

Okayama Prefectural Tsuyama High School

SSH Project

Eighth Annual U.S.A. Science Camp  
(Online)



## 研修の概要

### 1. 目的

本校 SSH の研究開発課題である「未来を切り拓くトップサイエンティストの基盤となる‘Vision’, ‘Grit’, ‘Research Mind’の育成」に向け、海外に出向き、世界でのトップレベルの大学において研究者・学生との交流を行う。また世界トップレベルの研究機関・研修施設において本物に触れることで、自然科学研究に対する意識を高揚し、国際的な視野を広げるとともに科学的コミュニケーションの実践能力を育成する。これらを通して研究者になるための明確な目的意識を育てる。

### 2. 研修（オンラインで実施）

令和3年3月4日(木) 講師：マサチューセッツ工科大学 Ph.D. 吉永 宏佑 氏

令和3年4月14日(水) 講師：ユニバーシティカレッジロンドン 准教授 紅林 秀和 氏

### 3. 参加者

2年次生選抜生徒 14名（男子5名，女子9名） および 担当教員2名

生徒	2年次生	理数科	河野 春馬	高橋 恵吾	難波 幸大	大谷 夕弦
			坂手 萌子	杉山 可歩	仁木 心音	ランボー 海弥
		普通科	渡辺 梨緒	大力 春香	石原 悠人	堀 愛渚
			樋口 凱斗	松川 実菜未		

担当 岡堂 与司史（海外研修委員長・英語） 仲達 大輔（2年次理数科担任・物理）

### 4. 事前学習・GSO・事後学習

- ・事前学習：6月上旬から9月まで，毎月1回～2回実施。
- ・GSO：年13回，外国人指導者4名による英語スピーキング，プレゼンテーション指導を行う。
- ・事後学習：レポート作成，プレゼンテーション作成，および生徒への発表を行う。

## Experiences that Make Up Who I Am

Moeko Sakate

Firstly, through the GSO program, I could have a good opportunity to talk with our four ALT teachers and also other students in English. I realized that we students are studying English almost every day, but most of us, including me, are not USING English, like daily life English talking, which is the most significant part and the essence of English. In the first GSO lesson, I was really surprised how I couldn't speak English and how students around me were talented at speaking English. It was one of the reasons that I started going to English conversation school. Though all of the tasks in GSO were not easy, in every lesson, I could have a valuable experience. The most impressive one was talking about YOGA or the right way to do meditation for beginners because we had a professional yoga master in ALT teachers. Other ALT teachers also prepared interesting topics for lessons. We sometimes talked about the current issue at that time, mainly about the coronavirus or the Japanese government policy to it or the election of the United States. It was a good experience for me to get to know what other people, especially people from different cultures, think about the issues. I am definitely sure that I improved my English speaking thanks to the GSO program. I am really grateful to our funniest ALT teachers.

Secondly, we had two interesting lectures by Japanese scientists from world-class

universities. Both of them told us their experiences of studying and doing research at these universities and how they managed it. Our first lecture was in English and the doctor explained using simple English with clear pronunciation so that we all could understand. I asked him a question in my poor English and he kindly answered it. Our second lecture was in Japanese, and I could feel his passion for his study and could learn the importance of working hard for one thing. His lecture brought me something I had not appreciated so much then. It was to keep making an effort. At that time I appreciated saving energy more than making steady effort whatever I do. I had been almost losing my future purpose or the meaning of making an effort because of few opportunities to go somewhere like universities that motivate me, due to the coronavirus. (Maybe I shouldn't put the blame on something.) However, his lecture reminded me of the importance of achieving something and working hard for it and that means a lot for someone who is going to have a tough year of university exams.

Even though what I got through the program was priceless, sometimes I couldn't help thinking that, "what if I could go..." because I had been dreaming of taking part in the program since I was in junior high watching the presentations by students who participated in the program. That's how the program was attractive and precious. I sometimes felt even empty when I was preparing for the program wondering if there is any meaning for this. Now, however, I'm really proud of myself that I could partake in this program and I am feeling that every experience, every hard one, interesting one, and even embarrassing one, helped me grow and

create new parts of me little by little.

Last but not least, I am really appreciative of our teachers who made a lot of effort for this program. And also I hope that no more students experience such regrettable feelings and lose their priceless opportunity like this for their future.



