

Okayama Prefectural Tsuyama High School

SSH Project

Fifth Annual U.S.A. Science Camp



Mar 3-10, 2018
San Francisco, Boston, Washington D.C.



3/3 San Francisco
California Academy of Sciencesにて、
施設屋上で環境問題に関するディスカッション



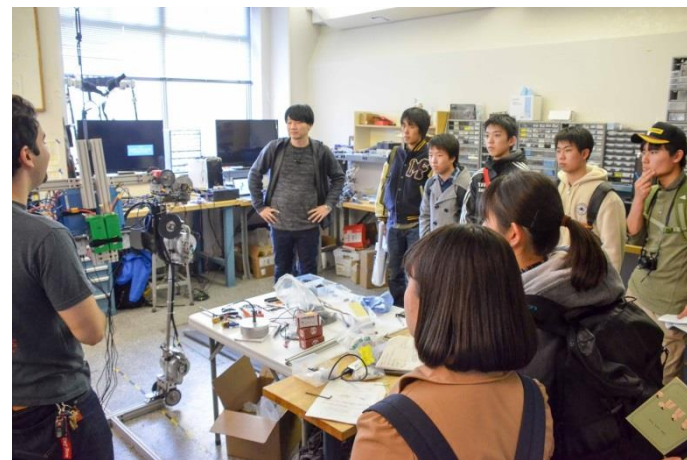
3/3 San Francisco
California Academy of Sciencesにて、
研究室見学と研究者による講義



3/5 Massachusetts Institute of Technology(MIT)
大学キャンパスでの、大学院生による講義



3/5 Massachusetts Institute of Technology(MIT)
大学キャンパスで、大学生にインタビュー



3/5 Massachusetts Institute of Technology(MIT)
ロボティクスに関する様々な研究と技術応用について講義



3/5 Massachusetts Institute of Technology(MIT)
ロボティクスに関する様々な研究と医療への応用について講義



3/6 Harvard University Medical School
研究者より研究内容についての講義



3/6 Harvard University Medical School
研究者より研究内容についての講義。その後ラボ,病院施設等を見学



3/6 Harvard University Medical School



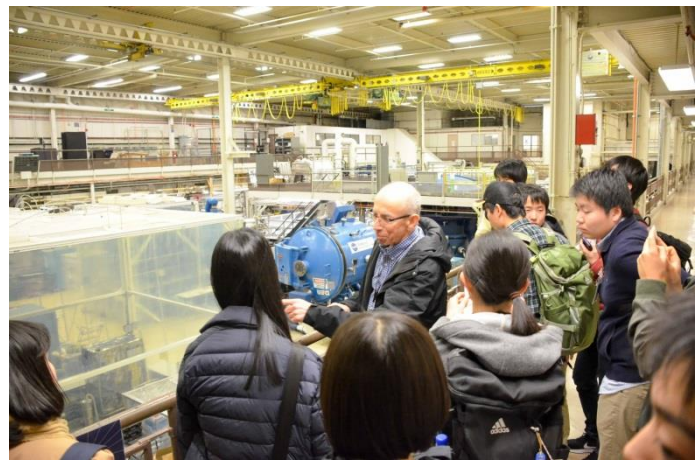
3/8 NASA の職員より宇宙開発等に関する講義



3/8 NASA の職員より天体に関する講義と
ディスカッション



3/8 NASA Goddard Space Flight Center
研究者より天体と観測技術に関する講義



3/8 NASA Goddard Space Flight Center
次期宇宙望遠鏡であるジェイムス・ウェブ宇宙望遠鏡について説明

3/8 NASA Goddard Space Flight Center
次期宇宙望遠鏡であるジェイムス・ウェブ宇宙望遠鏡製造工場見学



事前学習(GSO)
Martina先生



事前学習(GSO)
Ursula先生



報告会(GSO)



報告会(GSO)

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I 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. 研修先

アメリカ合衆国

サンフランシスコ …カリフォルニア アカデミー オブ サイエンス
ボストン …ハーバード大学, マサチューセッツ工科大学 (MIT)
ワシントン D.C. …スミソニアン国立自然史博物館・国立航空宇宙博物館,
NASA ゴダード宇宙飛行センター

3. 参加者

2年生選抜生徒 16名 (男子 8名, 女子 8名) および 引率教員 2名

生徒	2年生	理数科	垣内 真悟	角南 遼太	竹内 章人	中尾 天哉
			菱川 慶人	山口 卓	河井 沙奈	杉本 凜
			土井 南季			
		普通科	中塚 妃佳琉	原 ほのか	花谷 泰希	湯浅 勘司
			池上 佳奈	孫崎 恵美	山本 菜々子	

