

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

To facilitate the implementation of the new Junior Science Curriculum in the academic year 2018-19 and to enhance exchange of pedagogical content knowledge among teachers, our department had more meetings in the past year to discuss the scheme of work, teaching strategies and learning materials for each unit. With the concerted effort of all members of the department, the new curriculum was smoothly implemented.

In response to the promotion of STEM education, one of the Major Renewed Emphases of the Ongoing Development of the Science Education KLA, more new STEM initiatives such as making water purification models and cell models were introduced in our curriculum. A wide range of activities, including Rocket Car and Robotics workshops, Talk on ‘Saildrone Antarctic Circumnavigation’ and Visit to SenseTime were arranged to enrich students’ exposure to the latest development in STEM-related fields outside the classroom.

Opportunities were also provided to broaden students’ horizons outside Hong Kong. In collaboration with the Art Department, a STEAM Study Tour of Taipei was organized. 19 junior form girls participated in the five-day tour in July 2019, visiting spots such as the Sha Yang Ye Robot Wonderland and the Syntrend Creative Park to learn about the applications of Science in various cutting-edge technology.

Biology Department

Our department has continued to explore various opportunity to extend learning experience beyond the classroom. Students participated in the International Pathology Day Workshop organized by the Hong Kong College of Pathologists held at Queen Mary Hospital. Students had the privilege of attending sharing sessions conducted by medical professionals about different pathology disciplines and tried out various medical laboratory experiments. Our students were also invited to the Knowledge Exchange Programme organized by the Department of Microbiology of the University of Hong Kong. The topic of this particular programme was the Development of Animal Models for the Study of MERS-CoV. Students were given the opportunity to visit the professional research laboratories of the department and they had fruitful discussions with the research and teaching staff there.

To promote an awareness of conservation, our school continued to take part in the Juvenile Horseshoe Crab Rearing Programme organized by the Ocean Park Conservation Foundation Hong Kong. An exhibition of the horseshoe crabs was held in the library and was open to both the secondary and the junior sections of our school. The horseshoe crabs under the care of our students were all healthy and strong and they were released into the wild in July. In addition, arrangements were made for all S5 Biology students to participate in the field study course organized by the Ho Koon Nature Education cum Astronomical Centre in October to study the fresh water ecosystem at Chuen Lung.

This year, some of our students participated in the International Biology Olympiad – Hong Kong Contest 2018 organized by the Education Bureau and the Hong Kong Academy for Gifted Education, and the Hong Kong Biology Literacy Award organized by the Hong Kong Association for Science and Mathematics Education and

received encouraging results. Our department will continue to explore new endeavours for a more enhanced and enriched Biology education in our school.

Chemistry Department

Five students participated in the Hong Kong Chemistry Olympiad for Secondary School (2018-2019) jointly organized by the Hong Kong Association for Science and Mathematics Education, the Hong Kong Chemical Society and the Royal Society of Chemistry. Their project was titled Green Chemistry: Synthesis of Disulfide Bond in Cystine by Manual Grinding. It was a good opportunity for students to develop skills and learn beyond the textbook through project work.

In November 2018, a group of 35 Secondary 4 students visited the Ma On Shan Water Treatment Works. During the visit, students learnt how raw water is collected, filtered and treated with chemicals during the purification process. They also learnt how water quality is monitored by means of chemical and biological examinations of water samples taken from treatment works.

Physics Department

The Physics Department aims at helping students develop an interest, motivation and a sense of achievement in their study of Physics. To arouse students' awareness about the recent development of technology and understanding its impact on society and people's life, the authentic learning approach was employed. Learning is closely connected to the world beyond the walls of the classroom, which is made possible via the extensive use of technology in teaching and learning. Teachers could use the vast resources over the Internet to enrich students' experiences in different areas of study.

In May 2019, we had the first cohort of six Secondary 5 students sitting the Edexcel IAL Physics examination. They took the first 3 papers of the A-Level Physics examination and will complete the whole A-Level course in Secondary 6. Five students will be taking A-Level Physics in Secondary 5 next year. In order to prepare the A-Level students for the external examination in Secondary 5, at the beginning of the year, subject teachers discussed the common topics that are covered in both the HKDSE and A-Level syllabi so that they can be covered in Secondary 4. Upon evaluation, teachers agreed that this was a very successful arrangement and they will continue to use this strategy in the coming years. To facilitate lesson planning, relevant teaching materials, including an online resource package for teachers, were purchased. In addition, all subject teachers had attended relevant training workshops in the past years. We are happy to see that all subject teachers within the Department are eligible and ready to teach this new curriculum.

Our students continued to perform excellently in HKDSE Physics examination. The results were similar to previous years.

External competitions and events 2018-2019

Under the Science teachers' coaching and supervision, our students participated in various local and overseas activities and attained encouraging results in competitions. Some of the activities are shown below:

1. Chan Siu Yee Tania of 5Z participated in the Hong Kong Youth Science & Technology Innovation Competition 2018-2019 organized by the Hong Kong New Generation Cultural Association with her research 'Getting the best out of wolfberries: an effective way to improve eyesight'. She was awarded the First Place Grand Award in the Biology and Health Section of the Senior Secondary

Division, the Outstanding Achievement for Ability and Creativity in In Vitro Biology, and the Young Scientist of the Year.