オンライン研修 Ph. D. 吉永 宏佑氏 集合写真

## Conversation with "Real" Scientists

Keigo Takahashi

On March 4, we attended an online lecture by Mr. Yoshinaga, a graduate student at MIT.

In the lecture, I was impressed by the words "There is one success among many failures."

During the last year, I studied about viscous fluid with a theoretical approach. That's because I respect Albert Einstein, a theoretical physicist. However, I felt that experimental thinking was more suitable for me rather than genius thinking many times during my study. Moreover, I was worried if I could become a scientist. I attended the lecture with such feelings.

As we heard from his words, he accepts his failures. I noticed that he has experimental thinking. Then, I was relieved, but why? Before this lecture, my image of a scientist was a naturally talented person: he or she produces results as a matter of course. But it was just "a scientist in my mind". Actually, the real scientists are like Mr. Yoshinaga. Of course, he can study, thanks to his talent and luck. Also there are talented people just like my once image. But it is sure that experimental thinking which I also use is the basis of scientists. This fact became the hope for my future dream.

I also learned that Boston is a good environment for study, and the way of thinking that English is a communication tool. I came to be interested in studying abroad. I want to use this experience for studying and career research.

On April 12, I attended an online lecture by Dr. Kurebayashi, an associate professor of

University College London.

He has many unique ideas. For example, he said "I keep myself in a difficult environment, and when I look back, I feel a sense of achievement." I thought his ambition was extraordinary.

But a lot of his ideas made me reconsider my way of living.

His reply to my question also impressed me. He expressed his opinion while respecting my ideas. I respect his attitude to communicate.

Unfortunately, our visit to America was canceled because of the virus epidemic. It was sometimes difficult to stay motivated to join GSO. But I am proud of myself for participating in it throughout the year.

Lastly, I am grateful to teachers who prepared for this training, my parents who supported me, and my friends.



オンライン研修 Ph. D. 吉永 宏佑氏

## Break Out of My Shell and Move Forward

Haruka Dairiki

Before I started GSO, I was a very shy person and I disliked expressing my opinion in front of many people. Thanks to GSO, I can now do three things.

Firstly, I'm no longer afraid of making mistakes when expressing my opinion in English and I have gotten used to speaking in front of people. At GSO, we made 4 groups of 4 people and have a discussion in English with 1 teacher per team. In that discussion, I often had to express my opinion, listen to others' opinions, and think in conjunction with my opinion. At first, I was afraid that when I spoke in English, I would make a mistake and couldn't communicate well. However, I realized that English mistakes are commonplace for everyone. Also, when I couldn't speak English smoothly, GSO teachers and friends waited until I finished saying it. And after I finished speaking, they praised me "Well done," and I had confidence about speaking English.

Secondly, I could carry my one goal. I had a year-round goal in joining the GSO. That was to not look at the manuscript and speak at the time of presentation. This was because when I read the manuscript, I looked down and the voice of the presentation became quieter, and I cannot convey what I wanted to say. At first, every time I made a presentation, I tried to make a manuscript, remember it, and make a presentation. Then, although I made a note I could speak it as much as I could see it from time to time without remembering it. And when I made

a note in front of everyone at the last GSO, I made a note in case I forgot to say it, but I was able to make presentation without looking at the note. I was able to reach my goal for the first time in the last GSO.

Thirdly, I gained a deep knowledge of science and mathematics. GSO has four teachers who will study international, science, geography, and literary affairs. And sometimes, I had homework and had to prepare for my presentation. The topic was often scientific. Many of the students who participate in GSO are mostly science students, and as a liberal arts student, I was worried if I could keep up with what I was learning. My knowledge of science was poor, and there were only two liberal arts students among the members of the GSO. But actually, Science was also connected to various fields other than science fields. This experience was very valuable and inspiring to me because I had never thought about a topic of liberal arts in a scientific way. The most impressive thing was when I thought about Sei Shonagon. He had never thought about the relationship between science and Japanese literature. It was interesting for me to see that even if the content is the same, the perspective will change from the perspectives of science and humanities.

I think GSO made me a little different than before. I am able to break out of my shell and grow. I am able to reduce my resistance to speaking English with this GSO and gain a better understanding of my scientific knowledge. I was able to grow thanks to the GSO teachers and members. The experience at GSO was very valuable and memorable. I will use the confidence

and skills I have acquired here in the future.



