SSH Super Science Highschool
SSH 通信 arkhe
2024 1.21
No.202
発行：屋代高校
SSH 推進担当

今回は 11 月 30 日（土）から５日（木）までに実施された、SSH オーストラリア海外研修の報告を研修生が英語でまとめてくれました。高校 2 年生９名、１年生１名、引率教員２名（英語、理科）で、シドニーにて様々な研修をしてきました。

Hello everyone. We have been to Australia in December. We will report our studies and fruits.

We brought some research topics to Australia. One group is conducting a research project on the theme of “Soil Biodiversity”. As part of the project, on the first day in this country, we collected soil samples nearby the roots of Australian local trees. Then we collected tiny soil organisms using a Zurgren device, and observed them. We are currently confirming the number and types of organisms from the photos taken at that time, and have succeeded in confirming about five types of organisms at this point! We have the impression that many of the organisms are the similar species as those we have identified in the soil we have collected in Japan.

The ultimate goal of our research at this point is to use the biodiversity index as an indicator of environmental problems such as climate change, so this training was a very valuable opportunity for us to get information on soil organisms in foreign countries with different climatic zones. In the future, we intend to collect samples from various lands in Japan and compare them with the data we obtained this time in order to further our research.

The other group researched about “Southern Night Sky” in association with the northern sky. There are 88 constellations in total and 27 constellations of them are called to be in the southern sky. Also, 9 constellations can’t be seen from Japan. The “Large Magellanic Cloud” and the “Small Magellanic Cloud” can be seen only in the southern night sky. We planned to take photos of stars from Japan and Australia and make one big photo of the night sky. By using a wide-angle lens camera, we practiced taking photos and tried to take photos in Australia. However, because of the light harm, cloud, and the lack of our techniques, we couldn’t take constellations.

On the second day, we had an exchange program with WENONA High School. In the morning, we were divided into pairs, and everyone took same classes with a WENONA partner. Of course, since everything was spoken in English, we could not understand the content and struggled to comprehend it many times. However, I clearly remember how happy I was

when I was able to use my knowledge and conversation with my partner to understand the content of the class. The class format was different from that of Japanese high schools; it was an University-like system where students could study the subjects they want.

In the afternoon, students from Yashiro High School firstly made presentations on their research assignments and what they would research during their study in Australia, and then both high schools further deepened their friendship through recreational activities such as eating Australian and Japanese sweets and quizzes to guess the Japanese words.

On the third day, we first visited a laboratory in Sydney University. The lab's research theme is coral. The main reason of death of coral is global warming, which causes rising seawater temperatures. In addition, it causes more hurricanes to occur. According to the professor, frictional heat which caused by hurricanes damages a lot of coral. We mainly learned following two topics.

< Hurricane Research> Energy of ocean means the strength of the waves and seawater temperatures. For example, ocean when hurricanes come has high energy. There was a machine which can measure energy of ocean by using samples (stone, coral, etc.), depending on how broken they are. If the sample is broken into small pieces, it is located where it has strong waves and high seawater temperatures. It's not Measuring the energy of ocean itself.

<Coral dating Research> There are several ways to date coral in Sydney University. For example, using radioisotope of carbon, observing sampled coral under a microscope. Surprisingly, coral has growth rings like trees. We can date coral by just observing it.

We have some **advice** to the students who might be visiting Sydney University next year.

In the presentation at the Sydney University, we had to listen to a lot of technical terms about chemistry in English. It was very difficult to understand the presentation. So, I advise you to learn technical terms in advance. Our school has a great teacher, Mr. Nagayama to whom you can give any questions about such words. Also, we had to give questions for all presentations. So, you should think about questions all the time. There are many things that we don't know until we experience in Australia. Please prepare for difficulties.

The second place on the day was Optus Satellite. The company is located in Belrose, about 40 minutes drive from city center. This is the second largest telecommunications company in Australia. This company manages the communication system such as televisions and smartphones. Also, the company is launching communication satellites.