引率 白石 裕樹 (海外研修委員長・英語) 井上 出 (SSH 推進室・物理)

4. 事前学習・事後学習

- ・事前学習：第1回定期考査終了後より、毎週1回実施。
月1回は岡山県のGSO事業による外国人指導者4名による指導を行う。
- ・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。

5. 日程

平成30年3月3日(土)～3月10日(土) 6泊8日

月日 (曜)	地名	現地時刻	実施内容
3/3 (土)	学校 発	10:30	貸切バスにて関西国際空港へ (途中SAにて昼食)
	関西国際空港 着	14:30	UA034 空路にて出国 (機内食, 機中泊)
	関西国際空港 発	18:10	(日付変更線通過)

	サンフランシスコ 着	10:50 14:30 17:00 18:00 19:30 20:30	サンフランシスコ国際空港着 入国手続き後、専用車にて移動（途中昼食） California Academy of Sciences 研修 施設見学，研究員による講義と交流 California Academy of Sciences 発，専用車にて移動 市内にて夕食 ホテル ウィットコム着 研修のまとめ サンフランシスコ市内泊
3/4 (日)	サンフランシスコ 発 ボストン 着	6:00 8:35 17:05 19:00 21:00	ホテル発，専用車にて空港へ（空港にて朝食） UA768 空路にてボストンへ ボストンローガン空港着 専用車にてホテルへ ホテル バックミンスター着，市内にて夕食 ミーティング ボストン市内泊
3/5 (月)	ボストン	7:00 10:00 14:30 17:15 18:00 19:00	朝食後，ホテル発（地下鉄にて） MIT 訪問 ・ C.Furukawa 研究員(Mathematical Economics) 講義，研究室見学，交流，研修のまとめ ・ 学内にて昼食 MIT ロボティクス見学 機械工学部訪問，研究室見学および講義，交流 アンケート調査実施 夕食（市内にて） ホテル着 ミーティング ボストン市内泊
3/6 (火)	ボストン	9:00 9:30 12:00 13:00 17:00 18:00 19:00 20:00	朝食後，ホテル発（地下鉄にて） ハーバード大学ロングウッド校着 講義聴講 昼食（学内にて） ハーバード大学ロングウッド校 見学 提携病院訪問・研究室見学および講義，交流 ハーバード大学ロングウッド校発 ホテル着 夕食（市内にて，現地学生と交流） 研修のまとめ ボストン市内泊
3/7 (水)	ボストン 発 ワシントン D.C. 着	7:00 9:40 11:15	ホテル発 専用車で空港へ（空港にて朝食） UA525 空路ワシントン D.C.へ ワシントンダレス国際空港着 空港にて昼食後，専用車にてホテルへ

		13:00 13:30 17:30 18:00 18:30 20:00	ホテル ホリデイ イン ワシントン DC 着 スミソニアンへ (徒歩) スミソニアン国立自然史博物館・国立航空宇宙博物館研修 生物, 地学, 考古学, 宇宙開発, 航空工学, 天文学から テーマを設定し, 調査 同博物館発, 徒歩にてホテルへ ホテル着 夕食 (市内にて) 研修のまとめ ワシントン D.C.泊
3/8 (木)	ワシントン D.C.	9:00 10:00 12:00 13:00 16:00 17:00 20:00 21:00	朝食後, 専用車にてホテル発 NASA 研究者による講義 昼食 (市内にて) NASA Goddard Space Center にて研修 ・ Science of Sphere において講義 ・ 施設見学 NASA Goddard Space Center 発 専用車にて ワシントン D.C.着, 夕食 (市内にて) ホテル着 研修のまとめ ワシントン D.C.泊
3/9 (金)	ワシントン D.C. 発	7:00 8:30 12:30	ホテルにて朝食 ホテル発, 専用車にて空港へ UA803 空路にて, 成田国際空港へ (機内夕食,朝食) (日付変更線通過) 機中泊
3/10 (土)	成田国際空港 着 成田国際空港 発 伊丹空港 着 津山高校 着	16:40 18:15 19:40 22:30	入国審査, 荷物受取, 税関審査 国内線チェックインカウンターにて搭乗手続き 全日空 2179 便 空路にて伊丹空港へ 貸切バスにて学校へ 解散式