G S O活動の様子

## Valuable Experience

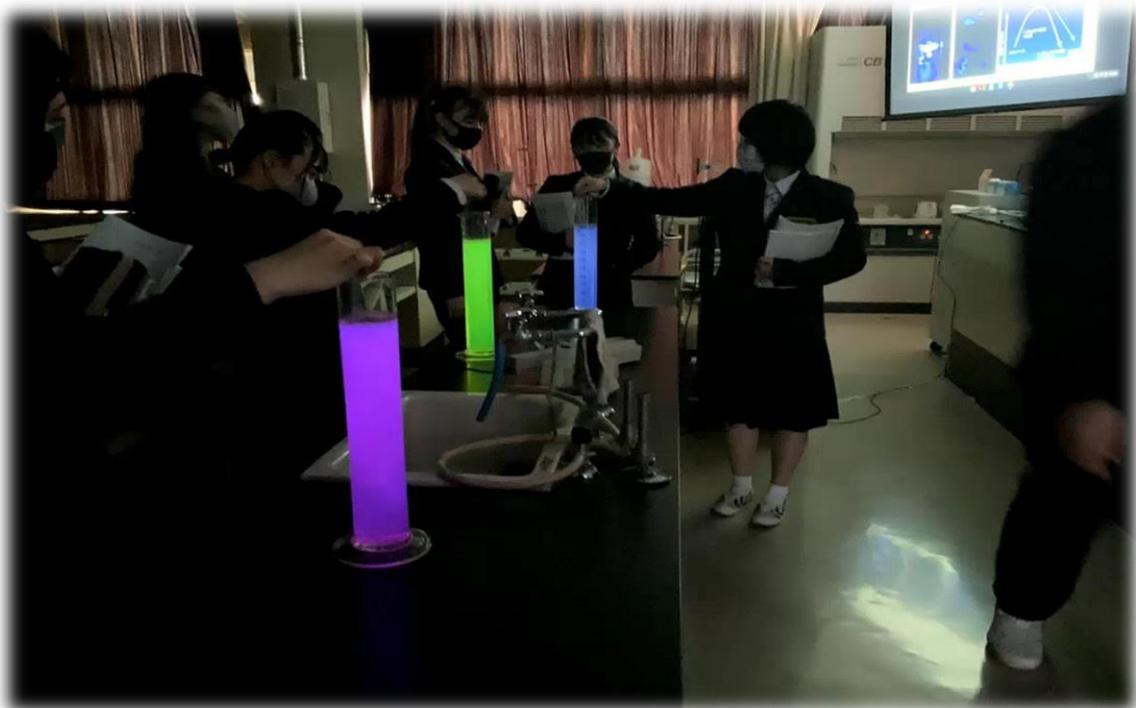
Minami Matsukawa

I think that I have acquired conversational skills in English through GSO and pre-training. At first, I didn't know what to say and I was silent, but gradually I became able to say something, and I became able to have a lot of long conversations. In addition, I was able to find the ability to make presentations in English by completing the tasks that are given each time. When I was able to speak more smoothly than before by replacing words I didn't understand with other words or by gesturing to make it easier to convey, I enjoyed the conversation more smoothly than before.

In online training, I thought that the experiences and stories of people who actually went on to graduate school overseas were interesting and valuable. When I heard that it was important to think about what I wanted to do at university, I decided to think about what I wanted to do and what I would aim for in the future in order to gain independence. In addition, Mr. Yoshinaga said that English is a tool and the most important thing is research. After all, I realized again that speaking English is a major premise for studying abroad, and that independence and skills for research are required, so I decided to study English firmly in high school. With Mr. Yoshinaga's words to cherish various opportunities, I decided to try more things. I hadn't thought seriously about studying abroad, but I was very interested in hearing

Mr. Yoshinaga's story. In other words, this online training gave me an opportunity to think about studying abroad. I found that studying abroad is a good opportunity to study and think about common problems and new problems with people from different backgrounds, and to understand what other people and people of different cultures are thinking. I thought it looked very fun.

Unfortunately, I couldn't go to the overseas training, but my experience in GSO, pre-training, and online training has greatly improved me. I also learned that talking with people from different cultures in the same language is so much fun. I would like to make use of what I learned in this SSH overseas training and I can work on various things more independently from now on.



