Sky Mosaic – Building a Shared Mosaic

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September 2004

THIS IS **NOT** A DEFINITIVE FINAL REPORT

FORMATIVE evaluation studies like this one often:

- **are conducted quickly**, which may mean
  - small sample sizes
  - expedited analyses
  - brief reports

- **look at an earlier version** of the exhibit/program, which may mean
  - a focus on problems and solutions, rather than successes
  - a change in form or title of the final exhibit/program

Outdoor Exploratorium – Formative Evaluation
Sky Mosaic – Building a Shared Mosaic

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PURPOSE

This study is the second of a set of 'quick and dirty' evaluation studies on the Sky Mosaic exhibit. The Sky Mosaic exhibit asks visitors to:

- Match the sky color – Visitors try to find the best color match for a patch of sky, choosing from a set of color swatches.
- Build a shared mosaic – Visitors add a square of the color they've chosen to a mosaic, which holds color squares different visitors have contributed for different times of the day throughout the year. We hope that the resulting mosaic will encourage visitors to ask questions about and reveal patterns in how the color of the sky changes over time.

This study looks in general at:

- What makes the exhibit interesting or worthwhile?
- Do visitors have difficulties matching the color of the sky or adding their piece to the mosaic?
- Do visitors think it is an art or a science exhibit?

Then, it considers more specifically

- Does contributing to a shared mosaic add value to the experience? How so?
- Is it important to visitors to write something on the back of their contribution to the mosaic? Why or why not?
- What patterns if any do they notice?
- What questions do they have about the mosaic?

METHOD

- We collected data on August 29 and September 2, 2004. There were, respectively, 2 and 3 columns[1] with color squares from previous days already in the mosaic on August 29 and September 2.
- Visitors were recruited at the entrance of the museum, next to the Holes in a Wall exhibit.
- An evaluator asked visitors to pick the best match for the color of a patch of sky (shown in Figure 1) from a set of paint samples and to describe what they were doing.

[1] One column holds color squares for one day.

- Visitors were then asked to place a square of their color choice into the mosaic. See Figure 2. We gave them the option of personalizing their square by writing something on the back of their contribution to the Sky Mosaic.
- After they added their color to the mosaic, visitors were asked a set of questions, shown in Appendix A.

Figure 1. Patch of Sky

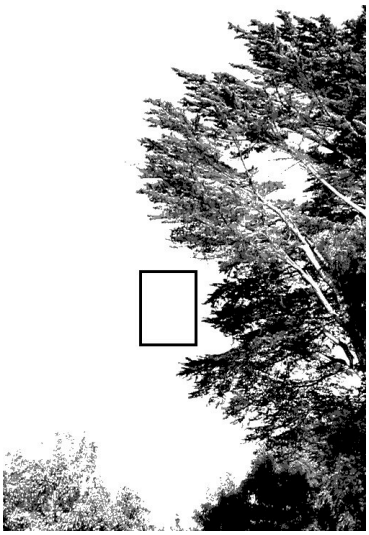
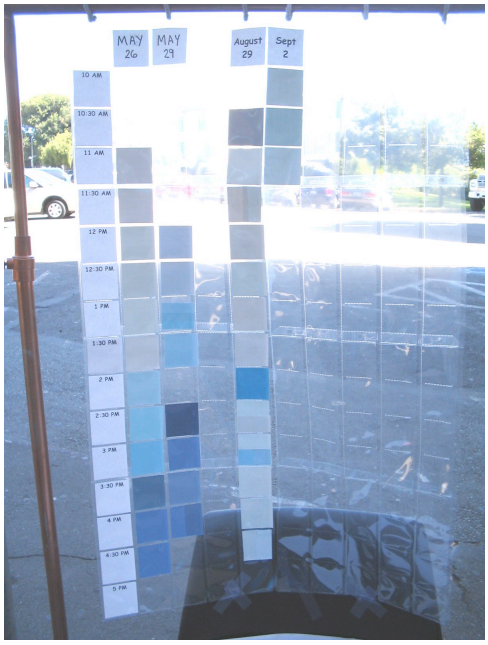


Figure 2. Sky Mosaic





DATA

- N=18
- Demographics

Group Type	Count
Adult peer	10
Teen peer	1
Family	5
Teen individual	1
Adult individual	1

RESULTS

In the following, example quotes are provided to better illustrate the types of responses visitors gave.

In General

How interesting was the overall activity to visitors?

