

In the “Color and Culture” area of *Skin*, a large mural of human faces introduces the science of human skin color and celebrates its variation before transitioning to the societal impacts of racial constructs.



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The Art of Balance

Covering Sobering Topics in Exhibitions – Without Sacrificing Fun

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A day at the California Academy of Sciences promises fun: encounters with fascinating creatures and joyful amazement at the beauty and resilience of nature. Can that delight coexist with sobering reminders that much of the planet’s biodiversity is in peril? At a time that calls for decisive action to chart an equitable, sustainable future, we’re compelled to provide both.

The museum’s current incarnation – a groundbreaking sustainably designed structure – opened to the public in 2008. Located in San Francisco’s Golden Gate Park, it is home to a world-class aquarium, planetarium, and natural history museum, as well as respected programs in scientific research and education – all under one green, living roof (fig. 1). More than 15 million people have visited its 100,000 square feet of exhibitions since 2008. In this article, we share what we’ve learned about our audience’s relationship to fun at the museum and discuss exhibition-making strategies we’ve used that successfully balance fun with challenging content – as well as where we’ve missed the mark.

Fig. 1. An exterior view of the museum shows its undulating living roof. Edged by solar panels and planted with native wildflowers and grasses, it generates some of the museum’s electricity and provides habitat for birds, insects, and other beneficial animals.

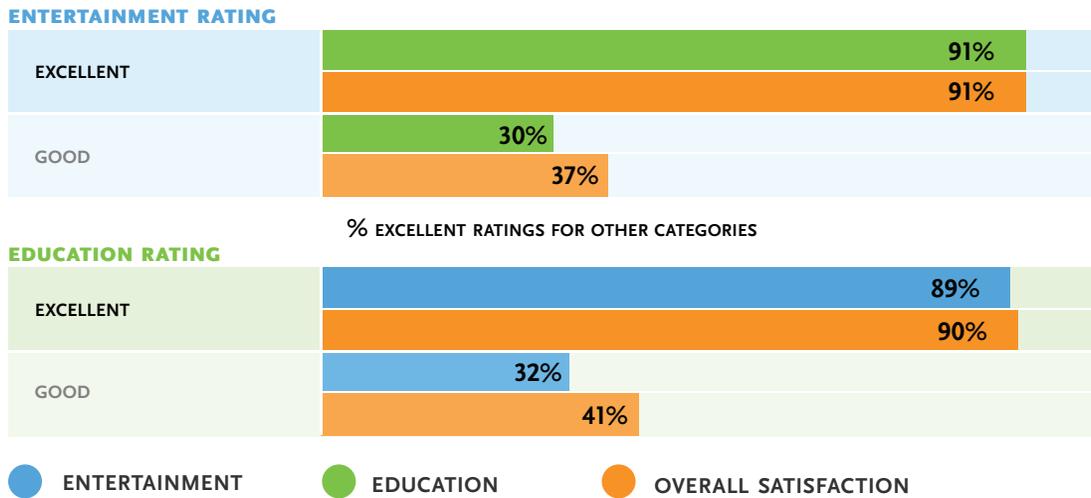


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Fig. 2.

When visitors rate entertainment as “excellent,” education and overall satisfaction also tend to be rated excellent. When entertainment ratings drop to “good,” education and visitor satisfaction ratings of “excellent” both drop precipitously. The same is true in reverse.

Entertainment, Education, & Satisfaction Ratings Rise & Fall Together



When You Say Fun, What Do You Mean?

What motivates people to visit our museum is their expectation of a fun experience that will take them out of their day-to-day routines. After interest in subject matter (74 percent), San Francisco Bay Area cultural attraction audiences cite “entertainment” as the second most common motivator for visitation (58 percent), followed by “education” (48 percent).¹ Audience research shows that fun and learning are inextricably linked; entertainment (which our visitors often describe as fun) and education mutually reinforce each other and result in higher overall satisfaction ratings (fig. 2).