II 研修報告（引率者より）

SSH 海外研修委員長 白石 裕樹（英語）

1. 出発まで

① 募集と選抜

1 年次 3 月に説明会を実施，希望者は 2 年次 4 月にエントリーシートによる申し込みを受け付けた。生徒の関心は高く，約 70 名の生徒が説明会に参加し，最終的に 22 名の生徒がエントリーした。

選考は，エントリーシートと面接によって行った。面接は，英語科・理科の複数の教員によって実施し，日本語と英語で行い，科学研究に対する意欲とコミュニケーション能力を重視し評価した。これにより理数科 9 名，普通科 7 名，計 16 名の生徒が選ばれた。

② 事前学習

5 月末から 16 名全員による事前学習をスタートした。事前学習は毎週 1 回 90 分を基本とし，引率予定者である英語教員と理科教員に加え，科学部で英語発表指導をいただいている Martina 先生にも指導をいただいた。内容は，研修先であるスミソニアン博物館やゴダード宇宙センターに関する事前調査とプレゼンテーション学習，英語コミュニケーション，グループワーク，MIT キャンパスにおけるアンケート調査資料作成，しおり作成などを行った。

③ GSO (Global Science Okayama)

岡山県科学英語事業「GSO」を活用し，毎月 1~2 回，4~5 名の外国人指導者に来校いただいて英語コミュニケーションの指導を行った。16 名を 4 班に分け，各班に 1 名の GSO の先生についていただき，20 分ごとにローテーションすることで，全員が毎回 4 人の講師による 4 テーマのコミュニケーション演習を行う方法で実施した。

2. 研修

3/3(土)出発，3/10(土)帰国の 6 泊 8 日の日程である。本校ではこの週が高校入試で生徒は家庭学習日となるため研修参加者の授業のロスが最小限で済む点，夏は他の SSH 行事が集中しており実施が困難な点，などを考慮し，3 月実施となった。

① 3/3(土)

【フライト】

例年より早い昼前に貸切バスで本校を出発。夕方，関西国際空港より出国。スムーズに出国手続きを終えることができた。

サンフランシスコ国際空港に着いたが，予想に反して非常にスムーズに入国審査のゲートへたどり着いた。審査官の厳しい態度に不安を感じつつも，すべての生徒が無事に自力で通過することができた。

【サンフランシスコ】

アカデミー・オブ・サイエンスでは，バックヤードツアーをお願いした。最初に，カリフォルニアの在来種の植物が植えられている屋上庭園を案内していただいた。この屋上庭園は，植物を展示する目的の他に館内の空調費を節約できたり，鯨などの大型動物の骨を土中に埋めることで骨格標本が自然に近い形で作製できたりなど，随所に施された工夫に生徒は感心しきりであった。続いて，米国有数の保有量を誇る標本室を見せていただいたり，剥製を作製する部屋に入らせていただいたりした。標本や剥製の採集から作製に至る過程や，使用する薬品等についての講義であったが，最初こそ難解な専門用語と英会話の速さにたじろいだものの，慣れてくると生徒から次々と質問が飛び出し，非常に質の高い学びとなった。生徒達は自分たちが質問をすることで，より深い内容を伺い知ることができるだけでなく，自分たちの関心の高さを相手に伝えることができる，ということに改めて感じた様子であった。

② 3/4(日)

【サンフランシスコからボストンへ】

ボストンへ移動するため、サンフランシスコ国際空港へ。米国で初めての搭乗手続きとなったが、生徒たちは見よう見まねで素早くチェックインを終えた。ただ、セキュリティチェックではジャケットと靴を脱ぐよう指示され、日本とは違う警備の厳しさを身をもって学んだ瞬間であった。

ボストンには予定通り到着したが、5時間以上のフライト及び3時間の時差に疲れを隠せなかった。雪はなかったが、サンフランシスコより一気に気温が下がり、同じ国でありながら気候の違いに戸惑うなど、改めてアメリカという国の大きさを実感した様子であった。夜は次の日の研修に向けて入念にミーティングを行った。

③ 3/5(月)

【マサチューセッツ工科大学研修】(以下 MIT)

午前中は、大学院生である古川知志雄氏の講義を受けた。高校から香港に留学、そのまま大学は米国留学の道を進んだ方で、数理経済学を専攻されている。その経済学を非常に難解な数学で分析していらっしやることから、文系の生徒はもちろん、理系分野の生徒においても引きつけられる内容の講義となった。数理経済学という学問の面白さだけでなく、古川氏の生き様に胸を打たれた生徒も多く、予定した時間を超過しても質問が止まることはなかった。