Interest Rating	Count (out of 18)
Interesting	8
Somewhat interesting	6
Neutral	4
Somewhat not interesting	0
Not interesting	0

What did visitors find interesting

- Choosing a match was interesting - 8 visitors

  Visitor3- M: "That we had to try to agree on a color"
  F: There are so many different colors, and we had to decide and compromise

  Visitor5- F: The opportunity of going through logic, to pick and choose, and showing her how to make decisions...the opportunity to guide her in the process of making a decision

- They never thought about the colors of the sky before - 3 visitors

  Visitor8: because I was surprised how many different shades of blue there are and how hard it was to match

- They got a chance to contribute - 3 visitors

  Visitor13: She: what the final product will be and being a part of it.

- The pattern was interesting - 2 visitors

  Visitor11: how it fits in is interesting
- The colors are attractive - 1 visitor
- It was fun and challenging - 1 visitor

What did visitors find not interesting?

- Two visitors found the experience not interesting because they did not see the point of the exhibit.

Difficulties and frustrations

- 8 out of the 18 visitors interviewed did not find anything frustrating about the exhibit.
- The rest identified the following difficulties
  - It was hard to find the best color - 6 visitors

    Visitor12: Guy 2: "There's a little bit of variety in the sky patch. And maybe the green in the tree made a difference.

    Visitor6: the sky is not completely blue; it's kinda blended between blue and white
  - The sky changes quickly - 2 visitors

    Visitor8: the sky changes color. Mother nature doesn't sit still the clouds - it's white, no blue, no yellow
  - There were too many choices - 2 visitors

    Visitor10- F: "it was hard for me because there were so many choices...give me 10 (colors) and it would have been easier, but 100...."
  - The mechanism for looking at all the colors was difficult to use - 1 visitor

    Visitor11: hard to go through the tiles, flipping between tiles, back and forth.
  - It was hard to decide on one color - 1 visitor
  - It didn't accommodate shorter people - 1 visitor

Is this exhibit art or science?

- Visitors felt that the exhibit was

Art or Science	Count (out of 18)
Both art and science	15
Science	2
Art	1

- Visitors thought the following aspects of the exhibit made it an art exhibit:
  - The colors - 4 visitors

    Visitor1: you combine color with art. There's art with sky in it.

    Visitor4: colors=art"
  - The patterns of the mosaic - 5 visitors

    Visitor3- M: "Just the patterns we make, it's art

    Visitor5- F: Art because of the colors, and the patterns will provide an overall result that will entertain the eye and will provoke an emotion...I'm a photographer, so I know about colors...."
  - The subjective nature of the exhibit - 3 visitors

    Visitor9: because it's a subjective matter not as strong. more depth. The art part, art is something humans appreciate

    Visitor7- F: when it comes to picking color, it's emotional & individual
  - Something to appreciate - 3 visitors

    Visitor9: art is something humans appreciate

    Visitor11: it's a beautiful representation.
  - Something we create - 2 visitors

    Visitor13: She: "Art," because "It's going to be turned into something."
- Many of these visitors also thought the exhibit is a science exhibit because:
  - It looks at why the sky is blue - 4 visitors

    Visitor1: sky is science - why is the sky blue, what combines to make blue

    Visitor8: Science is knowing why the sky is light blue to begin with
  - It's about weather, which is a science - 5 visitors

    Visitor3- F: "It has to do with the weather=science

    Visitor4- F: it's science because of the weather

    M: "I think it's science because I tried to associate everything with the study of the weather" (during this experience)
  - It shows patterns over time - 7 visitors

    Visitor7: when complete, you can see a pattern of some sort. It's interesting to look at pattern over days and years.

    Visitor6: because it seems you are trying to figure out the pattern of the sky
  - We collect data - 1 visitor

    Visitor5- F: "Science because gathering data and surveys...

- It's about noticing/observing something - 1 visitor

  Visitor11: and it's science because of what you notice. The sky is always there but you don't pay attention.

- It's about he science of perception - 1 visitor

  Visitor10- C: "and in the eye, there's rods and cones that see color so that's science"

- Most visitors thought that the exhibit was both an art and a science exhibit. One visitor said outright

  Visitor8: science is art. [What do you mean?] Truth is more interesting than artistic renderings. Science requires interpretation and conveying ideas just like art.

Building the Mosaic

Did adding a square to the shared mosaic make the experience more or less interesting?