But what is fun, really? No universal definition exists; fun is subjective, variable from person to person, and context-dependent. However, its multifaceted nature doesn’t leave fun impervious to characterization. A team of psychologists set out to study what people mean by “fun” and identified five primary types, noting that “fun can be an activity, a state, or a trait”:

- Contentment fun: “peaceful, warm, relaxed, loving, caring, and contentment”
- Achievement fun: “focused, challenged, accomplished, absorbed and engrossed, and contains some sense of a flow state”
- Sensual fun: “sensual... lustful, intimate and romantic”
- Ecstatic fun: “ecstatic, crazy, excited and energetic”²

In focus groups on visitor perceptions that we conducted in 2014, we asked recent and lapsed visitors to describe entertainment in the context of our museum. They described experiences of beautiful things they’ve never seen before, as well as familiar favorites; experiences where they could talk, touch, ask, wonder, and figure things out; and experiences where they feel curious, excited, immersed, transported, and delighted. These visitor perspectives relate to three types of fun identified by McManus and Furnham: **achievement fun** (wonder, immersion, curiosity); **sociability fun** (talking, asking, visiting with others); and **contentment fun** (beauty, relevance, accessibility).

With a clearer sense of what our visitors mean by fun, and how we might communicate its availability in our exhibitions, we can weave in sobering content in ways that don't compromise enjoyment.

Museums' Responsibility to the Future

At this critical moment in human history, increasing the public's environmental and scientific literacy is imperative to addressing our planetary challenges: climate change, loss of species and ecosystems, equity and social justice, and beyond. Compared with a decade ago, more people in the United States feel that protecting the environment should be a top political priority, and a majority report seeing the effects of climate change in their communities.³ By virtue of the public's belief in our trustworthiness – and our reach – museums hold power to increase awareness, deepen understanding, and inspire action. We must balance this responsibility with meeting 21st-century audience expectations for leisure and fun.

Our approaches draw on the National Network for Ocean and Climate Change Interpretation (NNOCCI), the Visualizing Change program, Heartwired, and other behavior change and environmental education research.⁴ Trying to jostle visitors into action by emphasizing how humans have profoundly damaged the planet Earth often leads to hopelessness, apathy, and inaction. Our exhibitions intentionally frame challenging messages to leave visitors encouraged and empowered (and more likely to return). Matter-of-fact truths are woven within a broader context of natural wonder, hope, and solutions to build interest and activate participation without squashing delight.

We use front-end research to reveal what resonates with visitors and how we can leverage the museum's assets, expertise, and research to tell stories that elicit awe and wonder – key elements of the fun our visitors seek. With this eye toward “wow” opportunities as the “main course” of

the visitor experience, we use a variety of techniques to excite and delight: a mix of large or iconic objects, live animals, interactivity, and immersive environments (factors outlined in Steve Bitgood and Don Patterson's 1987 article, “Principles of Exhibit Design,” which still ring true today).⁵ This multisensory approach reflects and addresses our audience's different learning styles, values, beliefs, identities, and needs. Starting with a healthy portion of delight cultivates the conditions for open, honest discussion around issues, and typically avoids the pitfalls of a doom and gloom approach. Then we add measured amounts of “side dishes” – content about the challenges an organism or system faces, always grounded in authentic science, avoiding sensationalism, and paired with actionable solutions scaled appropriately to reflect the scope of the problem (fig. 3).