昼食後は、班単位でMITの学生を対象にしたアンケート調査を行った。その一番の目的は、アンケートを使って自分から学生に話しかけ会話をすることにある。断られたり、うまく説明することができなかつたりしたこともあったが、ほぼ全ての生徒が積極性を持ち諦めずに何度も話しかけることができた。

午後は、ロボット工学の研究室を訪問した。日本人教授の浅田春比古氏(Harry.Asada)の率いるd'Arbeloff Labを見学した(なお、津山高専と津山ロータリークラブから紹介をいただいたものである)。案内をしてくださった学生のJacob Guggenheim氏は、体の不自由な人が自分で動けるように筋力を強化するロボットや大地震などの震災後に人間が入っていけない場所で活躍するロボットの研究をしていた。自分の研究についてとても楽しそうに説明して下さる姿に、学ぶことの意味を考えることができた。また、動物の筋肉を動力として動くロボット等、私たちがイメージしている「ロボット」という概念を根底からひっくり返す研究に触れるにつれ、生徒は物事を多面的に見ることの重要性を再確認したようである。

④ 3/6(火)

【ハーバード大学研修】

午前中はハーバード大学ロングウッド校(メディカルスクール)で講義を受けた。歯学部の永野健一先生を始め、医学部の村上尚加先生、下澤克宣先生など、世界最先端の研究施設、医療現場で研究に携わる方より説明を受けることができ、世界でトップレベルの学生たちがどんなモチベーションで学んでいるかがわかった。講師の先生方に共通していたのは目的意識の高さである。「留学は目的でなくあくまで手段」という忘れがちな大原則を生徒は再確認し、自らのキャリアをおぼろげながら描くことのできた生徒も多くいた。ここでも質問は止まることなく、その後の昼食時間や学内の移動時間も利用して議論を交わしていた。

午後は、同校にて引き続き先生方の案内によってハーバード大学の提携病院を訪問し、交流・研究紹介・実験デモ・講義等を受けた。研究室の中には企業から製品開発のために研究室に派遣された研究者の方もおり、一口に研究と言っても様々な形で携わることができるのだということに生徒は感銘を受けていた。総じて生徒は積極的に質問ができるようになってきており、大きな成長が見られた。

⑤ 3/7(水)

【ボストンからワシントン D.C. へ】

アメリカの首都ワシントン D.C. へ移動。搭乗手続き、セキュリティチェックも慣れたものだった。折しも強烈な寒波が東海岸の主要都市上空を通過しており、多くの便でキャンセルが出ていたが、奇跡的にワシントン D.C.行きは予定通り離陸することができた。

【スミソニアン国立自然史博物館研修・国立航空宇宙博物館】

午後はスミソニアン国立自然史博物館研修及び国立航空宇宙博物館で研修を行った。多くの生徒が楽しみにしていたようで、事前学習で興味関心を強く引いた展示物目指して一目散に駆け出した生徒もいた。日程の都合上、半日で両方を見て回るにはかなり厳しい時間設定ではあったが、ライトフライヤー号や月面探査船、骨格標本や貴重な鉱物等、生徒は各々の興味のある分野を見学できた様子である。英語で書かれた説明書きをむさぼるように読む生徒の姿が非常に印象的であり、学びの本質を感じることができた。

⑥ 3/8(木)

【NASA ゴダード宇宙飛行センター】

午前中は、NASA ゴダード宇宙飛行センター周辺の会議室にて NASA の研究員の方から最新の火星探査機の話や太陽の活動周期の話などの講義を受けた。限られた時間の中ではあったが、質疑応答も非常に活発で密度の濃い研修となった。

午後には、次期宇宙望遠鏡である James Webb Space Telescope (以下 JWST) の製造工場を技術者の方の案内で見学させていただいた。まずは宇宙についての基礎知識の講義を受けた。専門用語を交えた英語での説明ではあったが、これまでの研修を通しての慣れもあり、生徒はほぼ内容を聞き取れた様子であった。その後、実際に宇宙望遠鏡を作っている施設も見学させていただいた。生徒がメモを取りながら熱心に話を聴き、次々と質問が飛び出した。それにひとつひとつ丁寧に答えてくださった。研究者の方々と交流ができる最後の研修であったが、今までの経験から学び成長した生徒の姿を見てとても誇りに感じた。