A woman staff guided us to the office. The office was very large and clean. And the staff was very friendly and explained very carefully, so we spent good time. We were able to go to the centralized control room where photography was prohibited. In addition, the staff took us near the parabolic antennas. We had a very valuable experience.

On the evening of the day, we went to Macquarie University Astronomy. In this institution, there are two astronomy domes, which has different telescopes to observe the stars and conduct research. First, our members of the astronomy research group made a presentation about the research to the University researchers. They said, "Interesting! I hope you will get good results!", which was a very positive response. As written in the summary of the astronomy group's research, however, the final result was not very good because of some reasons. So, if you go next year, please try to continue this research!

After the presentation, researchers showed us a lot of photos of planets and nebulae that they had taken. At that time, we were able to see real meteorites and hear explanations of nebulae, which was a very meaningful time. After the explanation was over, we were divided into two groups and observed the stars with telescopes in each astronomy dome.

The night sky was still a little too bright at that time. We were able to observe Saturn and Jupiter, and even the rings of Saturn were clearly visible! The telescope is quite accurate, so if you do various settings while observing, it will track the star you are observing. It also has a red light to make it easier to find the stars. Both telescopes have different structures; one has a mirror stand that can be rotated freely and the tube can be rotated sideways for 360-degree observations, while the other has a fixed mirror stand, and the tube does not rotate so much but still gives a beautiful view. Each telescope appears to be used for different purposes.

Our visit to Macquarie University has further broadened our interest and understanding of astronomy. I would like to continue researching and observing more celestial bodies and planets.

On the fourth day, we took a ferry to Taronga Zoo. It is the largest zoo in Australia and has a wide range of animals such as red pandas, meerkats, platypus, and so on.

We visited the backyard of the zoo and saw koalas and other rare animals in different climatic zones.

Although koalas are famous in Australia, their numbers have been declining due to forest fire and logging. In Australia, each state has its own laws governing how koalas are treated. In New South Wales, where Sydney is located, holding koalas was prohibited by law.

We also gave a presentation in backyard on our conservation activities for the endangered Nipponia Nippon (Japanese crested Ibis). Conservation efforts for the crested ibis are being promoted mainly in Niigata Prefecture, and the city of Sado produces "Sado Rice," which is linked to the conservation of the Nipponia Nippon. After our presentation, one staff member of the zoo gave us an interesting idea: "How about making sake from Sado rice?"

Overall, we experienced so many things in the study trip, where we studied with students of the same age from overseas, learned the differences between school life in Japan and Australia. W gained values that we could not have obtained in Japan. At the University of Sydney and Macquarie University, we were able to spend the best time acquiring and accumulating knowledge about coral reef conservation and environmental protection, as well as astronomy such as planets, by asking detailed questions. At Taronga Zoo, we learn about species protection to the fullest extent.

We were able to learn not only about academic studies, but also about various Australian cultures. We experienced many things that we would not have been able to do in Japan. We would like to continue studying more deeply about what we learned during this study abroad program.

いかがでしたか、屋代高校の SSH 海外研修は事前学習や事後発表も含め盛りだくさんです。オーストラリア実習帰国後の生徒に行ったアンケートにこんな質問がありました。「あなたが将来、時給 1,000 円、週 10 時間（月４万円）のバイトを 10 か月間続けて貯めたお金（40 万円）を投じる価値が、この研修にはありましたか？」。　回答は「余裕である…50%」、「ある…30%」、「普通…10%」「無い…10%」。

R7 年度も実施予定です。募集は新２年生、新１年生の順に、４月５月頃に行います。「余裕である」と答えられるような海外研修を作り上げていって下さい。たくさんの応募を待っています。

「屋代高校 SSH のホームページ」

SSH の 22 年の歩みがわかる HP です。
活動報告の中に SSH 通信のページがあり、この arkhe もカラーで掲載されています。右の QR コード、あるいは下の URL よりご覧ください。
https://yashiro.jpn.org/SSH