# Dissecting Scope - Visitors' Questions and Comments to Specimens

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August 2002

# Imaging Station - Front-End Evaluation
# **Dissecting Scope**
# **Visitors' Questions and Comments to Specimens**

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**PURPOSE**

- To gauge which specimens visitors find interesting and uninteresting to look at with the LEICA dissecting scope.
- To collect visitors' questions about what they see

This feedback can be used to help design engaging mediated activities for the Imaging Station.

**METHOD**

- Interviews (N=7)
- Visitors were recruited (as groups) from the Life Sciences Area on the Mezzanine of the Exploratorium
- Visitors were shown 4 specimens, one at a time
  - Zebrafish Embryo
  - Fruit Fly Larvae
  - Fruit Flies
  - Volvox

- The order of viewing was changed with each interview to reduce sequence bias.
- Each interview was structured as a question-answer conversation in which the microscopist, Kristina, gave short answers to visitors' questions, which then precipitated follow-up questions from the visitors.
- When the visitors finished viewing and discussing the 4 specimens, they were asked a set of summative questions to ascertain which specimen was the most and which was the least interesting to watch.

## DATA COLLECTED

- **Times**. The interviews were conducted on Wednesday, July 24 and Sunday, July 27, 2002 in the afternoons.

- **Demographics**

| Gender | Count (Out of 14 individuals) |
|---|---|
| Female | 8 |
| Male | 6 |

| Age Group | Count (Out of 14 individuals) |
|---|---|
| Adult | 9 |
| Youth | 5 |

| Group Type | Count (Out of 7 groups) |
|---|---|
| Adult – Adult | 3 |
| Adult – Youth | 3 |
| Youth - Youth | 1 |

## RESULTS

### Visitor's Questions

The following lists the questions that visitors asked about the specimen they saw. The questions are organized into 5 broad categories:

| | |
|---|---|
| Parts | Questions about what the specimen is and its different parts |
| Process | Questions about the activities visitors see or the life processes that the specimen seems to demonstrate. |
| Larger Context | Questions about the specimen in the larger context beyond what is immediately apparent on the monitor. These include questions about the specimen's relationship to other specimens, to humans, to the larger world, etc. |
| Set-up | Questions about the slide set-up as well as the microscope and equipment set-up. |

Zebrafish

- Parts
  - What is it?
  - Are these eggs?
  - What kind of eggs?
  - Is that a broken egg?
  - Are the eggs white?
  - What are those things [heart beating]?
  - Is that its eyes?
  - What's that thing [head and mouth]?
  - The liquid [circulating], is that digestion or blood?
  - Does it still have a tail when it's grown up?
- Process
  - How old are they?
  - Are they growing?
  - What stage is that in?
  - What's the gestation period?
  - When will they hatch?
  - What makes them flip around?
  - Life after hatching
    - Where does the mother lay her eggs?
    - How long from hatching to laying eggs?
    - What do they eat?
- Larger Context
  - X-comparison
    - Do they all form the same animal?
    - Why do fish look like frogs?
  - Zebrafish in the 'Wild'
    - What do they eat?
    - Where do they live?
- The Set-Up
  - THOSE Zebrafish on that slide
    - They're on that slide?
    - Are they still alive [on that slide]?
    - Are they dry [on the slide]?
    - Where do they come from?
    - How did they get there [on the slide]?
    - You grow them?
    - Are they in salt water?
    - What happens when those guys hatch?
    - If you put them in water will they keep living?

- Technology
  - What's that [microscope]?
  - So, this [screen] magnifies that [slide]? This is a big picture of that?

Larvae

- Parts
  - What is it?
  - How many different kinds [of flies] are there?
  - Is that one lying on top of another?
  - Why is [pupating] one smaller than the others?
  - That's the vein and nervous system?
  - Eyeball?
  - Muscles?
  - Is that their mouths?
  - Looks like cells?
  - So, I'm assuming that's the head?
- Process
  - What are they doing?
  - What are they eating?
  - Are they getting bigger?
  - That one's not moving? Is it sick?
  - How long before they are flies?
  - What's the gestation period?
- Larger Context
  - Larvae and Me
    - Are they harmless?
    - Can they get you sick?
  - Larvae in the 'Wild'
    - How long do they live?
    - They eat bananas, don't they?
    - Do they take baths?
    - Do they come out of eggs?
    - What creates fruit flies? They seem to just appear from nowhere.
    - How many eggs are laid at one time?