⑦ 3/9(金)~3/10(土)

【帰国】

昨年はほぼ予定通りに日本へ帰ることができたが、それ以前は毎回機材トラブルなどで予定が延期されていたため、非常に不安感があった。ウェザーニュースを見ると、非常に大きなサンダーstormがワシントン D.C.周辺に停滞しており、無事に飛ぶことを祈りながらワシントンダレス国際空港に向かった。出国の手続きを済ませゲートに向かうと、なんとか飛行機は定刻に飛んだ。日付変更線を越えて成田空港で乗り継ぎ、さらに伊丹空港から2時間半バスに揺られ、津山へ無事到着できた。さすがに疲れが出たのかほとんどの生徒は静かに思い思いの時間を過ごしていたが、その顔にはこの研修をやりきった充実感と達成感が浮かんでいた。

3. 研修を終えて

過去4度の研修のよい部分を引き継ぎながら新しいことにも挑戦し、更に全日程を通して好天に恵まれ、大きなトラブルや体調不良者も出なかったという、SSH第2期目の幕開けとしてこの上ない形で終わることができた。関係機関の方々や研修先、また先生方や保護者のみなさまのご協力なくしてはこの成功はかなわなかったであろう。何よりもまず心より感謝を申し上げたい。

世界最先端の研究施設、研究者、学生に直に触れることで、生徒たちの視野は大きく広がった。また、数々の人との出会いが、彼らにとって学ぶことの意味や自らの将来について考える機会となった。旅中、生徒たちが一様に口にしていたのは、今回出会えた方々の目的意識の高さである。「留学をしにアメリカに来た」人は一人もおらず、「〇〇を学ぶためにここに来た」「□□をやりたいからここまで来た」とさらりと口にされる姿に、大きく感銘を受けていた。そこに「学ぶ」ということの本質を感じ取ったのであろう。

研修を終えた今、彼らに考え続けてもらいたいのは、彼らの人生に対するこの研修の持つ本当の意味である。今回の研修を通じて、生徒たちは幾度も己の限界を感じるようになった。選抜試験を経て晴れてメンバーになったのも束の間、大半の生徒は事前研修で大きく躓くこととなった。思うように英語でのコミュニケーションが取れず、思いが英語にならない。どうしても待ちの姿勢が抜けず、自分をうまく表現できない。人知れず涙する生徒の姿を幾度も目にした。また、研修中も多くの生徒が壁にぶち当たった。あれだけ準備していったにもかかわらず、英語を通してうまく意思疎通ができない、自分から英語で話しかけることができない、自己表現ができないなど、本当に多くの「できない」が彼らを待ち受けていた。しかし、その限界こそが彼らを成長させたのである。「英語で何を言われているのか全然理解できなくて、自分の至らなさを痛感させられた。おかげでモチベーションが上がった。」「最初から周りの人たちはほとんど質問をしているのに自分はできなくて悔しかった。次からは負けずに頑張れた。」「アンケートを何度も断られて落ち込んだが、それが逆に奮起する材料になった。」これは海外研修参加者が記した感想の一部である。彼らは身をもって気づいたのだ。限界とは結局、自分が引いた線に過ぎないと。そしてそれを乗り越えるのは、あと少しの勇気であると。

これからも彼らは数え切れぬほど何度も己の限界を感じるだろう。己のふがいなさに涙するとき。絶望に打ちひしがれたとき。そんな時に思い出してほしい。この研修の持つ本当の意味を。そしていつか今度は講師の側に立ち、それを自分の言葉で次の世代に伝えてほしい。彼らのように目をキラキラさせた子どもたちに。

最後に、研修外の印象的な様子を2点紹介する。



生徒が街中で道を尋ねる様子。最初は教員が口火を切っていたが、2日目にはすでに生徒から話しかけ、必要な情報を得ることができていた。生徒の感想にあった、「何気ない『道を聞く』『現地の大学生に話しかける』などが一歩踏み出す勇気になった。これらがあったからこそ、MITやハーバードで失敗を恐れずたくさん質問できた。」はとても印象的な言葉だった。



毎夜のミーティングの様子。班ごとにその日の出来事、感想を英語で話す時間を設定した。初日はぎこちなくぽつぽつと話していたが、2日目以降、時間を知らせずに放っておくと、生徒たちは20分でも30分でも話を続けていた。それこそがこの研修が彼らにとって充実したものであったという明確な証左であらう。

Ⅲ 生徒レポート

Reflect on my experience

Kana Ikegami

We visited so many academic institutes and museums. At MIT and HMS, I had many opportunities to see devices used for research and listen to lectures from researchers. Of course, it was really fun for me to visit these places. However, what I saw in the cities was more exciting to me because these gave me chances to think deeply about many things I saw. I want to write about my experience.