A Well-Balanced Exhibition Experience

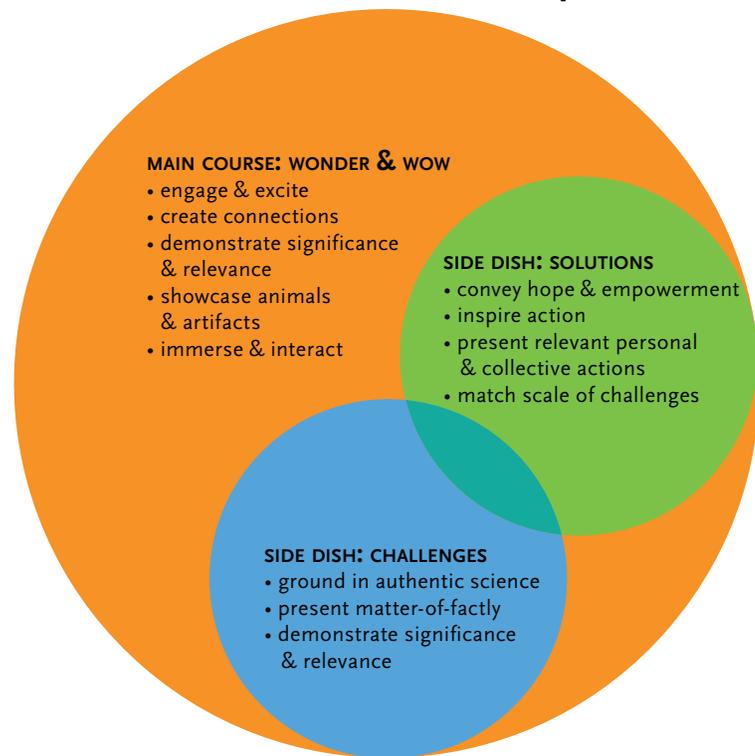


Fig. 3. Our recipe for a balanced exhibition experience pairs the fun of wonder and wow with relevant challenges and solutions for an equitable, sustainable future.



Fig. 4. (top) Visitors choose their own path through *Giants of Land and Sea*, an 8,000-square-foot permanent exhibition that opened in 2018. With multiple entry and exit points in a large, open gallery on the academy’s main floor, sustainability stories are distributed throughout.



Fig. 5. (right) Close encounters with California’s giants resulted in experiences that include contentment and achievement fun. One visitor said, “It’s just really, really neat to see the history and realize that it’s been alive for so long and what it must have seen.”

The following case studies describe how we've applied this recipe in two exhibitions, each aiming to build understanding and motivation around timely issues while meeting visitors' expectations for a pleasurable visit.

Giants of Land and Sea

Opened in 2018, *Giants of Land and Sea*, a permanent exhibition, explores the interconnected systems that shape California's coast and give rise to magnificent, and often giant, life (fig. 4). California's towering coast redwoods, majestic whales, and massive tectonic forces serve as the main course of "wow." To draw visitors into the open floorplan, we designed clear sightlines and pathways to dramatic objects, including a nine-foot-diameter coast redwood cross-section and an 87-foot-long blue whale skeleton. Commanding, real specimens convey the immense scale of charismatic marine mammals and giant trees, and two immersive simulations engage visitors with ecosystem phenomena. The "Shake House," an earthquake simulation set inside a San Francisco Victorian home, transports visitors back in time to experience the shaking and sounds of the city's powerful 1906 and 1989 temblors. The "Fog Room" surrounds visitors in cool, billowing fog and a redwood forest soundscape, evoking coastal California's frequent weather feature and mood influencer.

Alongside elements like these that deliver fun, wonder, and excitement, *Giants of Land and Sea* communicates challenges facing California ecosystems and residents. From climate change to habitat threats and natural disasters, challenges and solutions are strategically placed throughout the gallery to

help visitors link this side-dish content with organisms and places intended to inspire care for nature. For example, large underwater photographs, an array of whale skulls, and dynamically articulated dolphin and seal skeletons highlight diverse marine mammal life that thrives in California's coastal waters. From whale falls to food webs, visitors learn about the role each organism plays – the whole system relies on every part. Interpretation includes how human activities are changing the ocean, along with hopeful messages and actionable solutions to improve ocean health: reducing plastic pollution, cutting fossil fuel use that drives ocean acidification, making sustainable seafood choices, and supporting the Marine Mammal Stranding Network.

How did the recipe turn out? A summative evaluation study and exhibition satisfaction surveys provided a nuanced understanding of the visitor experience. Surveys showed that 67 percent of visitors rated the exhibition excellent – slightly higher than the museum's average exhibition rating of 65 percent excellent. The Shake House, Fog Room, marine mammal skeletons, and redwood cross-section were frequently selected as the most memorable or interesting parts of the exhibition. Close encounters with California's giants resulted in feelings of awe, respect, and appreciation for the beauty of nature (fig. 5). The Shake House (also a popular feature of a prior exhibition in the same gallery) provided a combination of ecstatic, sociability, and achievement fun. The Fog Room was engaging for family groups with younger children; some others found it disappointing and desired a more evocative setting and supporting content. Some adult visitors said the experience elicited peaceful and relaxed

Fig. 6. In *Skin*, a 3,800-square-foot temporary exhibition, dramatic specimens and imagery offset by contrasting dark and light motifs guided visitors' attention and reinforced the concept of skin as a living interface.

feelings and encouraged them to reflect on their experiences with fog, which aligned more with contentment fun.

