..et encore.. les jeunes ne peuvent pas vraiment lire. Donc, en fait on ne sait pas. Mais l'exposition n'était pas mauvaise. On espère pouvoir entrer dans la galerie permanente car on a quand même payé un prix.

User ID	**3. Did your kids have any problems seeing some of the exhibits?**
IF-User 11: Father in his thirties with his wife and their two kids in a group of people coming from Marseille.	Oui il fallait porter les plus petits parfois pour qu'ils voient les fossiles surtout. Parce que souvent c'était sombre et trop en hauteur. Les écrans étaient mieux placés et les enfants s'adaptent facilement en montant sur les petits tabourets.
IF-User 12 Father in his thirties with his wife and their two kids in a group of people coming from Marseille.	Les légendes étaient bien faites dans l'ensemble. Assez claires. Ma fille à un certain âge donc elle lisait. Pas tout car les dinosaure c'est pas trop sont truc. Mais au moins c'était accessible. Par contre, les jeux n'étaient pas toujours compréhensibles et marchaient pas très bien comme le microscope de la première salle. C'est dommage.
IF-User 13 A young Lady with her mother and her three children between 4 and 6 years for two of them and one who was less than 1 year.	Mes enfants sont trop petits pour voir cette exposition. Ils ne peuvent pas voir grand-chose à moins de grimper sur des caisses ou des tabourets. Ils sautent partout et essaie de comprendre les jeux et animations. Mais les fossiles déjà ils ne savent même pas ce que c'est. Etant donné que ce n'est pas à leur hauteur ils ne regardent pas plus. Il aurait fallu une exposition avec plus de squelettes. C'est ce qu'on pensait trouver avec le titre de l'expo.
IF-User 14 A young boy in a wheelchair around 10 year-old.	j'ai tout vu et tout regardé. Ou presque. J'ai pas vu les fossiles en résine car la salle était plutôt sombres. Mais là je vais voir les chauves-souris. J'aime bien prendre le plus d'information possible. C'est cool les dinosaures. J'en profite quand je suis là. Je me glisse partout !

User ID	**3. Did your kids have any problems seeing some of the exhibits?**
IF-User 15 An old lady who lost her grand-daughter in the exhibit at some point	Elle regarde ce qui lui plaît. Elle a du voir ce qui l'intéressait vu qu'elle est partie jouer à cache-cache ! C'est difficile de garder son attention car elle est jeune et ne comprend pas tout.
IF-User 16 An old lady sitting on a bench to the exhibit with her husband and her grand-sons.	Leur grand-père est là pour les aider à tout voir. Ils n'ont pas eu trop de mal à s'adapter dans l'ensemble. Ils adorent les écrans et les jeux. Car ils les comprennent plus que les légendes ! Ils passent un bon moment c'est l'essentiel même s'ils n'ont pas tout compris.
IF-User 17 Middle-aged woman from Guadeloupe with her children.	Mes enfants sont hyperactifs ils regardent tout et se glisse entre les gens pour jouer aux jeux et voir les fossiles et tout. Ils ne lisent pas les légendes. Il faut les forcer ou leur expliquer.
IF-User 18 Two men in their mid twenties.	No kids.

User Taxonomy Group

Student Researchers: Maya (Victoria) Hood, Andrea Carroll, and Péter Bálint Langmár

Introduction

There is no introduction written for this section of the report.

Methodology

Our group studied the users at the Museum National d'Histoire Naturelle's exhibition, Dans l'Ombre des Dinaosaures.

As a preliminary source of the analysis, we interviewed Mme Sophie-Eve Valentin-Joly. The information gathered from the interview was helpful when further researching the users. Our group chose ethnographic research methods, which included interviewing visitors, taking field notes on users, and photographing users interacting with the exhibition. All the photographs and interview responses have been used and unedited for our research, except for photographs that were either too blurry or too dark to analyze.

Visit One

On Thursday June 24th 2010 between 10:00 and 12:00, our group visited the exhibition for the first time. It was a preliminary visit to begin to understand the flow of the exhibition, the behaviors of the visitors, as well as become familiar with the exhibit's offerings.

Visit Two

On Monday July 5th, 2010 between 10 and 12:30, we interviewed Mme Sophie-Eve Valentin-Joly in her office to discover who the intended user for the exhibit was from the perspective of the institution. The information we got from the interview is the basis of comparison we made between what the museum wanted to do and what we observed.

We were interested in finding answers to the following questions:

1. What are your primary target audiences for this exhibit?
2. What characteristics do these audiences share?
3. What should the user understand after the exhibit, if it is to be successful?
4. Is the exhibit primarily for education or for entertainment?
5. How long do people spend in the exhibit?
6. How does the exhibit address issues for people with special needs?
7. What level of interactivity was desired for children? For adults?
8. Are there guides available to lead tours, or is the exhibit designed to be self explanatory?
9. Are teachers/adults given an explanation of the exhibit to prepare them for student/child visitors?