オンライン研修事前研修

## The Importance of Communicating Your Own Opinion

Kokone Niki

This year, unfortunately, I could not go to America and experience some special project as usual because of COVID-19. But I was able to improve my communication skills with GSO and online training held as an alternative event.

When I talked to ALTs at the first GSO, I was nervous about speaking in English, which I don't usually speak, and I was just concerned about not making mistakes. However, as a matter of course, I realized through GSO trainings that it would be difficult to live in the present age of globalization unless I accurately convey my opinion.

Actually, when I heard Mr. Yoshinaga's story in the online training, he was able to firmly hold his own opinion and convey it. (Mr. Yoshinaga is a MIT student and told us about his story and research)

I felt that anyone who can have and convey their opinions can be a leader and will surely lead people in the future. Communicating your opinion can certainly be difficult. However, as it is, my opinion is not understood by anyone. Therefore, I will stick to my opinion and share it so that I will not be buried in many people from now on.

## Great Experience

Haruto Ishihara

Our program started just as the novel coronavirus was spreading rapidly. I knew that last year's visit to the U.S had been canceled and I feared that the same thing would happen this year. As I anticipated, we couldn't go to the U.S. However, thanks to the dedicated teachers, I was able to learn many important things despite actually being abroad.

One thing I learned during this program is the importance of having an opinion. During this program, we had so many chances to express our opinion. Whether it is about politics, science, our daily life, we had to express our opinion in a way that can be understood by teachers or other students. Of course, it is our English ability that makes it much easier. But it is also crucial that we think about a certain topic well and have opinion about it. Even if we can speak perfect English, we can't express our opinion unless we have an opinion.

Also, this program was a good opportunity to expand my horizon. Although we couldn't actually go to the U.S, we had a chance to listen to a Japanese student at MIT, online. He told us about his life in the U.S and his research at MIT. I didn't know that MIT is such a diverse place as his research team has people from all over the world. What surprised me the most was that he suddenly decided to go to MIT when he was in his second year and actually made that happen. He said that it is important to believe in what you want to do and not to be afraid to take a risk. It's sometimes hard to take a leap of faith, but I want to keep his words in mind and

be able to pursue what I like.

Finally, I want to thank all the teachers who provided us with these wonderful opportunities.

Although we were in a difficult situation, they taught us with great passion and dedication.

They set up the online lecture for us. Without them, I would not have been able to experience these things. Thank you.



G S O活動の様子

## American Dream

Kaito Higuchi

I had “dreams.” Properly Speaking, I still have one. In the GSO and prior learning, I learned a lot of things. I will write two of them and I have several things to appreciate. First, preparation is of great importance in any situation. Mr. Yoshinaga, a researcher at Massachusetts Institute of Technology, gave a lecture about himself and his specialty online and said “Chance favors only the prepared mind.” Although I missed many chances because of lack of preparation, I shall not make the same mistake. His lesson helped me make the decision that I will employ my time in studying and practicing something to seize an opportunity next time. For that, I first try something because, I assume, it would be better to regret doing it than to regret not doing it.

Second, expressing my opinion matters. I had decided such many things by myself as whether I continue GSO, attend the online lecture, and so on. Being Yes-man, I accepted many things, but I should have expressed my opinion a little more; for I sometimes had what I was reluctant to do. In GSO, however, I was able to express myself in many ways and all of the people there were willing to discuss something with me. I can learn the significance and way of critical thinking. Also, both Mr. Yoshinaga and Mr. Kurebayashi told us that doubting common sense really counts especially in academic fields. So I want to apply what I learned from GSO and researchers to my usual life by contemplating my choices and what I am going

to do and actively tell my opinion.

Third, I'd like to appreciate the great support of my teachers and four instructors in GSO, and the interaction with my friends. Although students last year had prepared for this trip, they faced the abrupt termination. In contrast, I had a precious time of talking with many people and taking the online lecture thanks to the effort by the teachers. As giving up on the trip surely kept me negative, I could enjoy the very chances.

By the way, I had hoped to take part in this trip and interact with university students since I saw a speech of this study trip by high school students in junior high. This was one of the dreams which I had here and there, now and then. Literally, the lasting dream didn't last. However, it is not with only myself that this is the case because, I guess, all people have faced the situation equally.

