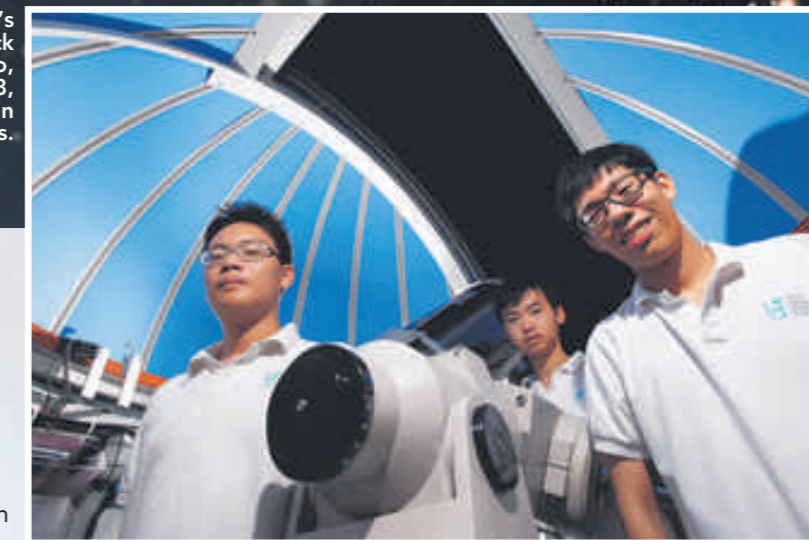


Seduced by the stars



Stargazing clubs are attracting more members thanks to the unique opportunity they offer to learn more about the universe. EISEN TEO reports

NUS High School's (from left) Kendrick Wong, 17, Wayne Soo, 18, and Ang Yu Jian, 18, have taken part in astronomy Olympiads.



Mr Yuen Xiang Hao, the teacher-in-charge of NUS High's astronomy club, said: "It's one thing to tackle astronomy questions on paper and another thing to look through a telescope and see Saturn or Jupiter with their full rings."

"From an emotional standpoint, it's a big difference." The stargazers value the night sights all the more because of their rarity. They share the same complaints: Singapore has too much light pollution, cloud cover and poor weather. Mr Yuen recalled: "Last year and the year before, we wanted to view comets, but first there were clouds. Then there were clouds blocking the clouds, so there was nothing to see."

With a shrug, he added: "It's one of those things you learn to live with." Tommy Tai, 15, head of BPGH's astronomy team, lamented about the lack of good stargazing spots in Singapore. "It's hard to stargaze at home unless you have a balcony and, even then, you're surrounded by HDB blocks which are getting taller and taller."

REACHING FOR THE STARS

Viewing disappointment aside, young astronomers have plenty of other activities to look forward to. They compete in three national competitions a year – the Nanyang Polytechnic Astronomy Quiz, Astrigue and the Astro Challenge.

At NUS High, seniors give presentations and lectures to juniors on astronomy topics. Club member Kendrick Wong, 17, is working on a radio astronomy project investigating the properties of dark matter in a distant galaxy. The project is part of his graduation requirement.

Kendrick and his club's vice-president Ang Yu Jian, and fellow member Wayne Soo, both 18, took part in the 6th International Olympiad on

Astronomy and Astrophysics in Rio de Janeiro, Brazil, last month. They did so with two Raffles Institution (RI) students. The NUS High trio got silver medals, while the RI duo got a gold and an honourable mention between them.

Yu Jian recalled: "They described the movement of the stars from a rover's point of view as it moved on Earth and asked us to work out its path. That was a killer question." Mr Soh was pleased to note that while only a handful applied for Olympiads in 2005, around 20 students did so this year.

The young astronomers are also keen on getting their peers interested in the stars. Clubs usually organise special stargazing sessions during celestial events such as the approach of Mars to Earth.

In June, during the transit of Venus, the ACS (Independent) astronomy club held an open house for their schoolmates and the public. Quan said: "It's a very rare event. The next time it occurs is in the year 2117."

NJC's Ms Yeo said her students are looking into organising camps and workshops for other schools in NJC's cluster.

So what are the best ways to get youth hooked on astronomy? Bring out the telescopes, said Quan. "Even with small 4- to 6-inch telescopes, you can see very beautiful objects, such as the Andromeda Galaxy or the Crab Nebula."

Tommy added: "Show them science fiction movies such as Star Wars."

eisenteo@sph.com.sg

I WOULD LIKE TO... Research astronomical models such as the formation of stars and nebula expansion.

