Section 2: Sonification Activities

Listen to the "Ted Radio Hour" broadcast referred to on the SJS site - it's only about 8.5 minutes long, and is an excellent introduction to sonification.

Non-computer Activities:

1. Trail mix Activity
    a. Use a set amount of trail mix (½ to 1 cup for each group)
    b. The trail mix will be the "collected data". Have each group sort their "data" by an agreed upon characteristic.
    c. Upon completion compare sort methods across the groups. Then discuss:
        i. Astronomers can access data in many ways
        ii. Sonification is one of these ways.
        iii. How does the trail mix activity help?
2. Using tones(there are many free tone apps available for the smart phone)
    a. Direct students, all with sleep masks on, to follow directions from a beginning point on **tactile graph paper**.(a pack of this graph paper can be ordered online).
    b. **OR:** Use the whiteboard or chalkboard. - place a beginning and end point. Have one or more students give navigation directions between the points using tones, one tone for right, one for left, one for up, and a different one for down.
3. Line Activity: (A large people demo)
    a. Put students in a straight line. Have them put on sleep masks. Play tone. High tone, go right. Low tone, go left. After a few tones, let kids take off blindfolds and see where they ended up. (maybe volume tells how large of a step to take?) Make adjustments to your group.

Computer Activities:

The instructions for the activities are on the SJS site.

1. Import Shapes from the sample file under IDATA.
2. Play with sonification and the shapes:
    a. There are two different region modes under the sonification tool, custom and viewport. Have the students:
        i. Custom: Play with the time and tone navigation buttons. How does this change things?
            1. What information is given to you?
        ii. Viewport
            1. What options are available? Play!
3. With sleep masks on, have the students listen to each shape.
    a. Now have them guess the shapes you play for the whole class.
        iii. What information did they listen for?
        iv. What was their evidence for the different shapes?
4. Have them listen to an astronomical image.
    a. If you use M83 under IDATA sample images, you can have them compare it to a tactile version, or a puffy version.

Credits: **Innovators Developing Accessible Tools for Astronomy (IDATA)**, officially known as *Research Supporting Multisensory Engagement by Blind, Visually Impaired,* and *Sighted Students to Advance Integrated Learning of Astronomy and Computer Science,* and the resulting curricular resources, Afterglow Access software, and project research were made possible with support from the U.S. National Science Foundation's STEM+C program (Award 1640131). IDATA institutional collaborators include AUI, GLAS Education, Linder Research & Development Inc., Logos Consulting Group, TERC, University of Nevada – Las Vegas, University of North Carolina at Chapel Hill, and Universidad Diego Portales. Individual consultants on the project include Kathy Gustavson and Alexandra Dean Grossi. IDATA Teacher collaborators in the U.S. include Amanda Allen, Jacqueline Barge, Holly Bensel, Neal Boys, Tim Fahlberg, Kristin Grender, David Lockett, Matthew McCutcheon, Caroline Odden, Michael Prokosch, Kara Rowbotham, Rick Sanchez, and Barbara Stachelski. IDATA Student collaborators in the U.S. include Evan Blad, Naleah Boys, Ellen Butler, Jayden Dimas, Riley Kappell, Joseph Murphy, Logan Ruby, Alex Scerba, Charlize Sentosa, Meg Sorensen, Remy Streichenberger, Trevor Warren, and others. IDATA Undergraduate Mentors include Tia Bertz, Katya Gozman, Chris Mathews, Kendall Mehling, Andrea Salazar, Ben Shafer, Alex Traub, and Sophia Vlahakis. Special thanks to the IDATA external advisors including Nic Bonne, Al Harper, Sue Ann Heatherly, Russ Laher, Luisa Rebull, Ed Summers, and Kathryn Williamson.