The evaluation used the Dimensions of the Visitor Experience (DoVE) instrument to measure the emotional impact of the exhibition.⁶ *Giants of Land and Sea* scored well above the norm compared to other museum exhibitions on four dimensions: aesthetic appreciation, reflective engagement, compassion, and connection. Many visitors connected with the broad environmental messages: Pre- and post-visit personal meaning maps demonstrated that visitors were more likely to mention the interconnectedness of ecosystems, biodiversity, and human impacts after viewing the exhibition. Most visitors felt that the exhibition conveyed the messages, “Northern California’s climate connects its ocean life and giant redwoods” and “People and climate are shaping the future of the Northern California coast” (86 percent and 82 percent respectively).⁷

While visitors clearly felt that the exhibition conveyed a sustainability theme, half of interviewees either didn’t recall seeing sustainability actions they could take or couldn’t recall specifics. Additionally, most visitors said that the exhibition didn’t inspire them to change their behaviors; some felt they were already doing enough. The exhibition succeeds in delivering fun and entertainment, but the “side dish” of actionable solutions seems to get lost among the giants.

Skin: Living Armor, Evolving Identity

Skin: Living Armor, Evolving Identity opened in 2019 with a dual purpose: to showcase the amazing properties of skin across organisms

and to examine the layers of societal meanings associated with human skin color. Dramatic contrasts of dark and light, macro photography, and a meandering translucent scrim moved visitors along a semi-linear narrative progression and reinforced the concept of skin as a living interface (fig. 6).

The first two exhibit areas celebrated skin diversity and sought to instill wonder and fascination for the shared functions and unique features of skin across different species. The main course of fun included eye-catching museum specimens, such as a black rhinoceros and pangolin, and abundant tactile opportunities strategically placed to evoke excitement, surprise, and curiosity. Exhibit elements played with scale: At the exhibit entrance, large, brightly colored panels invited hands-on exploration of textures and materials that represented feathers, scales, hair, and bony plates (fig. 7). Animations showed the microscopic at wall size, including human face mites wriggling into and out of pores. Other tactile experiences included touchable samples of actual snake skin and otter fur, touchable models of whale blubber and fish scales, and mystery boxes where visitors used their sense of touch to guess the objects inside.

The final area, “Color and Culture,” contained the side courses of challenges and solutions. It conveyed the science behind the “sepia rainbow” of human skin tones and invited visitors to confront hard truths about racism: The socially constructed meanings humans impose upon skin color led to ideas with vast influence in our politics, economy, laws, and institutions. Exhibits included stories and objects that depict painful history and present-day inequities, as well as celebrations of human diversity and joy. A mural composed of nearly 60 portraits



Fig. 7. Tactile experiences provided fun and memorable moments throughout the Skin exhibition.

included still images and subtle use of video to add moments of delight and humor (intro image). Videos profiled local organizations advancing racial justice in housing, business opportunities, and outdoor access. Visitors shared reflections on what racial justice meant to them. In contrast to the distributed interpretation strategies in *Giants of Land and Sea*, this exhibition concentrated challenging content and solutions within one area.

This recipe resulted in exit surveys in which 68 percent of visitors rated *Skin* as excellent. Tactile experiences, seeing real specimens, and exhibits in the Color and Culture area were frequently chosen as the most memorable or interesting elements. In interviews, one visitor commented, “Seeing a black rhino was crazy, and that was really exciting.” Another said, “I really liked the wall with all the faces and different skin tones. For me, it makes it clear that race is something more of a construct than anything else. That there are so many different shades. So, for me, that was very beautiful.”⁸

Visitors clearly perceived messages about human skin color and the cultural construct of race; 56 percent of visitors identified “race as a social construct” as the main message of the exhibition. In exit interviews, 70 percent of visitors felt very positive about the inclusion of this challenging content – despite 43 percent of visitors reporting they left the exhibition with feelings of sadness, anger, or guilt related to social issues connected to racism. Of the 28 percent of visitors who said they left *Skin* feeling hopeful and optimistic about the future, several mentioned being inspired by exhibit elements that showcased individuals and

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groups working on social justice issues (the side dish of actions and solutions). With less than a third of evaluation participants in this hopeful subset, it suggests that future exhibitions have room to improve in presenting the actionable solutions side dish in more apparent or engaging ways.

