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Introduction:

The Skynet Junior Scholars program has developed online tools and inquiry-based activities that enable middle school and high school aged youth to use robotic optical and radio telescopes to do astronomy. Staff and volunteers at the Wisconsin School for the Blind and Visually Impaired have been involved in SJS since the beginning. In addition to vetting the SJS online environment for accessibility to blind/low vision (BLV) youth, we have implemented SJS activities in school and camp environments and have empowered our students to take on leadership roles. We are committed to making science and technology as accessible to students who are blind and low-vision as it is to their sighted peers by using a variety of tools, methods, and exploration activities.

Modifying SJS activities for BLV Youth:

- ◆ **Scale Models** Students create an accessible “Pocket Model” scale version of the solar system using tactile dot stickers on cash register tape and model the solar system using tactile items to represent the planets.
- ◆ **What do astronomical filters do?** Students use an iDevice with the Light Detector app. They are given a set of red, green, and blue filters. We project images with different colors. Students hold the filter between the iDevice and the screen and see how filters affect the light that is detected.
- ◆ **Observing the Universe** Students use the SJS website to learn, explore, and complete observations. Students use screen readers and screen magnification software to access the SJS site.
- ◆ **What do cosmic objects look like?** Students color tactile coloring sheets of different stellar objects. Students convert Skynet image data into tactile images so that they can study their observations, as well as other data.

Implementation in Camp Settings. Lessons Learned:

- Provide variety of activity choices: hands-on, online, and technology activities.
- Rotate groups so everyone has a chance to participate.
- Share images. Most youth who are BLV have some sight and appreciate seeing each others’ images.
- Prepare tactile gallery of visible objects.
- Make tactile prints even for youth who have some vision. The multi-sensory approach is very helpful. Be generous in making prints of group’s images.
- Add Braille to each image regardless of whether it’s needed, as it familiarizes everyone with Braille. Recruit a blind person who can use a Braille writer.

Feeling like a scientist. Students report:

- Using the tools of professional astronomers, making decisions about objects depending on their visibility at telescope locations, choosing exposure times to match an object’s brightness, etc.
- Being able to easily request images instead of using a regular telescope that is hard to set up and see through if you have low vision or are blind.
- Versatility of doing science online – on the school or home computer – and on one’s phone – bookmarked!

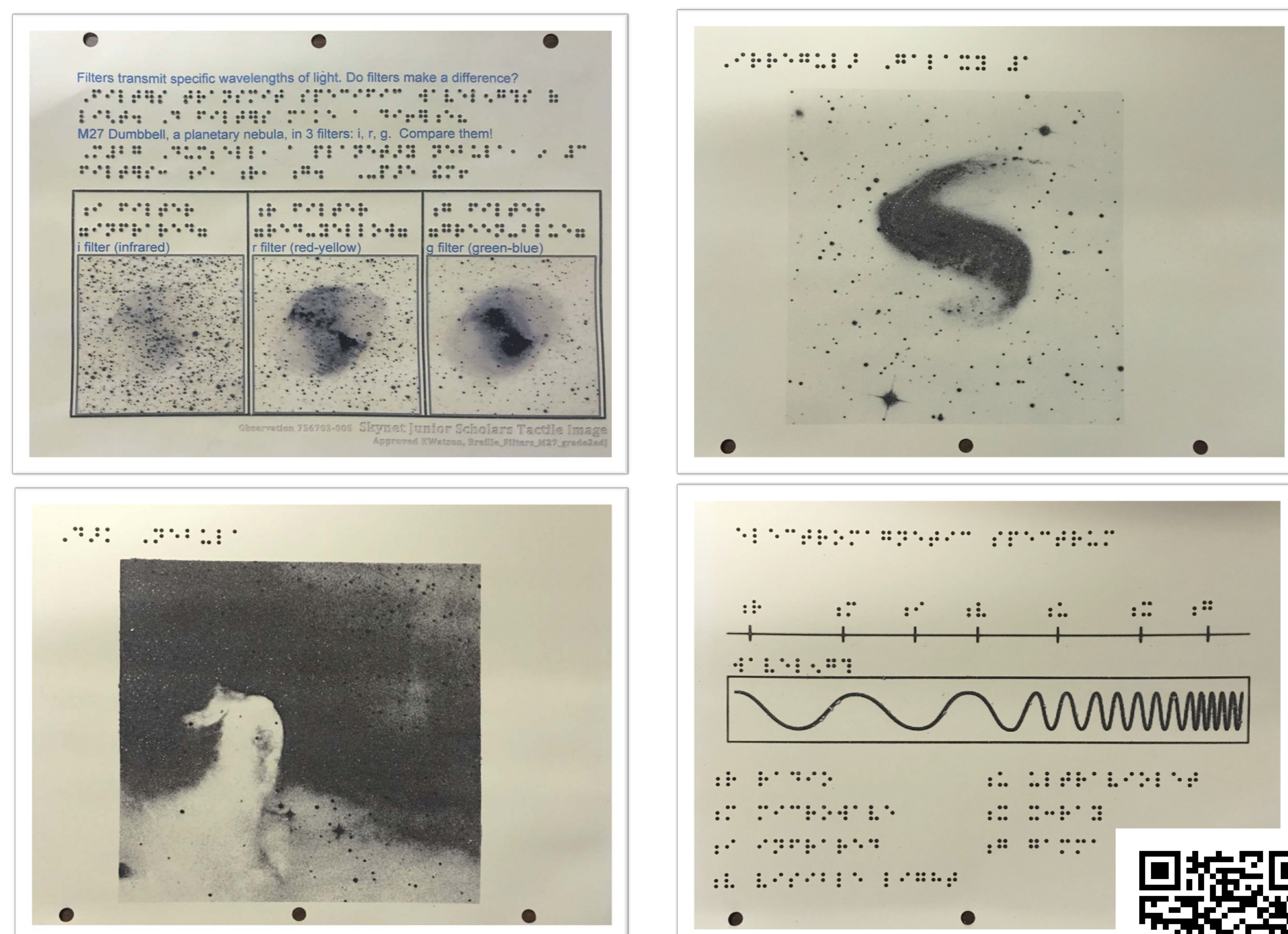
Taking the Lead. Magic of Astronomy Star Party:

After 12 years of Yerkes Observatory working with the Wisconsin School for the Blind and Visually Impaired, the tables were turned, and the students took charge. SJS gave students the confidence to plan and lead a star party for the public for the first time! “Magic of Astronomy”, a Harry Potter themed event, was planned and implemented by WCBVI youth and their leaders featuring hands-on activities and Skynet observing experiences. The public requested observations and went home with a magical **Touch the Universe** picture of their own.

Magic of Astronomy & WI Lions Camp



Tactile graphics used by students who are blind and low-vision



Additional resources: <http://sites.google.com/a/wcbvi.k12.wi.us/sjs/>



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