In July 2019, Tania represented Hong Kong in the 34th China Adolescents Science and Technology Innovation Contest organized by the China Association for Science and Technology and the Ministry of Education of the People's Republic of China with her winning project and captured the Second Class Award.

Tania also participated in the Hong Kong Student Science Project Competition 2019 organized by the Hong Kong Federation of Youth Groups and captured the First Prize in the Scientific Wallchart Division with her project entitled 'A Current You Can't "Sea": An Introduction to Internal Waves'.

2. In the International Junior Science Olympiad 2019 – Hong Kong Screening, Ip Tsz Oi captured the First Class Honour, Chan Tsz Ching captured the Second Class Honour, Cannon Stephanie Kate and Cheng Wing Chi Angelina captured the Third Class Honour.

Chan Tsz Ching entered phase three of the advanced training programme to prepare for the 16th International Junior Science Olympiad to be held in Doha, Qatar in December 2019.

3. In the International Biology Olympiad – Hong Kong Contest 2018 organized by the Education Bureau and the Hong Kong Academy for Gifted Education, our school captured the Best Schools Award. Wong Yuet To attained the 1st Runner-up, Ng Ka Hei attained the Silver Award, Wong Hiu Yu and Ng Sze Mai attained the Bronze Award.
4. Ip Tsz Oi of 3U attained the Honourable Mention in the Hong Kong Physics Olympiad organized by the Hong Kong Academy for Gifted Education.
5. Twenty S.5 Biology students were nominated for the Hong Kong Biology Literacy Award (2018/2019) and attained encouraging results. Fung Wai Yee Queenie, Ko Yi Lam and Wong Yuet To captured the First Class Honours.
6. In the 2019 Science Assessment Test organized by the Hong Kong Association for Science and Mathematics Education, Hui Hoi Lam and Chan Sum Yuet Tiffany attained the Diamond Award, Lau Yan Tung Zita, Siu Audrey Abigail, Chan Hayley and Hon Kai Yu attained the Gold Award.
7. Lee Yuet In Jocelyn, Chan Hayley and Tsui Vivienne captured Distinction in the 2019 Australia Big Science Competition.
8. Nine girls achieved Distinction or above in one or more Science subjects in the Secondary School Mathematics and Science Competition 2019 organized by the Hong Kong Polytechnic University. Shek Hei Tung of 5X attained Medal ranking, the top achievement level, in the Chemistry Section.
9. In January 2019, Chan Siu Yee Tania and Li Junqiao Sabrina participated in the 11th International Science Youth Forum 2019 organized by the Hwa Chong Institution, Singapore. This annual event provides a platform for academic and cultural exchange among scientifically-gifted students from different countries. They also had the privilege to attend master classes conducted by some Nobel laureates.

10. The team comprising Cannon Stephanie Kate, Cheng Chun Yan, Chan Lok Hei and Choi Ching Lam captured the 1st Runner-up in the Hong Kong Budding Scientists Award 2018-19 organized by the Education Bureau.
11. In February 2019, a team comprising twelve Electronics and Robotics Team members captured the Inspire Award Finalist in the 2018/19 FIRST Tech Challenge Hong Kong Tournament.
12. Over 30 teams from Hong Kong, Macau and 14 mainland cities competed in the robotics competition 'FIRST Tech Challenge China Exchange Tour (Hong Kong Stop) 2019' in May 2019. Eight members from the Electronics and Robotics Team captured the Rockwell Collins Innovate Award in the event.
13. A team of ten Electronics and Robotics Team members participated in the 2018/19 Hong Kong FIRST LEGO League Robotics Tournament. The team captured the Robot Performance Award: 1st Place in the Secondary Division.
14. A team comprising Tan Yu Yng Lorraine, Chen Ling Yi and Ngan Sze Yuen from the Electronics and Robotics Team captured the Second Prize in the Secondary Section in the Robotics Intelligence DIY 2019 organized by the Hong Kong Science Museum, the Leisure and Cultural Services Department and the Creative Power Educational Association.
15. A team comprising Ikin Jennifer Christine, Tan Yu Yng Lorraine, Wong Ka Yu and Wong Yan Ching Grace captured the Outstanding Performance Award in 第一屆生物醫學工程創意競賽 (挑戰賽) organized by the Department of Biomedical Engineering of the Hong Kong Polytechnic University.
16. The team comprising Lao Chin Wai Kristie, Cai Rui Zhe Racheal, Leung Rachel Wai Ching and Shek Hei Tung attained the Most Creative Award in the Senior Secondary Division of the 2018/19 Hong Kong GreenMech Contest organized by the Hong Kong Federation of Youth Groups.
17. Two teams participated in the "Digi-Science" Video Production Competition for Hong Kong Secondary Schools 2018-2019. Chan Hayley and Tsui Vivienne from S.3 attained the Merit Prize in the Junior Secondary Division, while the team comprising Ma Yan Ling Madeline, Szeto Man Sum and Tsang Kwan Chi Gigi from S.5 attained the Merit Prize in the Senior Secondary Division.
18. Chan Jing Jane of 2X and Chung Hiu Laam Hannah of 3W participated in the Young Astronaut Training Camp 2019 organized by the Hong Kong Space Museum. They had the chance to learn about the latest development in aerospace in China through a nine-day space training camp in Beijing.