

## **5. Science Education**

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To develop our girls into scientifically literate individuals, the Departments of Junior Science, Biology, Chemistry and Physics in the Science Education Key Learning Area have provided a wide range of learning experiences, both inside and outside classrooms, to equip our girls with the necessary knowledge, skills, values and attitudes.

### **Junior Science Department**

The Junior Science Department has continued to explore ways to enhance our students' scientific literacy, cultivate their interest in science and encourage them to pursue the latest science knowledge through self-directed learning.

This year, we participated in the Junior Secondary Science Online Self-learning Scheme organised by the Education Bureau, and supported by the Hong Kong Virtual University under the Hong Kong University of Science and Technology. Students participated in the online learning activities in six science disciplines, including astronomy & earth science, biology, chemistry, environmental science, food & health science, and physics. After studying the learning packages at their own pace, students could evaluate their understanding by completing quizzes on the online platform. With the enthusiastic participation and outstanding performance of our S1-3 girls, 195, 21 and 40 of them attained the Gold, Silver and Bronze Awards respectively in the scheme. Two girls, Chu Tin Wing and Lee Hoi Ki, were among the 15 students attaining the highest scores in the quizzes in Hong Kong.

During the summer vacation, a series of STEAM workshops on the topic 'Reverse Engineering a Loudspeaker' were held for interested girls to learn about the scientific principle of a loudspeaker through dismantling the device and analysing it through deductive reasoning. Participants were also given the opportunities to learn through making by applying their understanding to create their own loudspeakers.

### **Biology Department**

With the COVID-19 pandemic situation substantially alleviated over the academic year 2022-23, the Biology Department organised a variety of activities to enrich our students' Biology knowledge and skills beyond classroom learning and the curriculum.

In collaboration with the Hong Kong STEM Education Alliance, we were very honoured to have Professor Poo Muming from the Chinese Academy of Sciences and Professor Dan Yang from the National Academy of Sciences, U.S. to give our Biology students two inspiring and interesting talks on neuroscience on 25 November 2022.

In March 2023, S4 and S5 girls attended a talk on microscopy conducted by Carl Zeiss. A hands-on workshop was held to enable some girls to examine the beauty of living things at the microscopic level using some cutting-edge optical instruments. Some visited Professor Carmen Wong's Cancer Biology Laboratory at the Faculty of Medicine of the University of Hong Kong.

Our S5 girls took part in a field study course hosted by the Ho Koon Nature Education Cum Astronomical Centre in May 2023. They enjoyed a day of excursion to carry out an investigative field study on the freshwater stream ecosystem in Tai Kiu, Tai Mo Shan.

### **Chemistry Department**

This year, 78 students from S4 and S5 classes participated in the Chemists Online Self-study Award Scheme co-organised by the Education Bureau and the Hong Kong Virtual University. This programme

provided students a chance of learning outside classroom. A total of 56 students received awards in this programme.

A group of four S4 students, So Chun Kiu, Ng Si Ting, Wong Hin Lam and Wong Tze Ching Andrea participated in the Hong Kong Chemistry Olympiad for Secondary Schools (2022 – 2023) organised by the Hong Kong Association for Science and Mathematics Education. Their project titled “Microbial Fuel Cells: An investigation on their potential in generating electricity for the future” captured the 2nd Runner-up. The team also participated in the Greater Bay Area STEM Excellence Award 2023 (Hong Kong) and captured the Gold Award in the Secondary (Senior) Schools Stream.

It was a good opportunity for students to apply their laboratory skills learnt in class to conduct a research. The department will continue to encourage students to learn Chemistry beyond the textbook contents through project work.

## **Physics Department**

The 2022-23 academic year brought students back full-time into the classroom. The students were excited to have the opportunity to undertake hands-on activities, with teachers happily providing learning experiences that not only educate but also stimulate students’ creative and critical thinking skills. One of the highlights was the Lunar Eclipse Viewing Astronomy Night, where students were given the opportunity to learn about and operate different telescopes.

Our girls continued to perform well in the public examinations with over 45% of them obtaining 5\* or above in the 2022 HKDSE and 65% achieving A\* in the International A Level exams. Also to note were the amazing results from the Hong Kong Physics Olympiad with four students receiving awards and the school ranking 6th overall for the Best Schools Awards.