Furthermore, as we all know, a person moves not forward, goes backward. So I restart my preparation to go to the US in the future by improving my English level, doing a deep dive into what I try to do, and finding more clear-cut purposes.

In brief, I decided to pursue the American dream.

## Online Sessions

Miya Rambo

In the SSH program, we had online sessions twice. The first time, we had a session with Mr. Yoshinaga, a researcher at Massachusetts Institute of Technology, and the second time with Mr. Kurebayashi, a professor at University College London.

In the session, Mr. Yoshinaga mentioned “If you are curious about something, you should actively search for an answer.” It’s a really simple thing to do, but now that we have smartphones and we can search for anything anytime that we tend to think we can look it up some other time, then we forget about it. I realized that these kind of simple, but really efficient skills are needed to become a successful scientist like him. He also taught us the difference between deciding university and grad school. He said that we should pay attention to curriculum and courses for deciding university, and for grad school, we should pay attention to professors and research groups.

Mr. Kurebayashi told us to be more confident about ourselves and not to be afraid to take a risk. These words left the biggest impression on me. Being a high school student was pretty tough for me until I listened to Mr. Kurebayashi. I kept comparing my grades or appearance with my friends and sometimes I got really depressed. I realized that the point was not to compare with others but to compare with yourself. Maybe I can change my way of thinking

and broaden my possibilities when I truly believe in myself. I want to bear his words in mind and be confident in myself. Both sessions grew my interest in studying abroad. Also I was also reminded of the importance of having my opinion and being able to express it to others. I would like to finish my report by thanking all the teachers and my friends who made the SSH program so special and unique. I could not have experienced such memories without everyone's efforts.



G S O活動の様子

## Impressions of GSO

Kodai Namba

I have improved 3 things through GSO. The first is that I no longer have resistance to speaking English. When I first went to GSO, I was nervous about speaking English in public and couldn't speak it well. So I couldn't take care of grammar, reading and talking about the situation of the place. However, as I went several times, I got used to speaking English and the degree of tension when speaking English and Japanese have come together. I was able to afford to use grammar and air of the field a little. In the future, when I have to speak English, I think I will be less fearful because I have had this experience. I also think that I will make use of what I learned in GSO at that time.

The second is that there is less resistance to speaking in public. Before going to GSO, when speaking English in public, I would speak word by word. But after all, when I step on the number of places and getting used to it, the degree of tension did not change much no matter how many people were in front of me. This was used in the presentation of the subject research in science and mathematics. I would like to take advantage of GSO's experience when I have the opportunity to present in the future. Thank you very much for the GSO teachers who gave me guidance, school teachers, and everyone who joined GSO together.

## What I Learned this Year

Kaho Sugiyama

Last year, COVID-19 spread around the world, and not only around the world, but we were also greatly affected. At first, I wanted to go to America and learn things I didn't know there. Of course, even now that I have finished my activities, I still feel strongly about that, and I think I can gain a lot of experience to go there. Throughout this year, however, I found that even if I have not gone overseas for training, I can grow up through my activities with English. There were two opportunities for me to grow up.

First, GSO. GSO allowed me to communicate with four unique members in English. It was always exciting to share ideas and knowledge with GSO members and friends, and they had such different ways of speaking that I had many fresh experiences. For example, one gave a short quiz about the countries of the world, and the other discussed famous scientists. Through this activity, I could acquire smooth communication skills and creativity in English.

Second, an online lecture. I listened to a lecture by a teacher who attends MIT. Before listening to the lecture, as a preparation for the overseas training, we learned about American universities, life there, and our interesting scientific research, and I could greatly increase my motivation. In the lectures with the prior training, the fact that “understanding each other” left a big impression on me. I learned that mutual understanding and communication are important to close the gap in various aspects between foreign countries like America and Japan. I learned

about the university situation in America firsthand, so I would like to use them as a reference for my future education. Also, some parts of his research were difficult, but I could understand the general content of his research to ask various types of questions from me and my friends.

Finally, in his speech, there was the phrase, "Chance Only Favors the Prepared Mind". Throughout the year, I have come to realize that this idea is quite correct. I was able to not only take part in the training but also gain confidence in my English because I had been communicating in GSO for a year. And I think that I could not gain this confidence without the life with COVID-19. I would like to apply what I have learned to the future.