10. How are the users' goals/preconceptions addressed by the exhibit? How does this differ for children and adults?

Visit Three

On Wednesday July 7th, 2010 between 10:00 and 12:30 our group visited the exhibition for the final time. The purpose of this visit was to conduct ethnographic observations, to take field notes and photographs, and to interview the "informants" at the exhibit. As a group, we stood in the last section of the exhibit and waited for and approached users. We wanted to give the users a chance to walk though and see the entire exhibit before we asked them questions. The two of us who spoke French asked the questions, while one of us stood discreetly in the background and quietly observed the users who were interviewed.

Questions

1. Where are you from? A Parisian, a tourist from France, or a tourist from another country?

2. How did you find out about the exhibit, why was it attractive for you? Through word of mouth, the internet, a guide, the newspaper?

3. Did you find the cost of the ticket normal or expensive? How did the adult price compare to that of the children's price? Was it expensive to go as a whole family?

4. Will you return to the exhibition? Or will you only see it just one time?

While we questioned and observed the users, Professor Olga Werby inconspicuously took photographs of them interacting with the exhibition. The flash was turned off so as not to distract the users as well as to protect the light sensitive fossils. Overall, 165 pictures were taken.

Results

The user taxonomy was not generated.

The data collected both in interviews with museum personnel and visitors, as well as ethnographic observations documented in photographs illustrated some interesting results. While our limited sample size and observational time constrains the nature of our conclusions, it is important to note their possible implications on a grander scale. As a whole, it seems as if the museum's target early teens audience, were present and active in the exhibition but were not the dominant group. Small children, families, and children with parents and grandparents made up the majority of the visitors, most of whom were not from the greater Paris area.

Our data shows that the marketing of the exhibit worked in that its focus on dinosaurs attracted a wide audience. As Mme Valentin-Joly pointed out, dinosaurs are a very popular subject that will attract families and children just on the nature of the subject. While the ways in which visitors heard about the exhibition varied from word-of-mouth by Parisian relatives to the museum's website, each interviewed party was attracted to the exhibit by the subject matter. However, this led to some confusion as families with small children were expecting a dinosaur-focused exhibit. The true subject of the exhibition was lost on the subjects interviewed. One grandmother (Family Two), a Parisian women who had come with her two very young grandsons, expressed disappointment in not seeing more dinosaurs. She also complained that her

grandchildren did not interact well with the exhibit and that it was boring for them.

High rate of visitors are outside of the target group, which indicates some problems of knowledge, interest and behavior. Both the high representation of younger and older visitors, outside of the target group. The youngest visitors or event the adults can be attracted in different ways, than the target group. Following, the age of child visitors was under the targeted early teens. In short, this shows, that the audience is more diverse by age, than the it was expected. The high rate of the non targeted audience emerged different malfunctions of the exhibit, its usage was not obviously proper.

Our interviews illustrated the dominance of tourists and French-speaking foreign travelers in the population of visitors. These people ranged in age and mainly came from mainland France and its foreign departments. This seems to prove the data Mme Valentin-Joly presented, in that only 20 percent of visitors were from outside of French speaking countries. In terms of usability, it seems as if our sample, although not entirely representative of the breadth of user groups coming into the museum, were not experiencing any language barriers or cultural issues with the exhibit.

One recurring theme in our interviews was the regret that the exhibition was not for children. It seems as if the marketing and visual communication of the exhibit alluded to the subject of dinosaurs without clarifying the objectives and subjects of the space. Parents and grandparents brought their small children to the museum and seemed highly disappointed in the ability for their children to both interact and understand the exhibit. The price was also a deterrent to families, especially to the aforementioned visitors with small children. They did not believe that they received their money's worth because the subject was too complex for their children to understand. One woman (Family Four), visiting from Guadaloupe with her family, spoke highly of the exhibit's interactivity for older children, but believed that smaller children got nothing out of it and even some older children and adults wouldn't be able to grasp its concepts fully.

This inaccessibility to younger audiences, while conscious by the museum, was not communicated properly to the audience, resulting in parents either having to explain every aspect of the exhibit to the child, or feeling disappointment in the cost/value ratio of the experience. Those in the early teens did interact well with the exhibit's various computers and screens, although retention of knowledge could not be determined.

Image #5: A man lifts up his son to see the fossils. Many parents/grandparents expressed disappointment in the inaccessibility of the exhibit to small children.

Image #89: This photo illustrates the predominance of parent/grandparent with small children attempting to use the exhibit. This young girl is licking the side of the exhibit (IF-User #1).