The Physics Department is dedicated to finding new and innovative methodologies and activities that further enhance an already rich and diverse learning environment.

## **Science programmes and competitions 2022-2023**

Besides the activities organised by the respective Science subject departments, the Science Team also arranged for students to take part in a wide array of internal and external Science programmes.

On 30 September 2022, the whole school took part in the DGS STEM Presentation and Exhibition. 26 selected teams shared their STEM projects done in the previous academic year with the rest of the school. Students had the opportunity to learn about the STEM-related research done by their peers to broaden their horizons.

74 girls completed the DGS Science Research Programme between October 2022 and May 2023 to develop their research skills. Ten teams were able to put their research proposals in their own area of interest into action and took part in local research competitions. The team comprising Chan Hoi Yin, Chan Tsing Yi Vanessa, Lam Pui Man, Luo Nga Wai and Law Yi Ting captured the First Prize in the Junior Division Investigation Design Proposal (Biology and Chemistry) in the Hong Kong Student Science Project Competition 2023. Three teams, comprising Lee Crystal, Li Sze Wing Jennifer, Jiang Yolanda Pak Yin and But Wing Hei; Ng Hey, Chow Tsz Yau, Ma Yung Wai Jocelyn and Tang Long Yan Valerie; and Cheng Yik Shun, Sum Yu Tung, Zhang Manying and Tam Wai Chee, attained the Merit Awards in the Hong Kong Science Fair 2022-23 and showcased their projects to the public in the Science Fair held in the Hong Kong Convention and Exhibition Centre in June 2023.

Under the coaching and supervision of the Science teachers and our Science Research Project Advisor, our students participated in many more local and international competitions and attained some encouraging results. Some of the activities are shown below:

1. In November 2022, close to 70 girls attended the ‘Masterminds, Masterclasses 2.0’, a series of seminars in Astronomy, Earth Science, Life Science and Medicine, and Mathematical Sciences organised by the Hong Kong Laureate Forum (HKLF). With the enthusiastic participation in the science-related events organised by HKLF throughout the year, 24 girls attained The HKLF Science Explorer Award 2022/23. Among them, Cai Siyao, Kwok Wing Tung Gianna, Cheng Yik Shun and Cheng Cheuk Laam attained the Gold Award.
2. Six S3 girls took part in the International Junior Science Olympiad 2023 – Hong Kong Screening. Ching Helen, Chu Noelle and Leung Wing In captured the Second Class Honours, while Hui Cheuk Yi, Chan Tsz Nam and Tsang Evelyn Wai Ning captured the Third Class Honours.
3. In the International Biology Olympiad – Hong Kong Contest 2022, Guo Pei Pei attained the Gold Award, Chow Tsz Yau and Zhang Manying attained the Bronze Award, and Lau Yan Nam Malinda and Lui Sum Yuet attained the Honourable Mention Award.
4. In the Hong Kong Biology Literacy Award (2022/2023), Lui Sum Yuet and Ng Hey were awarded the First Class Honours, So Chun Kiu, Wong Tze Ching Andrea and Chow Tsz Yau were awarded the Third Class Honours, and Kum Ho Yee and Wong Hin Lam were awarded the Merit Award.
5. In the Hong Kong Physics Olympiad 2023, Jiang Yolanda Pak Yin captured the First Class Honours, Ching Helen and Li Xinjie captured the Second Class Honours, and Lee Crystal was given the Honourable Mention Award.
6. In the Sing Ying Physics Olympiad 2022-2023, Lee Crystal attained the Merit Award.
7. The team comprising Lee Crystal, Li Sze Wing Jennifer, Li Xinjie, So Chun Kiu, Wong Hin Lam, Wong Tze Ching Andrea, But Wing Hei and Au Cheuk Yi won the Gold Award in the CityU Science Patent Challenge. They received full funding for the application of a Hong Kong Short-term Patent for their winning invention.
8. In the 16<sup>th</sup> Hong Kong Budding Scientists Award organised by the Gifted Education Section of Education Bureau, the team comprising Li Ruyi, Chan Tsz Nam, Cheuk Nim Yan, Chung Hei Man and Tsang Evelyn Wai Ning was awarded the First Runner-up and the Reporter Award.
9. In the Hong Kong Secondary School Health Exhibition Presentation Competition 2022 organised by the Medical Society of the Chinese University of Hong Kong, the team comprising Chan Shu Yiu Zoe, Cheung Mo Kiu Monique, Chung Nicole Mong Joo, Chan Wing Kiu, Miu Kam Ying and Ng Lok Yiu Kennice was crowned the championship.
10. In the Native Freshwater Turtles Conservation Education Programme, the team comprising Lau Wing Tung Whitney, Fan Lok Ching, Han Choi Yin, Leung Lok Yin Janice and Lau Tsz Ching Michelle was given the Best Presentation Award.
11. In the Hong Kong Brain Bee Competition 2023, Leung Man Sum achieved Distinction Performance, Li Sze Wing Jennifer, Chan Tsz Ching and Lau Tsz Ching Michelle achieved Good Performance, while Hui Hiu Yan Sarina, Wong Hin Lam, Yang Zhichu and Wong Tsz Nok achieved Creditable Performance.
12. In the “Digi-Science” Video Production Competition for Hong Kong Secondary Schools 2022-23, the team comprising Leung Hoi Ying Leia, Liu Tsz Yu and Chu Lok Yi was the First Runner-up in the Senior Secondary Division.