- The Set-Up
  - THOSE Larvae on the Slide
    - Are they going to grow up here?
    - No chance of [their] flying away?
    - What do you feed them?

- Slide mount

  Is that the texture of the background?

Fruit Flies

- Parts

  What are those?
  Are they bees?
  Are they mites?
  Why are they called fruit flies?
  How do you tell the difference between male and female?
  How big can they be?
  What's that? [eggs]
  Why this color?
  Is that one missing a wing?

- Process

  Why aren't they moving/flying?
  They're rubbing their feet? Why?
  Why do they walk like that? Upside down.
  When do they develop their wings?

- Larger Context
  - X-connections

    Are they the flies for the thing [larvae] we saw before?

- The Set-Up
  - THOSE Flies on the Slide and the Exploratorium

    Are they trying to escape?
    Are they trapped?
  - Slide mount

    Why does it have a silver background?
  - Technology

    Those things on there [slide] goes to there on the TV?
    It's that small?

Volvox

- Parts

  What is it?
  It's alive?
  What are the white lines? [other algae]
  Why do they look like that? [in a ball]
  What color do they look like?

Is it transparent?
What do they feel like?

- Process

  Is that how big they're going to grow?
  How do they grow?
  How long do they last?
  They don't move?
  Are they floating around?
  Do they move voluntarily?

- Larger Context
  - Volvox and Me

    Are they harmless?
  - Volvox in the 'Wild'

    Where do you find them, in oceans and lakes?
    Where do they grow on the water?

- The Set-Up
  - Slide mount

    What type of solution are they in?
  - Technology

    They're moving in and out of focus. Why?
    What magnification?
    What are you going to do with it [the microscope]?

**Overall Reactions to the Four Specimens**

Most Interesting

- Tally

| Specimen | Number of Visitors (Out of 7 pairs) |
|---|---|
| Zebrafish | 3.5 |
| Larvae | 1 |
| Fruit Flies | .5 |
| Volvox | 2 |

Note: If a group of visitors identified two different specimens as being equally interesting, both specimens were counted 1/2 in the above tally.

- Visitors' Reasons
  - You can see part of a process, or life cycle. (4 visitors)
  - The specimen moved and was lively. (2 visitors)

- There were interesting shapes to see. (1 visitor)
- The specimen was not 'gross'. (1 visitor)

Least Interesting

- Tally

| Specimen | Number of Visitors (Out of 7 pairs) |
|---|---|
| Zebrafish | 1 |
| Larvae | 2 |
| Fruit Flies | 1.5 |
| Volvox | 2.5 |

Note: If a group of visitors identified two different specimens as being equally interesting, both specimens were counted 1/2 in the above tally.

- Visitors' Reasons
  - The specimen did not move very much. (4 visitors)
  - The specimen was 'gross' to look at. (4 visitors)
  - The specimen was too common; there was nothing new about seeing it magnified. (1 visitor)

Note that because of the small number of interviews, very little can be made of the tally above except that there was no dominant favorite that emerged from these initial interviews. However, looking at the reasons that visitors gave for what they found interesting and not interesting, we can begin to see some indications of what makes for an engaging specimen:

- The specimen should move
- The specimen should fit into a larger story (e.g., life cycles)

Some visitors were repelled by 'gross' specimens; however, it is not clear what visitors consider 'gross', or whether some gross specimens can be compelling and not just repelling.

## RECOMMENDATIONS

- Show the slides. Some visitors, especially the children, were drawn to the slide and the microscope. They asked questions about the 'real' thing that lived on the slide and were amazed that the specimens were so small.
- Show specimens that move. Many visitors explained that the more interesting specimens were active and lively.
- Frame what visitors see in a larger 'story'. Visitors also mentioned that they appreciate a specimen more if it somehow illustrates a process (e.g. development).

## ACKNOWLEDGEMENTS

This material is based upon work supported by the National Institutes of Health Grant R25 RR15627 and the David and Lucile Packard Foundation (Grant 4365).


Department of Health and Human Services • National Institutes of Health

Supported by a Science Education Partnership Award (SEPA) from the National Center for Research Resources