- Of the 18 visitors we interviewed, 15 added a color square to the mosaic. The other 3 did not add a square to the mosaic because a square for the color that they chose was not available that day.
- These 15 visitors found that adding to the mosaic

Adding to the mosaic…	**Count** (out of 15)
Made the experience more interesting	11
Neither made the experience more nor less interesting	4
Made the experience less interesting	0

- Contributing to the mosaic was important to visitors because:
  - Visitors got a chance to build an exhibit with other visitors - 6 visitors

    Visitor6: B; [with square in mosaic] you become part of the exhibit A; a sense of community

    Visitor11: knowing that you're adding to it

  - Visitors could see what others have done - 2 visitors
  - Visitors could leave a mark - 2 visitors
  - There's a larger pattern - 2 visitors
  - It made it more hands on - 1 visitor
  - It gave meaning to the experience - 1 visitor

Was writing on the back of the square important to visitors?

- 12 out of the 15 visitors who added a square to the Sky Mosaic chose to write something, usually their names, on the back of their contribution.
- These 12 visitors said that writing something on their square was

Writing on the back of a square was…	**Count** (out of 12)
Important	7
Somewhat important	2
Neutral	2
Somewhat not important	0
Not important	1

- This was because
  - Visitors could leave notes for themselves and each other - 4 visitors

    Visitor6: if it [exhibit] stays and you can come back and look at your own. It's like a note to yourself

    Visitor9: It's inspirational to next person. It's a moment in time
  - It identified the piece as theirs - 3 visitors

    Visitor4- F: I put both of our names on there, it tells (others) that it's ours
  - It made visitors feel like they've contributed to something permanent - 1 visitor

    Visitor8- M: if it ends up to be long standing, then I feel like a part of something

- Some visitors did not feel personalizing or writing on their square was important. They explained:

  Visitor8: W; all of this will become anonymous [because there will be lots of people]

  Visitor13: She: "Somewhat Important," because "I would have done [the experiment] regardless."

  Visitor6: because I don't know the purpose of it

What patterns if any did visitors notice?

- Visitors noted lighter (whiter) and darker (bluer) areas and transitions between them - 9 visitors

  Visitor6: it seems that on average, the sky in the afternoon is more blue and in the morning it's lighter, maybe it's more cloudy

  Visitor10- C: "Yeah, kinda, uhmmm, @ 11-4:30 PM, it looks way darker..."
  F: "You mean as it goes later in the day it gets darker, is that what you're saying?"
  C: "Yeah"
  F: "OK, I see the same pattern"

- Visitors talked about individual squares that stood out in the mosaic - 5 visitors

  Visitor1: [point to 3:30/1] blue is dark, [point to 3:30/2] light blue, little too purple

  Visitor6- A: that's unusually dark blue [2/2:30]

  Visitor8- W: [looking at 2/2:30] this is definitely San Francisco color. We have our dog days in October.

- They compared their square to other visitors' squares - 2 visitors

  Visitor3- F: "I think I'm right because the one above me picked the same color"
  M: "I think people are influenced by the one beforehand"

  Visitor9: Some people are more color blind [than myself, point to 2/2:30]

What inferences did visitors make about the mosaic patterns and pieces?

- How people see - 3 visitors

  Visitor6: A: that's unusually dark blue [2/2:30]
  maybe it's because he's wearing sunglasses, but wait, that would change the palette and the sky.

  Visitor9: Some people are more color blind [than myself, point to 2/2:30]

- What the weather was like on a certain day - 4 visitors

  Visitor13- She: "May 26th is good because it goes from light to dark.

  Visitor11: one blue [3/2pm] - looks like it's clearing up but fog then pushed thru

- What the weather pattern was like over a few days even when there were just a few columns in the mosaic - 6 visitors

  Visitor6: it seems that on average, the sky in the afternoon is more blue and in the morning it's lighter, maybe it's more cloudy

  Visitor7- F: "it's more blue in the afternoon which is typical because the fog is gone"
  G: "I agree"
  M: "and it gets darker as the sun goes down"

What questions did visitors have about the mosaic?

- What will happen to this mosaic/exhibit? - 4 visitors

  Visitor3- M: "What kind of study is this? How are you - Exploratorium) going to show it?"

  Visitor10- F: "I'm wondering what's going to happen in the end? (Then to his kids) Is she going to sell it (the mosaic)? Is it going to be a picture?"

- What does the pattern tell us? - 4 visitors

  Visitor6- B: can you use this to predict good weather?

  Visitor11: Bay area weather pattern.

- What affects the color of the sky? - 4 visitors

  Visitor7- M: "How does the moisture in the atmosphere affect the color?" (e.g., the fog)

  Visitor9- M: "Why would they (other people) see different colors? Why (was it) darker on May 26 (than) 29?...why is there such a variation when it's only three days apart?"