Recommendations

Although the museum's target user group was able to use the exhibit, it is interesting to note that this group only made up a small percentage of the actual user population; exceptions might be the directly targeted school groups. In our opinion the museum has a choice to make. Either it continues to target early teens or it modifies the exhibition to include a wider range of user groups. In the case of individual visitors, families to attract visitors might be also elemental, which might be supported by some more detailed information materials and signs.

If the exhibition will continue to be targeted towards older users, the marketing campaign should be modified to communicate this goal. Although the museum benefits from the broad appeal of dinosaurs within the general public, the content of the exhibit is not translated to the majority of its visitors. Several visitors who were interviewed expressed disappointment about the lack of dinosaurs. Clearly the subject of the exhibit and its appropriate age group were not effectively communicated. Another solution would be to offer deeper discounts and/or raise the age for free entry into the exhibit. In this way parents will be less likely to be disappointed in the lack of content for younger viewers.

If the museum decided to include this large demographic in the exhibition experience, it would have to accommodate differing ranges in height, development, education, and attention span. Perhaps more visual signage could be placed lower on the walls and the artifacts could be encased in glass or plastic rather than opaque materials so that more could benefit. A discovery area targeted just for smaller children could also be created to introduce the subjects of fossils and evolution to a broader audience.

In short, while we believe that the museum succeeded on providing an interesting and interactive exhibit for more sophisticated users, the majority of real visitors coming to the exhibit are not represented in its curation. In order to both entertain and educate the public as well as to generate revenue, the museum

should be clearer in its communication of the exhibit to potential visitors and/or modify the exhibit to include small children, handicapped individuals, and families in general.

The exhibition needs to be targeted and marketed more precisely with a new campaign, or with additional changes the high number of the off-target visitors should also be attracted.

Data

Mme Sophie-Eve Valentin-Joly's answers to our questions (from July 5th, 2010) informed our ethnographic research.

What are your primary target audiences for this exhibit?

Mme Sophie-Eve Valentin-Joly responded that the primary target audience was children between the ages of pre-teens and early teens. She is also commented that a majority of the museum visitors were French (both from Paris and other regions of France) and that only twenty percent of the visitors were foreign tourists.

What characteristics do these audiences share?

Mme Sophie-Eve Valentin-Joly commented that the French visitors tended to touch and be rough with the displayed objects. She said that children were the cause of the majority of technological difficulties during the exhibit's opening month. She noted that both Spanish and Italian tourists only speak their mother tongue and cannot read or understand the French and English captions. She said that German tourists tend to have very good English speaking skills.

What should the user understand after the exhibit, if it is to be successful?

Mme Sophie-Eve Valentin-Joly stressed that the exhibit was not about dinosaurs but instead on the instinction of dinosaurs and the evolution of mammals.

How does the exhibit address issues for people with special needs?

Mme Sophie-Eve Valentin-Joly stated that there was access to the exhibit for people in wheel chairs.

What level of interactivity was desired for children? For adults?

Mme Sophie-Eve Valentin-Joly explained that the software on the touch screen computers was designed for pre-teenagers and early teenagers. The software gave basic information on dinosaurs in a simple and fun manner. The adults interacted with the exhibit by reading the explanations.

Are there guides available to lead tours or is the exhibit designed to explain itself?

Mme Sophie-Eve Valentin-Joly said the guided tours were available for groups, such as school students.

Are teachers/adults given an explanation of the exhibit to prepare them for student/child visitors?

Mme Sophie-Eve Valentin-Joly explained that information on the exhibit could be found on the museum's website. She noted, however, that a majority of users went on the website to look at opening times and ticket prices.

After answering several of our questions, Mme Sophie-Eve Valentin-Joly also provided information on when users more frequently visit the exhibition. During the months of school holidays, such as February

and April, there is an influx of visitors. The museum always opens during the school vacation period because they know they will receive the highest amount of visitors during that period. For example, when the exhibit opened in April 2010, it received approximately 100,000 visitors in the first two months. Mme Sophie-Eve Valentin-Joly stressed that while opening during the school vacation ensures a high amount of visitors and publicity, it is also a hindrance to the exhibit. It is difficult to fix technological difficulties, and objects that are broken (both are often caused by children) when there is a high volume of visitors arriving each day to the exhibit. We are aware of the fact that depending the season user groups might change. For example, during the school semester, in school children groups are more common.

Visitor's Responses

Interview Questions were based on the preliminary visit to the exhibit on June 24th, 2010 and on the extensive interview with Mme. Sophie-Eve Valentin-Joly, a scientist at the Jardin des Plantes Muséum: the Grande Galerie de l'Évolution.