G S O活動の様子

## Chance Favors the Prepared Mind

Yuzuru Otani

Because of COVID19, I couldn't go to America, which I was really looking forward to visiting. I may go to America someday, but it's a shame that this special trip to NASA and MIT is gone. However, I was able to experience a lot even in such a situation.

First, I realized that I didn't have to speak perfect English through GSO. Until then, I was afraid to make a mistake in English and it took me a long time to speak in English. However, when I was talking to my teacher and friends, I realized that it was important to speak openly and try to communicate with them. And as I got used to expressing my opinions in English, speaking in English became more fun and more active.

Second, in the online training where I was able to talk with Japanese students at MIT, I was able to learn about studying abroad and life in the United States. I realized that studying abroad is an opportunity to grow and improve my English through meeting various people, and my interest in studying abroad grew. I was particularly impressed when he said, "Chance favors the prepared mind." With these words, I came to think that the pre-training and GSO, which I initially thought were only preparations for participating in overseas training, were preparations for connecting to even greater opportunities in the future. I've lost this chance to go to the United States, but I'll continue to work hard so that I can seize the chance to come around.

## Communicating in English

Aina Hori

〈Looking back on GSO〉

I participated in GSO for a year and realized the joy of expressing my thoughts in English. At GSO, we were able to have fun discussing interesting topics provided by the teachers every time. We have done so many activities over the past year, such as asking teachers questions, taking quizzes, listening to interesting math and science stories, and learning about English proverbs and greetings. At first, I got nervous and couldn't express my thoughts well in English, but as I took on more lessons, I became more confident, I became able to talk with the members of the group and the teacher, and gradually I could even afford to enjoy communication. I was able to grow in a year while helping each other even when I was in trouble. Talking in English with my school friends and foreigners is a rare experience, so it was a great stimulus for me.

〈Communicate your thoughts in English〉

Expressing one's thoughts and feelings and trying to agree with others is difficult even among Japanese people who have lived in similar values and cultures. It's a matter of course as long as we are human beings, and it is more common for people to disagree with each other, and it happens frequently. The important thing is not to force your values on others and control them to seek consensus, but to convey your own opinion and get the other person to understand. Then it is not difficult for people with the same language to express their opinions through

words. They can easily understand what the other person is saying. Because the language is different, you study and learn the language hard, and you will be able to have immeasurable pleasure when you can express your thoughts in that language. There is an important meaning in communicating whether the opinion is the same or different from others. I was able to feel that pleasure at GSO. I was full of pleasure when I found out that even poor English was transmitted to my teachers and friends.

〈Why we learn English?〉

I think that communicating with others in English is the culmination of the act of learning English. Why do we learn English? Isn't it to be able to know the thoughts of people all over the world, know their values, and send our own thoughts to people around the world using a universal language? I think that is the purpose of learning English. In other words, we learn English to communicate with people all over the world. As a result, various possibilities open up, such as getting to know another culture and leading to economic development. I've been studying English hard for the past year to express myself in English. I think GSO was a culmination of regular school lessons and home study. This made me think deeply about the meaning of learning English by participating in an SSH overseas training program.

I couldn't actually go abroad for training because of the COVID-19 this year, but I think I had the same valuable experience as going abroad in terms of expressing my opinion in English. While there were little face-to-face activities due to the influence of COVID-19, I was really

grateful for the opportunity to talk directly with foreigners. When this situation calms down, I would like to actually go abroad and experience something that can only be experienced there. I will never forget the joy and fun I felt in GSO. I would like to continue studying English by making use of what I learned in GSO.



G S O活動の様子

## Bloom Your Flowers in Any Location

Rio Watanabe

- Throughout this experience

First of all, I had a very valuable experience by participating in SSH overseas training. I would like to thank my family, teachers, and those who participated in GSO for giving me this valuable experience.

Through this training, I learned one important thing. It means that no matter what the situation, if you do the best you can, you will surely have the experience will be a great asset for you. I could not actually go to the United States due to the coronavirus, but I could learn in new ways through online training and other means.

- Online training

In the online training, I could listen to Mr. Kosuke Yoshinaga and hear stories from a Japanese perspective, such as the differences between overseas graduate schools and the University of Tokyo, which I could not hear in the United States. I was overwhelmed by the greatness of overseas graduate schools. The desire to study abroad in the future has become stronger than before.

