

Pentaphone

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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

Sound and Hearing – Formative Evaluation Pentaphone

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PURPOSE

- To gauge how interesting visitors find the Pentaphone exhibit
- To determine what visitors think is the point of the Pentaphone exhibit
- To determine what visitors think the musical notation used on the Pentaphone means
- To get a preliminary impression of what visitor thinks a musical conversation entails

METHOD

- Semi-Structured Interviews

Activities and Set-up

- The Pentaphone was placed in an unenclosed area in the Sound and Hearing section
- Visitors (either in pairs or as individuals) were recruited from near the Pentaphone exhibit
- Each visitor was given two mallets and asked to play with the Pentaphone for as long as they like
- Visitors were then asked a series of questions about their experiences with the exhibit.

Interview Time

- Because it can be difficult to hear the sounds from this exhibit, evaluation was conducted during quieter times on the floor

| Day | Date | Time of Day |
|-----------|---------|-------------|
| Wednesday | 4/10/02 | PM |
| Friday | 4/12/02 | PM |
| Thursday | 4/18/02 | PM |
| Thursday | 4/25/02 | PM |

Data Collected

- N= 20
- Demographic Breakdown

| Group Type | Count |
|--------------------|--------------|
| Individuals | 11 |
| Individual – Adult | 7 |
| Individual – Teen | 1 |
| Individual - Child | 3 |
| Pairs | 9 |
| Adult - Adult | 4 |
| Adult - Youth | 3 |
| Youth - Youth | 2 |

| Gender | Count |
|---------------|--------------|
| male | 8 |
| female | 21 |

| Musical Background (self reported) | Count |
|---|--------------|
| None | 11 |
| Some | 18 |

Note: there were no mixed pairs in which one individual claimed to have a musical background and the other did not.

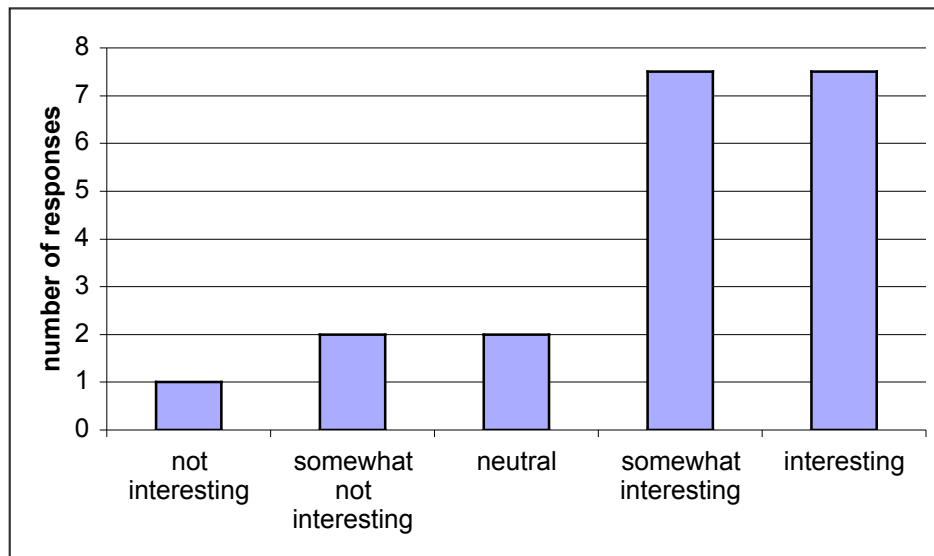
RESULTS

Visitor Interactions

| Activities | Number of Visitor Groups ¹ |
|---|---------------------------------------|
| Played different materials (Visitor played bars of more than one material) | 20 |
| Played tune (Visitor picked out an identifiable tune or played a rhythmic pattern) | 5 |
| Played together (Visitors played a tune or rhythm together) | 0 |

Visitor Interest

How interesting visitors thought the exhibit was



Note that if the two members of a pair did not agree, each person's response was counted as a half instead of a full response.

¹ The unit of analysis for the study is the group.

