Skynet Junior Scholars: Sharing the Universe with Youth

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Overview:

Skynet Junior Scholars (NSF award numbers 1223687, 1223235, 1223345) engages middle and high school aged youth in the study of the Universe using the same tools as professionals by:

- targeting youth audience enrolled in the 4-H program;
- building accessibility standards into the SJS design ;
- using research quality, multi-wavelength telescopes. These telescopes are part of the Skynet Robotic Telescope Network.

Why 4-H?

In order to address the shortfall of STEM professionals in the US, the National 4-H organization set a goal of engaging one million new young people in science programs by 2013 which has been exceeded. SJS taps into National 4-H STEM resources that assist projects like ours in creating:

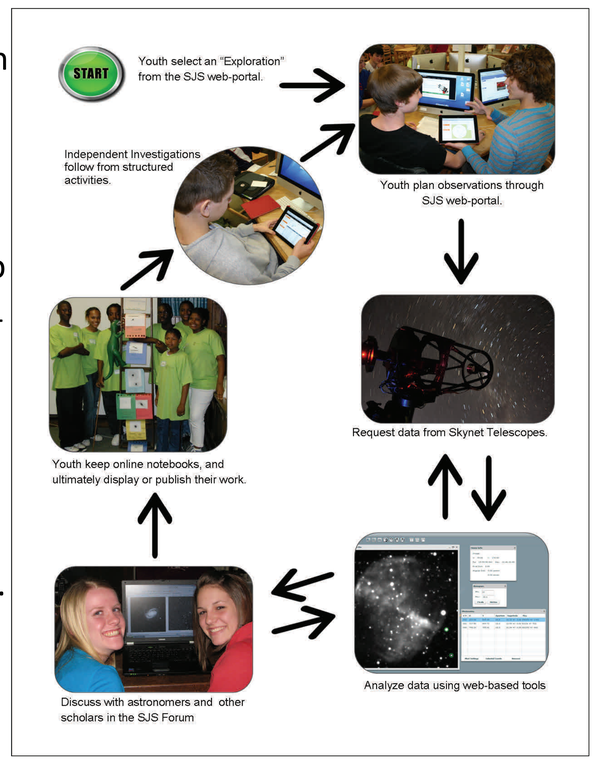
- creating 4-H approved curricula that meet national standards;
- creating professional development that meets 4-H core competencies.

How SJS Works:

Youth enrolled out-of-school-time programs use Skynet telescopes, communicate with Skynet STEM professionals, and complete observing projects through an interactive web-portal that encourages discussion and collaboration with other young scientists . More than **200 middle** and **high school aged youth** are current Skynet Junior Scholars. Components include:

1. Professional development for youth leaders. Youth may participate in SJS after their leader completes professional development. Youth leaders guide Scholars via discussions, and hands-on modeling activities in a group setting. So far, **61 youth leaders** and informal educators from **15 states** have received professional development.

2. Scientific Skill building projects. Youth work asynchronously on observational astronomy projects of interest. Initially, students receive instructional prompts to aid in inquiry.



SJS Engagement in Inquiry Cycle

3. Spiraling Levels of Engagement. As youth progress they receive more telescope time, and initiate their own observational research. Special projects, online forums, and local group meetings encourage collaborations and scientific discourse.

4. Scientific Community. Skynet astronomers and STEM professionals answer questions and provide mentorship through the SJS forum .

Development of the SJS Web-portal:

The web-portal enables youth –directed inquiry through:

- embedded text boxes and tables within SJS Explorations;
- Editable notes;
- Gallery with upload capability;
- Forum;
- How to videos .

Future features include community data repositories, shared graphs and tables.

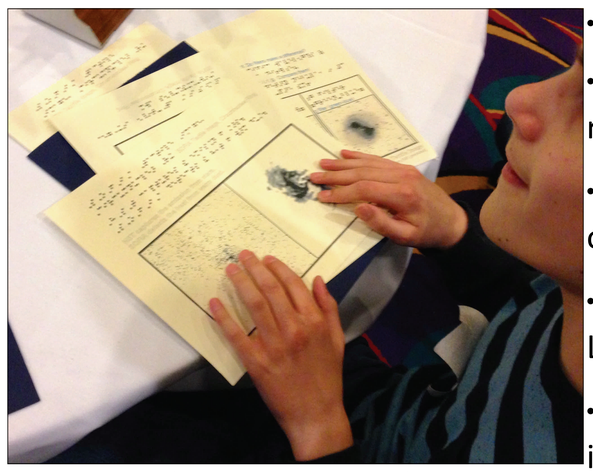
SJS Observing and Analysis Tools:

Scholars receive telescope time, create observing requests and preview their data on Skynet 2.0, the Skynet Telescope Interface ;

- Youth Leaders manage their groups on Skynet 2.0;
- Skynet users analyze data via server-side application called Afterglow.

Ensuring Accessible Content and Tools:

SJS produces content, programs and support materials to ensure that ALL youth including blind and visually impaired (BVI) and deaf and hard of hearing (DHH) scholars can fully participate in astronomical investigations by working with practitioners to:



Seeing the universe using a tactile image!

- apply Universal Design principles;
- test the web sites for clarity with screen readers and other assistive technologies;
- create braille annotated tactile versions of Skynet images;
- overlay all videos with an American Sign Language interpretation (underway);
- engage visually impaired adult leaders in SJS professional development. It works! Leaders held a two week summer camp "A Universe of Possibilities: Space Odyssey 2014" that included SJS programming for 17 BVI youth.

ASL Overlay on Intro Video

SJS is a partnership between

THE UNIVERSITY OF CHICAGO · NRAO · ASTRONOMICAL SOCIETY OF THE PACIFIC · THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL · 4-H · NSF