- GSO

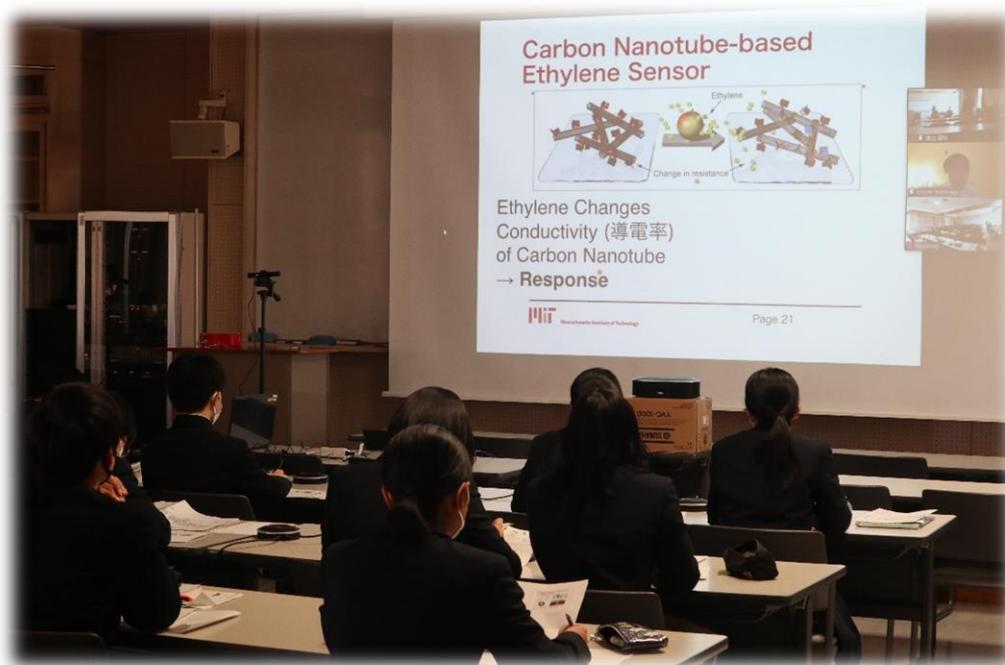
GSO teachers and students have a wide variety of circumstances, and it was very refreshing and exciting to exchange opinions and talk about their experiences. What impressed me

especially was the cultural differences between Japan and foreign countries. While talking about that, I no longer have the fear of speaking English and making mistakes, and now I can express my thoughts in English.

- Advance training

In the advance training, I learned about the places I was planning to visit in the United States. I was surprised at the size of the American scale, such as museums. I could find many places I would like to visit in my future life. I also had several opportunities to make presentations in English in public. Through this, I felt more confident in myself than before.

I am really glad that I took the courage to take on this overseas training. I want to make use of this experience in my future life.



オンライン研修 Ph. D. 吉永 宏佑氏

## Broadening My Horizon

Haruma Kono

This year, due to the outbreak of COVID-19, the trip overseas was cancelled. However, thanks to the teachers, it was decided to have a remote session. Since lecturers were Japanese, they talked about studying abroad. Originally, I had not thought about studying abroad at all. However, as the lecturers shared information and ideas they had gained through studying abroad, I gradually became interested in studying abroad.

The first lecture was by Mr. Yoshinaga. He talked about the appeal of graduate school in the U.S. He also told us stories from his high school and college days. What impressed me the most was the idea that, "if you go to a graduate school abroad, you can learn English and do cutting-edge research." I had never thought of this before, so I felt like my horizons had been broadened. I also thought his idea that, "luck comes to those who are prepared", was very nice. It is true that waiting for luck will only make time pass by, so I thought it was important to take action on my own.

The second lecture was by Mr. Kurebayashi. He is also a man who has many experiences. What impressed me the most in his lecture was that, "life changes dramatically through a series of coincidental choices." I was convinced that there are always choices in life, and the way you choose them can make your life completely different. He also said, "What I do is the best

thing in the world." He also told us that he wants us to have something to be proud of. I wanted to work hard every day to get something that I could be proud of as the best. He also said that he was able to overcome various difficulties because of his experience of enduring suffering, so I also wanted to face the difficulties and not just run away from them.

Through these lectures, I felt that my view of life has changed a lot. Both of the speakers said that we can't imagine our future. So I would like to cherish the present and live my life to the fullest.



G S O最終回 集合写真



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