During our ethnographic observations at the museum, we have interviewed five groups of visitors. We asked the visitors four questions:

1. Where are you from? A Parisian, a tourist from France, or a tourist from another country?
2. How did you find out about the exhibit? Through word of mouth, the internet, a guide, the newspaper?
3. Did you find the cost of the ticket normal or expensive? How did the adult price compare to that of the children's price? Was it expensive to go as a whole family?
4. Will you return to the exhibition? Or will you only see it just one time?

User ID	**1. Where are you from? A Parisian, a tourist from France, or a tourist from another country?**
U-User 1 Mother and father with two sons who were aged ten and twelve	The family was from Reunion, a French island located off the coast of Africa in the Indian Ocean.
U-User 2 Grandmother with two grandchildren who were aged two and four	They were Parisian.
U-User 3 Mother and daughter who was age twelve	They were from Grenoble, located in Southeast of France.
U-User 4 Grandparents with two grandchildren	The grandparents lived in Guadeloupe, a French island located in the Caribbean.
U-User 5 Parents with five year old boy and two year old daughter	They explained that they were from the South of France, but did not give the name of a precise city.

User ID	**2. How did you find out about the exhibit? Through word of mouth, the internet, a guide, the newspaper?**
U-User 1 Mother and father with two sons who were aged ten and twelve	They found out about the exhibit through a guide book, as well as through word of mouth.

User ID	**2. How did you find out about the exhibit? Through word of mouth, the internet, a guide, the newspaper?**
U-User 2 Grandmother with two grandchildren who were aged two and four	She is from Paris and therefore knows the museum very well.
U-User 3 Mother and daughter who was age twelve	The mother said she found out about the exhibit through the internet, but was also insistent that she knew Paris very well.
U-User 4 Grandparents with two grandchildren	The grandmother was an anthropologist and therefore knew the museum very well and was interested in the exhibition.
U-User 5 Parents with five year old boy and two year old daughter	The mother had heard about the exhibit through her father who lives in Paris.

User ID	**3. Did you find the cost of the ticket normal or expensive? How did the adult price compare to that of the children's price? Was it expensive to go as a whole family?**
U-User 1 Mother and father with two sons who were aged ten and twelve	They found the cost of the museum ticket to be a normal price. They also mentioned that compared to Reunion, Paris was very expensive in general.
U-User 2 Grandmother with two grandchildren who were aged two and four	She found the price of the tickets to be very expensive.
U-User 3 Mother and daughter who was age twelve	They found the price of the tickets to be normal.
U-User 4 Grandparents with two grandchildren	The grandmother found the price of the tickets to be very expensive, especially for the children.
U-User 5 Parents with five year old boy and two year old daughter	They found the price of the ticket to be expensive, especially for their five year old boy.

User ID	**4. Will you return to the exhibition? Or will you only see it just one time?**
U-User 1 Mother and father with two sons who were aged ten and twelve	They will not return to the exhibit primarily because of the vast distance between Reunion and Paris.
U-User 2 Grandmother with two grandchildren who were aged two and four	She said she would not return to the exhibition. She was disappointed by the limited amount of dinosaurs on display. She did not know about the theme of the exhibition until we had told her, and she had assumed the entire exhibition was on dinosaurs. She thought it was not suitable for children and that is was for adults only, and she said that her grandchildren did not like it. Overall she was very disappointed.
U-User 3 Mother and daughter who was age twelve	They will not return to exhibition.

User ID	**4. Will you return to the exhibition? Or will you only see it just one time?**
U-User 4 Grandparents with two grandchildren	As an anthropologist, the grandmother would return to the exhibition a few more time. She said, however, that it was not suitable for children. First of all, children got tired very quickly. Secondly, she though the concept of the shifting continents and the extinction of the dinosaurs, that took millions of years, too advanced for children to understand. She liked the touch-screen computers but thought they were suited only for ten years old.
U-User 5 Parents with five year old boy and two year old daughter	They will not return to the exhibit.

General Impressions

At the time of our first visit, school groups were the dominant visitors. When we returned for our third visit, however, which was at the end of the school year, the visitors shifted from school group to nuclear families. During this visit, we noticed that there were 20 adults, 34 children, and one group of school students and teacher. A majority of the children at the exhibit were under eight years old. The sex of the visitors was balanced. A majority of the adult visitors were at the exhibition to entertain and educate their children.

During the interviews, we observed that there was not a significant difference in cultural upbringing, in education, and in interests and expectation of the exhibit among the visitors. The main difference between the visitors was age. During our ethnographic research, visitors were mostly families that consisted of parents and between one to four children. The adults weren't all necessarily parents; we noticed that a number or grandparents came to the exhibition with their grandchildren. We observed two main groups, which included individual users and group users. The main difference observed in individual users is the age, maturity, and physical differences between children and adults. The dissimilarities noticed between group users include social, cultural, and education.

The Conceptual Design Group's information about the users (specifically what they have noticed about users' age, origin, and sex) overlap with our group's data.

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