IIA Outreach program

IIA outreach program was conducted on 15th June 2013 at *Madiwala High School*. It was conducted for class 10, for a total of around 200 students, with the help around 16 volunteers from IIA and 4 science teachers from the school. The duration for the programme was 3 hours, 8.30 - 11.30 AM. Kannada was the preferred medium of instruction.

The event was divided into 3 sections, a one hour talk, another one hour for demonstration and activities and a final session for discussion and interaction with the students. The talk and the demo were held in parallel sessions with the group of about 100 and 100 students in each batch respectively.

The IIA outreach team with the students of Madiwala High School

Students attended the one hour talk and video tour of the solar system, a half an hour presentation of Stellarium and demonstration of adjoining kits and activities, and the demonstration on how to use the telescope, including a demonstration on how terrestrial objects were magnified by the telescope.

A group discussion with teachers and students happened at the rooftop followed by a photo session. At the end we gifted the three books (George's Secret Key to the Universe,

George’s Cosmic Treasure Hunt and an Astronomy Quiz Book) for further reference to the library along with all the posters we used for demo.

Details of the event:

1. Talk:

The Talk

The talk was titled: "A journey through the Solar system" which was presented to students in the form of a dialogue between two students in Kannada. The talk started with a contemplation and appreciation of the beauty and the grace of our Earth through poignant images and videos which captured the imagination and enthused the students. Slowly we moved upwards in the space in a space shuttle with the students on a journey to the moon, followed the first man landing on the surface of the Moon and were awe struck on seeing the Earth rising over the horizon. We visited the interior planets of Venus and Mercury taking note of their peculiarities and faced the heat of the mighty Sun. Riding on a Solar flare, we flew back to the Earth to witness the majestic auroras and then to the fiery red planet. We searched for life in the waters of Europa and Enceladus, averted the Armageddon at Jupiter to sail across the glorious rings of Saturn. With a cursory look at the outer planets of Uranus and Neptune, we completed our wondrous journey looking back at the "Pale Blue Dot" through the eyes of Voyager.

2. Demonstration / activities

There were 2 activities of half an hour duration each:

a. Stellarium
b. Explanation and demo of the working of the telescope

a. Stellarium :

Stellarium and kits

The theme of the activities were to enable the students to 'see' the night sky from any location on earth. We started with the 'starclock' which was an easy to use kit which could help the students in locating the pole star if they knew the current time, and could see Cassiopeia and Big Dipper (which are comparatively easily identifiable constellations). It was already shown to the students, with the help of Stellarium, on the importance of the pole star, and how all the stars appear to revolve around it. The next step was to teach them to use a handy paper-made 'clinometer' to find out their latitude of their geographical location. The latitude would be used to make a 'sundial' adjusted to their specific latitude, to see the time without the help of a clock. Finally, a star chart was also provided for the Bangalore night sky, which included all the major constellations. They could use the latitude to create their own star chart, and use the local time and date to identify the sky above.

In addition to the demonstration of the kits in class, all the kits (Starclock, Clinometer, Sundial and Star Chart) were distributed to the students as cut-away pages of a booklet with

adjoining instructions in English and Kannada for facilitating a DIY (do it yourself) approach from their side.

We also submitted an A3 poster on how the night sky looks from Bangalore at 8 p.m. in the month of June including a list of interesting objects that can be seen through the naked eye. A large detailed map of the universe from National Geographic showing the scale of the Universe from the solar system all the way to the supercluster of galaxies where our milky way resides, was also given as part of the activity.

b. Explanation and demo of the working of the telescope:

Demonstration of how to use a telescope

Explanation of the VBT model

With the help of the ray diagram that was printed on a poster, the working of the telescope and the different types of telescopes were explained in their science lab. The different components of the telescopes were shown and demonstrated their functioning. Students were given the eyepiece of a 4" telescope to observe the magnification of the objects. After explaining the basics of the working and uses of the telescope, the students were taken to the rooftop, where we explained about the coordinate systems and movement of the telescope using VBT model. The school was in possession of a 3" Newtonian reflector, which we used to show them the magnified image of the faraway terrestrial object.

Discussions and feedback

Students felt very happy and asked us to come again. A boy curiously asked what actually we do in IIA and what he should study to pursue astronomy in future to get into the institute. During the Stellarium demonstrations, students asked questions related to the composition of planets, the rings of Saturn and its composition. They were also very interested in the kit based activities. They were very interested during the demonstration of the star clock, star charts and the movement of the shadow as we demonstrated the sun dial. Many of them stayed back after the session and explored Stellarium themselves whilst some others were interested in knowing how they could make the kits at home from the handouts which we had given. The students were very excited to see the working model of the VBT and the magnified image through the spare eyepiece. They were surprised to see the inverted image through the telescope. The science teacher Ms. Gayathri invited us to give talks and she was very interested in motivating the students to study science. Overall the activities were great fun for the students as well as for the volunteers and all of us enjoyed the event a lot!