

Internet Venus Live using internet telescope and its utilization in schools

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'Astronomy' is one of the most difficult subjects for teachers to teach in elementary and junior high schools, since stars and planets are only visible at night and it is not possible to observe them during classes in the daytime. Observations of stars by naked eyes or by telescopes are important, however, model experiments are popular in classes due to restrictions of the nature, in schools. Recently, computer graphics simulations, such as celestial motions, are also introduced in schools with the improvement of IT environment of schools promoted by the government, however, not all the teachers can treat IT tools sufficiently at this moment. Therefore, it is necessary not only to develop teaching aids using IT tools, but to evaluate them in schools.

We have developed Miyagi University of Education Internet Telescope (MUEIT) and proposed educational programs utilizing it in the astronomy in classrooms of elementary and junior high schools. Web camera is attached to the Internet Telescope, and the live images of stars and planets are open to public on our homepage. From any location, such as the classroom, by connecting to the internet, it is possible to move the MUEIT by remote control, and observe stars and planets in astronomy classes in schools.

However, it is inevitable to propose 'handy' educational programs suitable for the science curriculum, in order to utilize internet telescopes widely in schools. 3rd year students of the junior high schools learn the relationship between the shape and the size of Venus, and its revolution. For science classes for the 3rd year students, the internet live of Venus was conducted and shown on our homepage during the daytime of the weekday between September and December in 2005.

Using the internet Venus live, an hour-class of 'Change in shape and size of Venus and planetary revolution' was conducted in Myojo junior high school in Miyagi Osato, and Oritate junior high school in Miyagi Sendai. Internet Venus Live was utilized as an introduction of the theme. The dataset of Venus images for a long period were also effective to examine the relation between the change in its shape and the position on the orbit. Students are impressed that the Venus can be observed even in the daytime. Students are interested in the observation of Venus via internet as an experience-based astronomical teaching material.

Internet Venus Live was accessed 25 times in a day in an average during this period. It is planned to be conducted in fall in 2006, too. Venus live is introduced in the homepage of 'forum of starry sky observing network' (<http://www.hosizora.miyakyo-u.ac.jp/>).