Ang Yu Jian, 18, the NUS High School of Mathematics and Science

"Work for the National Aeronautics and Space Administration designing spacecraft."

Minton Tiew, 14, Bukit Panjang Government High School

"Invent time travel."

Tommy Tai, 15, Bukit Panjang Government High School

DESIGN JASTER NGUI PHOTOS DESMOND LUI FOR THE STRAITS TIMES

National Junior College (NJC) has a new eye on the sky. It is an observatory with a 14-inch telescope capable of viewing heavenly bodies such as Saturn, the Scorpius constellation and the Orion Nebula. The inches refer to the diameter of the telescope's lens, so NJC's lens would be the size of a large pizza. Opened at the start of the year, the classroom-sized observatory, located on the sixth floor of NJC's boarding house, cost a six-figure sum – paid for mostly from alumni donations. The stellar addition has grabbed the imagination of students. Astronomy club teacher-in-charge Valerie Yeo said: "Because of the observatory, a lot of students have become very interested in astronomy."

The young astronomers at NJC are the latest to join a niche group of enthusiasts whose schools have an observatory to call their own. They include National University of Singapore High School of Mathematics and Science (NUS High), which opened one in 2005, and Anglo-Chinese School (Independent), which opened its observatory in 1998. Both house 14-inch telescopes.

Astronomy clubs at these schools and in others such as Bukit Panjang Government High School (BPGH), have between 30 and 40 members – a good group size for a co-curricular activity (CCA). The CCA has been shedding its "slacker" image as young astronomers work on university-level research projects and sign up for – and ace – astronomy Olympiads.

However, the number of schools which offer astronomy as a CCA here has remained low over the past few years, at between 10 and 20. Mr Soh Rong'en, 23, an NUS physics major and vice-president of its astronomy society, said setting up the CCA requires a supportive school and teacher-in-charge, as stargazing entails the teacher staying in school late at night or overnight to oversee young

stargazers.

The absence of an astronomy CCA in most schools parallels an absence of coverage in the secondary school syllabus. In 2008, the Ministry of Education removed the study of the rotation and revolution of the Earth around the Sun from the primary school science syllabus.

Yet, its absence in the school curriculum may work to astronomy clubs' benefit, said Mr Soh. "Astronomy is an untapped field and has the potential to show students a lot of things they never imagined. Not encountering it in class may inspire them to learn more about what's beyond Earth."

STAR-STRUCK

NJC is aware of this benefit. As one of only four centres of excellence for science and technology in Singapore, Mr Nick Chan, vice-principal for strategic matters and student development, said the school wants to go beyond the curriculum to provide students more opportunities for inquiry-based learning.

From next year onwards, the school intends to offer students astrophysics, astrochemistry and astrobiology as research electives.

Twin sisters Neo Zhi Xian and Neo Zhi Ting, both 14, are interested in astrobiology, or the study of biology in space. "We want to study extraterrestrial possibilities – how planets can sustain life," said Zhi Xian.

And nothing inspires students more than peering into a telescope. NJC holds stargazing sessions on Monday and Friday nights, while ACS (Independent) has sessions on Friday nights. Zhi Xian said: "When you look into the sky, you are looking at the universe. I find that the coolest thing of all." The sisters said they are unable to afford a telescope, so this is the only way they can explore the constellations.

Over at ACS (Independent), club chairman Le Thien Minh Quan, 18, said: "The stars at night are beautiful to look at."

National Junior College's astronomy club teacher-in-charge Valerie Yeo, 30, Neo Zhi Ting, 14, Neo Zhi Xian, 14, Jesslyn Zeng, 16, and Lai Shumin, 17, in their school's observatory. The sixth-floor facility has a retractable roof to deploy the 14-inch telescope.



THE IMPORTANCE OF ASTRONOMY AND OBSERVATORIES

"Astronomy doesn't just focus a student's attention on the skies. Observing objects in space helps a student to understand Earth's place in space. It also has indirect practical applications through the field of physics. The development of many important principles of physics started from astronomy, when early astronomers observed the sky and came up with principles to explain interesting phenomena they observed."

For example, English physicist Isaac Newton observed the orbits of the Moon around the Earth, and the Earth and planets around the Sun. This led him to come up with the three laws of motion and the law of universal gravitation in 1687, which became the foundation of classical mechanics.

An observatory functions similarly to a physics lab. In a physics lab, students conduct experiments and observe the results, through which they learn principles of physics. In an observatory, the students observe planets and learn classical mechanics."

Dr Cindy Ng, an astronomy and cosmology lecturer from the National University of Singapore