Skin’s recipe for fun experiences paired with challenging content resulted in a positive response and strong satisfaction ratings from visitors. The exhibition scored mostly within the normal ranges on DoVE measurements of emotional impact. An interesting difference emerged between visitors who spent time in the Color and Culture area and those who did not. The former had significantly higher scores for reflective engagement, privilege, compassion, togetherness, spiritual engagement, and tension. This suggests the concentration of side-dish content delivered a meaningful emotional experience, though perhaps one that doesn’t neatly fit the definitions of fun. However, visitors who skipped this area missed part of the intended balanced experience.

Conclusions

These two examples show that addressing urgent contemporary issues in exhibitions can coexist with fun in a museum visit. In fact, our visitors value the presence of such content along with fun and look to the museum for actions that support positive change. But it is worth reiterating that fun is subjective and varies from person to person. A balancing act is required to satisfy visitors' desire for fun while conveying challenging environmental and societal issues with the goal of inspiring action. Our practice is to lead with a "main course" of wow and wonder, followed by smaller, digestible "side dishes" of challenges and solutions. Our evaluations suggest that our visitors readily enjoy and engage with the main course and side dish of challenges in our recipe, but the side dish of actions and solutions still needs refinement, perhaps with a holistic approach to the broader museum experience. Further, while we seek to encourage visitors to take action, we – and the museum field at large – have limited capacity to evaluate and understand where that leads in visitors' lives and communities once they leave the museum.

To improve our own practice, we will continue to explore the art of this balance, encouraged by the research and listening to our visitors. No matter what your museum's discipline is, we hope these examples and learnings help stimulate creative thinking about your own exhibition strategies. As we strive to address the issues facing our world, we – museums, zoos, aquariums, historic sites, and beyond – can provide fun experiences and empower visitors to

co-create a more harmonious, equitable, and sustainable future.

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1 Morey Group, 2018 San Francisco Positioning Study, 11. Additional information available on request.

2 I. C. McManus and Adrian Furnham, "Fun, Fun, Fun: Types of Fun, Attitudes to Fun, and their Relation to Personality and Biographical Factors," *Psychology* 1, no. 3 (2010): 159–168.

3 "Public's 2019 Priorities," Pew Research Center, accessed July 29, 2020, <https://www.people-press.org/2019/01/24/publics-2019-priorities-economy-health-care-education-and-security-all-near-top-of-list/>; "Majorities See Government Efforts to Protect the Environment as Insufficient," Pew Research Center, accessed July 29, 2020, <https://www.pewresearch.org/science/2018/05/14/majorities-see-government-efforts-to-protect-the-environment-as-insufficient/>.

4 "Heartwired Strategy Guide," Heartwired, accessed April 9, 2020, <https://heartwiredforchange.com/>; "Visualizing Change," Visualizing Change, accessed April 9, 2020, <http://vischange.org>. "National Network for Ocean and Climate Change Interpretation - NNOCCL," Climate Interpreter and Monterey Bay Aquarium, accessed April 9, 2020, <https://climateinterpreter.org/about/projects/NNOCCL>.

5 Steve Bitgood and Don Patterson, "Principles of Exhibit Design," *Visitor Behavior* 2, no. 1 (1987): 4–6.

6 Jan Packer, Roy Ballantyne, and Nigel Bond, "Developing an Instrument to Capture Multifaceted Visitor Experiences: The DoVE Adjective Checklist," *Visitor Studies* 21, no. 2 (2018): 211–231.

7 MWA Insights, *Giants of Land and Sea* Summative Evaluation Report, 2019. Report available on request.

8 MWA Insights, *Skin: Living Armor, Evolving Identity* Summative Evaluation Report, 2020. Report available on request.