13. In the “Chemical Celebration of HKASME-60” Competition for Hong Kong Secondary Schools (2022-2023), Chau Pui Ki won the Excellent Award while Wang Cindy Hing Yu was given the Merit Award.
14. The team comprising Lee Crystal, Li Sze Wing Jennifer, Ng Si Ting and Au Cheuk Yi was the champion of the Envisio Science Competition 2022.
15. In the Energy Saving Championship Scheme - Competition for Students, the team comprising So Hei Ching, Tang Long Yan Valerie, Tam Wai Chee and Wang Kathleen Tsz Kei attained the Hanson Outstanding Award.
16. In the Solar Future Challenge, the team comprising Lee Crystal, Li Sze Wing Jennifer, Ng Si Ting, Wong Hin Lam, But Wing Hei, Au Cheuk Yi, Chow Tsz Yau, Ng Hey and Wu Bailing won the Best Presentation Award and the Popularity Award.
17. The team comprising Yuen Fe, Au Yat Yi, Ching Helen, Chan Ki Yi Charlotte, Lam Ho Ching, Chan Ying Ching, Lee Crystal, Lau Yan Nam Malinda, Cheng Yunying, Ng Hey, Wu Bailing, Lam Wing Tung, Wong Lai Ki Calista, Fang Samantha Guo Ling and Leung Tiffany Sabrina captured the Inspire Award, the grand prize in the First Tech Challenge Hong Kong 2022-2023. Nine members of the team represented Hong Kong in the FIRST Tech Challenge Asia Pacific Open Championships 2023 held in July in the Macquarie University in Sydney.
18. In the Hong Kong GreenMech Contest 2022/2023, the team comprising Liu Nga Yi, Siu Pui Yung, Tong Sui Ting and Wong Hei Ching captured the First Runner-up. They represented Hong Kong in the World GreenMech Contest 2023 held in August in Taichung.
19. In the FIRST LEGO League Challenge 2022-2023, the team comprising Mai Polly, Cheung Hoi Yin Ariel, Ho Tsz Yan Antonia, Lin Ching Kiu, So Hei Ching and Leung Tsz Kiu Amanda was the Overall First Runner-up.
20. 12 girls took part in six different categories in the ROBOFEST Hong Kong 2023. Ho Nga Chi achieved the Second Place in the Senior APP category. Chan Ying Ching, Chan Tsz Wai, Chan Tsz Hei and Ho Nga Chi attained the Gold Award; Au Yat Yi, Lam Ho Ching, So Hei Ching and Tang Long Yan Valerie attained the Silver Award; Yeung Chiara Pui Kay, Lau Sin Sze Zoe and Chan Tsz Nam attained the Bronze Award.