Reasons visitors gave for their interest level.

| Reasons for Interest Level | Number of Visitor Groups (out of 20) |
|---|---|
| Visitors found the different sounds interesting | 12 (60%) |
| Visitors enjoyed playing music | 6 (30%) |
| Visitors complained about not being able to hear the sounds | 5 (25%) |
| Visitors complained about the amount and level of interaction | 3 (15%) |
| One visitor thought the exhibit was only for younger visitors | 1 (5%) |

Visitors' Impressions about the Point of the Exhibit

The following lists what visitors thought the Pentaphone exhibit was intended to show:

| The Point of this Exhibit | Number of Visitor Groups (out of 20) |
|---|---|
| Different materials make different sounds | 14 (70%) |
| Scales | 4 (20%) |
| Music – the Pentaphone is a musical instrument to be played | 3 (15%) |
| Don't know | 3 (15%) |
| How a xylophone or pentaphone works | 1 (5%) |

Understanding the Notation

Note that in this study, we could not detect any difference between responses from those visitors who claimed to have a musical background and those who did not.

What do visitors think the shapes mean?

Many visitors either had no idea or guessed, but were uncertain of, what the shapes signify. Only 6 out of 20 visitors thought that shapes represent a collection of notes in a scale.

| Notation - Shapes | Number of Visitor Groups (out of 20) |
|--|--|
| Scale (same sounds but different range) | 6 (30%) |
| No Idea | 8 (40%) |
| Notes | 3 (15%) |
| Goes nicely together | 1 (5%) |
| Not musical notes | 1 (5%) |
| Sharps and Flats | 1 (5%) |
| Chords | 1 (5%) |

What do visitors think the colors mean?

Visitors were uncertain of what the colors mean. The following table lists the types of guesses that visitors made. Nine visitors in total thought the colors may indicate notes.

| Notation - Colors | Number of Visitor Groups (out of 19) |
|--------------------------|--|
| Notes | 9 (47%) |
| No Idea | 8 (42%) |
| Songs | 1 (5%) |
| Different material | 1 (5%) |

Do visitors believe the same notes sound the same for different materials?

Most visitors believed that the same notes on different material sound similar in some way, although some visitors were unable to describe how they were similar.

| Same color and the same shape | Number of Visitor Groups (out of 16) |
|--------------------------------------|--|
| Sounds the same in some way | 13 (81%) |
| Same note | 5 |
| Does not sound the same at all | 3 (19%) |

Do visitors believe notes, an octave apart, sound the same?

Over half of the visitors believed that two notes, an octave apart, played on different material sound similar in some way.

| Same color and different shapes | Number of Visitor Groups (out of 18) |
|---------------------------------|---|
| Sounds the same in some way | 10 (56%) |
| Same note but different octave | 6 |
| Does not sound the same at all | 8 (44%) |

Visitors' Notions of a Musical Conversation

When asked what they thought a musical conversation might be, visitors gave a variety of answers:

- It is playing music
- It involves two people answering each other, with the musical note as the word.
- It has something to do with relationships between notes
- It's learning about music
- It's about dolphins and whale communication
- It's about repeating a pattern
- It's telling a story with music

SUMMARY

- Most visitors believed that the point of the exhibit was to demonstrate how different materials make different sounds. A few visitors felt that the exhibit also described musical scales, but it was unclear to these visitors what exactly they were supposed to learn about scales. This is even though the label does provide an explanation of the pentatonic scale. Some visitors also believed that the Pentaphone exhibit is a musical instrument to be played.
- A majority of the visitors did not understand the musical notation used at the exhibit.
- Although some visitors had ideas about what is a 'musical conversation' and identified its qualities, none of the visitors spontaneously began a musical conversation, and it is not clear if they would be able to have a musical conversation without some guidance. As it is currently, the unmediated exhibit does not promote or support this type of activity

RECOMMENDATIONS

- *Improve the sound quality.* Some visitors complained about not being able to hear the sounds from the Pentaphone. Some visitors also had difficulty hearing similarities between

the same notes on different material, perhaps because the exhibit was slightly out-of-tune during the evaluation. This may also have made it difficult for visitors to determine the relationships between the shapes and colors used to represent scales and notes.