SUMMARY

- Most visitors (44% and 33%) found the overall experience of finding a match and adding their color to the shared mosaic to be interesting or somewhat interesting. A large minority of visitors thought that the matching activity made the experience interesting while a smaller minority found contributing to and looking for patterns in the mosaic interesting.
- Like the first study, a few visitors indicated that they did not understand the point of the exhibit. This again suggests the need for interpretation that helps explain the overall purpose of the exhibit and possibly what to 'look for' or reflect on about the experience itself.
- Most visitors found that contributing a color square to the mosaic added to the exhibit experience. The most frequent reason given was that this made them feel that they were building an exhibit together with other visitors.
- Most of the visitors who added a square also wrote something on the back of their color square. When asked, most of these visitors said that doing so was important or somewhat important to them because: it gave them a chance to leave notes for each other (or themselves in subsequent visits), it helps them 'mark' their contribution and give them a sense of ownership over the piece.
- Visitors looked at the mosaic and saw differences in brightness and color. Some talked about specific squares and others made comparisons between their square and other squares. In addition, visitors tried to infer the sky and weather at particular times represented by a specific square as well as guess at how the sky may have changed throughout and across days. Some visitors also commented on how different people see colors differently.
- Visitors' questions fell into 3 broad categories: questions about the purpose of the exhibit, again pointing to the need to have better interpretation, questions about the patterns and what they can tell us about weather condition, and questions about why the sky looks the way it does.

- Finally, most visitors thought that the exhibit is about both art and science and did not want to draw a line between the two when thinking about this exhibit.

NEXT STEPS

- The results of this and the previous study indicate that some visitors wanted more help understanding the 'punch line' or the point for the exhibit. As an early prototype, we were interested primarily in whether or not visitors found the matching and building task interesting. As one of our next steps, we will begin to focus on ways to support visitors in answering some of the questions that arise as they use the Sky Mosaic - questions about how they and others perceive light as well as how the colors of the sky change depending on weather and time of day. We will experiment with signage that helps visitors explore these questions by pointing out what patterns to look for in the mosaic and by encouraging them to reflect on what made matching, a seemingly simple task, so complicated in practice.
- The Sky Mosaic is an exhibit that requires visitors to build a collective representation of a constantly changing phenomenon. As such, it represents a genre of exhibits that needs to allow visitor input throughout a day and across months to amass enough data for long-term patterns to emerge. For sustainability, this requires that the exhibit be stand-alone, something that can be rolled out easily, and that can be used with little facilitation. One of the major challenges then is to redesign the current exhibit to be a robust and easy to use stand-alone exhibit.

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APPENDIX A

Interview

This exhibit is a little different from other Exploratorium exhibits. This is an exhibit that visitors get to build. It's a sky mosaic that visitors add pieces to throughout the day and throughout the year. So, each of these squares is a square that a visitor has added to make the exhibit so far.

What I would like you to do is look at this patch of sky [point] and pick out the best match for the sky from these colors. And, I would like you to tell me how you are trying to match the color of the sky. So, pretend you're describing what you're doing to a friend of yours who has never done this before.

Remarks they make while using exhibit:

So, which did you pick as your best match? _____

We don't have all the colors yet, but let's see if we have yours.

[If NO] I'm sorry we don't have that color yet. But, I'm going to write down your best match and when we do get that color square, I'll add it to the mosaic.

[If YES] Here's a square for the color you picked. Some people like to personalize their square. So, they write or draw something on the back; so they know which square is theirs. Would you like to do that for your square?

Personalize: YES NO

Will you put it in this slot? It's xxx [time] right now.

May I ask you a few questions about that experience?

1. In general, how interesting would you say that was to you? Would you say it was …

Uninteresting	***Somewhat uninteresting***	***Neutral***	***Somewhat interesting***	***Interesting***

2. What made it _____ for you?
    a. Was there anything about matching the sky in particular that was interesting/ not interesting?

3. Was there anything frustrating or difficult about matching the color of the sky? How?

4. Did adding your square to the mosaic make your experience more or less interesting? Or, did it not make any difference?

More	***Less***	***No difference***

5. Can you tell me what made it _____ interesting?

6. [If personalized] How important was it for you to write or draw something on the back?

Not important	***Somewhat not important***	***Neutral***	***Somewhat important***	***Important***

7. [If personalized] Can you tell me why it was _____ to you?

8. When you look at the mosaic, are there any patterns you see?

9. Were there any questions that popped into your head during any part of this experience? Did you become curious about anything while you were matching the color of the sky, adding your square to the mosaic, or looking at the mosaic?

10. In your opinion, is this exhibit art or is it science? is it both? Or is it neither?

Science	***Art***	***Both***	***Neither***

    a. Can you tell me why you think this is_____?