HoPE - Observation Data, teachers group

When: July 20, 2017
Overall Vote: The first: 26; the second: 9; the third: almost all hands up

Data at different timescales

Technical Experience:

- *Did they learn how to use the tools to control the variables?*
    - Yes.
- *What questions did they asked or concerns they have about the technical experience?*
    - "The experience is fun, but some students only like the sound so they just slide back and forth to hear the sound, which is very noisy and distracting for others in the Hall"

Content:

- *Did they seem to understand temperature anomaly?*
    - Yes.
- *What questions did they asked about the content?*
    - "Why use year 1880 compared with 20th century average?" "Why choose year 1880? " "Why showing pre-20th century data?" "Why use average of 20th century instead of the average of all?" "Why not geological time as well?"
    - "Why compared with -0.25 C?"
    - "What year is each bar?"

Reaction:

- *Surprising/delightful response?*
    - "Oh" when sliding the controls
    - "Wow" when getting to the highest point
    - Laughed when hearing the sound
    - "I like the color"; another teacher said "I like the color when it changes into red"
    - "Fun to watch the trend"

Recommendations:

- *Explanation:*
    - "There should be more explanation about what happened around each year, especially the year when the temperature changes a lot"
    - "Maybe have another layer on the population growth, or other things"
- *Others:*
    - "There should not only be a beginning and end year shown, but a scale."
    - Accessibility (visual noise for autistic children)

Temperature around the world

Technical Experience:
- *Did they learn how to use the tools to control the variables?*
    - "I feel like I can only interact with one side each time"
    - "Good. I can see the options and it is clear about what to do"

Content:
- *Did they seem to understand that warming is unevenly distributed around the world?*
    - "More changes in North, because there is more red"
    - "Average temperature is going up in North"
    - However, no one pointed out that temperature near equator changes less than other places, which depends on the latitude. (This is explained by the facilitator later)

Reaction:
- *Surprising/delightful response?*
    - "Oh" after the facilitator explained
- *Frustrated/confused response?*
    - "What orange line shows?"

Recommendations:
- *Explanation*:
    - Instructions
        - "Should have a subtitle, which also helps accessibility"
        - "The part on the right need to be explained a bit. Just a bit clarification is fine"
        - "If it is a panel, we can have a start button for students to choose whether they want the tutorial or not. Just a very short tutorial."
        - "Tutorial is too much"
    - Other content:
        - "There can be an overlay of what's happening around that year, such as World War II and industrial revolution. Here only presents data but we can do more. Let students think more: why it's happening?"
        - "Are 5th graders able to follow this one? They need introductions, and color need to be changed, also there should be bullet points."
- *Colors:*
    - "Should be more differentiation of colors. Don't use the shade but different solid and distinctive colors like yellow, red, and orange instead of light to darker red. Shade is barely visible. "
    - "Overall, it's too dark to hold attention."
- *Outlines:*
    - "Pretty neat. But you can include the countries and cities on the map. International students want to know how climate changes in their home country and may have more interest in it."

- - "Do an outline of map, and bright it up."
  - *Others:*
    - "Make it into an app"
    - "Will teachers have pre-access to this before the trip? Teachers can prepare students some pre-knowledge. Not an app, just website. Also, there can be tutorial for teachers"
    - "I am definitely willing to use this to teach in the classroom. But I don't see it as a museum experience. All things are good for classroom."
      - When asked to vote for which they prefer, app, website or hall map, most of teachers (about 3/4) votes for website.

Climate forcings

Technical Experience:
- *Did they learn how to use the tools to control the variables?*
  - Yes. One asked: when people want to do it again, do they need to press on button again? (not quite get that question)

Content:
- *Did they seem to understand that humans are driving temperature warming not natural factors?*
  - Yes. They answered "Human factors" when asked what causes the global warming.

Reaction:
- Surprising/delightful response?
  - "Wow" when the line of three factors combined goes up
  - "Wow" when the line of second human factor goes down
- Frustrated/confused response?
  - "Why the first and second human factors are going down?"
  - "Is the grey line the combination of all six factors?"

Recommendation:
- Lines:
  - "Combine human and nature factors together, or just give more combinations"
  - "One color, one line, one factor"
  - "Too much if lighting up all buttons. But we can choose one from human and natural factor to combine, so you can compare"
  - "Six lines are too many, not helpful. Too much data at once"
  - "Too much information is not helpful. Single line is better. What important is how these factors combined as one line to cause the warming"
- Buttons:
  - "There should be physical buttons and when you press them, they will light up"

- ○ "Some students just press the buttons for fun. You can lock the button for like five seconds, so there will be time for them to search and process the information"
- Text:
  - ○ "Add description of which line is what"
  - ○ Only two teachers read the text on the left
  - ○ "The text is helpful. But it maybe better to change the font, or have bullet point."
  - ○ "Information can be in different languages. "
  - ○ "Put decades under the graph"
  - ○ "Make the title bigger"
- Others:
  - ○ "Be consistent with measurement. Use Celsius, not Fahrenheit."
  - ○ "I suggest to have the geological time scale. Students like to see the comparison."
  - ○ "Sound can be more associated with different instrument" (five people agree)
- Positive comments:
  - ○ "I like really the simplicity"
  - ○ "I like it. It is simple and the purpose is to tell that it is carbon dioxide that changes the climate. Many students have other misconceptions and it is a good chance for them to learn."
  - ○ "It is the best of scaffolding [the text]. It's very helpful for them to get the context and make meanings of it."
  - ○ "I like that you provide multiple options."
  - ○ "Coloring is good. I like the orange. "

Notes (meeting after the session):
- Overall comments:
  - ○ "Need to deal with the grammar mistakes immediately."
  - ○ Also for website, it is quite easy."
- Data at different timescales
  - ○ "Should add time scale."
  - ○ If we have too much info, it's so text heavy. We can have button for them to choose whether to see the overlay or not.
- Temperature around the world
  - ○ "It is interesting to hear the idea of comparing the temperature change with population change. "

- ○ "I'm quite surprised by the critic the second one is not an experience in the museum. "
- **Climate forcings**
  - ○ "They kept asking about colors after the session. "

Transcript:

Brian: They gave very detailed comments, such as label on the graph.

Barry: We do have videos about population changes in hall of human origin.

Brian: Should add time scale.

Barry: If we have too much info, it's so text heavy. We can have button for them to choose whether to see the overlay or not.

Sahra: It is interesting to hear the idea of comparing the temperature change with population change.

Barry: Ocean certificate? Push back the discovery room session.

Sahra: Need to deal with the grammar mistakes immediately. And they kept asking about colors after the session.

Brian: Also for website, it is quite easy.

Sahra: I'm quite surprised by the critic the second one is not an experience in the museum.

Brian: The topic of climate change can't have an object.