- *Determine what experience(s) we want to support.* The results suggest that the exhibit with its current explanatory text works well in illustrating how different materials can have different sounds. However, it does not work as well in other capacities. We need to determine what experiences we want to support at this exhibit and then consider redesigns to support those experiences. The following bullets give examples of difficulties visitors had in understanding other ideas or participating in other activities intended by the designer, and suggest ways of supporting these ideas and activities.
- *Provide more connections to visitors' impressions.* The Pentaphone does not work as well in explaining the Pentatonic scale to visitors. If our intention is to help visitors learn about the Pentatonic scale, we should revisit the label. The following are some suggestions for refocusing the text based on comments visitors made:
 - When asked to describe the sounds the exhibit made, none of the visitors mentioned that it reminded them of the blues, which was mentioned in the label. Instead, visitors noted how the sounds sounded 'oriental' or 'Jamaican'. Perhaps the label can tap into this connection that visitors made: Why is it that visitors associate the Pentatonic scale with a 'foreign' sound?
 - Visitors do not spontaneously improvise blue tunes on the Pentaphone, but some visitors do try to pick out common folk tunes such as 'Mary had a Little Lamb'. Why is it that most folk tunes can be played on this instrument?
- *Explore musical conversation through mediated activities.* There are no indications from this study that visitors will or can have musical conversations at the Pentaphone as a stand-alone exhibit. We may wish to encourage musical conversations through mediated activities.
- *Explain the musical notation (as needed).* Furthermore, there is currently no explanation of the musical notation used in this exhibit. Therefore, it was not surprising that visitors were unclear about the meanings of the different shapes and colors. If the point of the exhibit is to help visitors play music and to learn about the Pentatonic scale, the notation system should be explained. However, if the point of the exhibit is to help visitors experience different sounds from different materials, it is unclear if the notation system is necessary.

ACKNOWLEDGEMENTS

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APPENDIX A

Observations

- Label order in which bar SET is played.
- Note if visitor tried to play a tune you recognize
- Note if visitor used one or two mallets
- Note if they played two sets at the same time
- Note if they read the label
- Read Label? **YES/ NO**

Metal

Played tune
Description of Sound: _____
_____ mallets

Bamboo

Played tune
Description of Sound: _____

Wood

Played tune
Description of Sound: _____

Glass

Played tune
Description of Sound: _____

Metal II

Played tune
Description of Sound: _____

InterviewPoint Of Exhibit

1. How interesting would you say this exhibit is to you? Would you say it is
- | | | | | |
|-----------------|-----------------------------|---------|-------------------------|-------------|
| Not Interesting | Somewhat Not Interesting | Neutral | Somewhat Interesting | Interesting |
|-----------------|-----------------------------|---------|-------------------------|-------------|
2. Why do you feel that it was _____?
3. What do you think is the point to this exhibit? [What do you think this exhibit is about?]
4. What did you get out of this exhibit, if anything? [What did you learn? What do you want to do with the exhibit?]

Listening

5. [Point to each set of bars] How would you describe the sounds from each set of bars?

Notation

Shapes

6. What do you think the different shapes mean?

Colors

7. What do you think the different colors mean?

Play and Guess

8. [Pick 2 bars that have the same color and shape. Play these.]
- a. Do they sound the same in any way? YES / NO
 - b. If YES, Can you describe how they sound the same?
9. [Pick 2 bars that have the same color but **different** shapes. Play these.]
- a. Do they sound the same in any way? YES / NO
 - b. If YES, Can you describe how they sound the same?

Musical Conversation

10. We're thinking of renaming the exhibit, Pentaphone – Having a musical conversation. In your opinion, what do you think it means to have a musical conversation?
- a. [If they can answer 10] What would be the words in the musical conversation?

Music Bkgnd

1. Do you play a musical instrument or sing? YES / NO
2. [If YES to instrument] What instrument do you play?
3. [If play or sing] How long have you been playing the XXX?