<What I thought in America>

First, I was very surprised to see restrooms because they were too dirty. I wondered if there was no one to clean the restrooms. In Japan, restrooms are clean. So I had always taken it for granted that restrooms were clean. However, I realized that someone works hard to keep restrooms clean, so they are clean in Japan. I also thought that Japanese people had a strong sense of cleanliness.

Second, all drivers in America stop at the crosswalk where there are no traffic lights. When I saw this for the first time I was very surprised because I had thought that Americans ignored traffic rules and I knew that most Japanese drivers don't stop at the crosswalk without traffic lights. What makes this difference? I thought that the morals of American are higher than those of Japanese in this situation. I thought that Japanese people should learn this behavior from American.

Third, I felt the income gap among people in America because I saw homeless people even though in Washington D.C., the capital of America. There were people who were dressed in neat clothes of course. On the other hand, homeless people were dressed in sloppy clothes and tried to keep themselves warm by the warm wind from exhaust port. They relied on only one blanket and food supply to survive in the cold weather. I was shocked because I didn't expect to see this poor living condition in Washington D.C.

There are other things I found and want everyone to know. On this trip, I had many chances to compare Japan with America. I found good points and bad points of each country.

<Change>

I was able to develop confidence in myself through this study trip because I was able to communicate and discuss with local people in English. I asked many questions to people in many places and I realized that to express my feelings clearly was important to make myself understood. When I came back to Japan, I was impressed by Japanese politeness and hospitality and I thought Japan is a good country. On the other hand, I found weak point of Japan. Japanese people can't say their opinions immediately. I realized some of our common sense doesn't apply in foreign countries. Furthermore, I felt more nervous talking with Japanese people than talking with foreign people in English. This experience was really surprising for me. It was not until going to America that I felt these feelings.

I want to thank Mr. Shiraishi and Mr. Inoue for preparing and supporting us, my parents for permitting me to join this trip, 15 friends for improving my motivation and the people who supported us.

I really had a great experience on this study trip. I wish I could tell everyone about all my wonderful experiences but it is difficult for me. So in my life, I want to be a person who always thinks deeply about something, takes action and has consideration for others. Thank you.

TO LIVE IS TO THINK.

生きることは、考えること



Believe Only What You Saw

Shingo Kakiuchi

A human can do nothing only by himself. It's essential for him to be given help from others. For me, they were my family, teachers, classmates, the members of kendo club and Japanese government. Without their help, I couldn't have had the superb trip in the US.

The US is quite different from Japan for some aspects such as culture, race, area of territory. What surprised me the most was the food. Before going to the US, I expected that American foods are much bigger than Japan's. However, my expectation was easily broken. Those foods we ate there were not so big. In other words, foods in the US were as big as those of Japan. The only meal I was shocked was bacon covered with too much oil. So I suspected the cook put the bacon into the oil, but I don't know the truth.

While staying in the US, I was able to find many wonderful points of the country. I'll tell you one of those. It was cities, themselves. Many people say that the US doesn't have long history and often despise it. However, when we talk about the history of buildings in cities, it has a number of old ones. In particular, those in Boston, one of the oldest cities of the US, were splendid. If you are to visit Boston, you can see the sight for miles which hasn't changed for hundreds years. Perhaps, even in Kyoto, we can't see such a beautiful view.

In Boston, we also went to MIT and Harvard Medical School. I think what we saw there had actually affected our vision in the future. Some students might thought it was not so difficult to study abroad and seemed interesting. Others might thought universities in Japan were good enough to study or carry out research.

From this experience, I have decided that I want to study abroad after I graduate from university in Japan. This thought will help me study eagerly. Hence, I want more people to go abroad and visit laboratories in order to see what is done in countries other than Japan. It will enable them to broaden their horizons.

Due to today's globalization and informatization, we can catch whatever information all over the world. But what you watch on the Internet is not always as moving as what you see directly.

**LIVE AS IF YOU WERE TO DIE TOMORROW.
LEARN AS IF YOU WERE TO LIVE FOREVER.**

明日死ぬと生きて生きよ 永遠に生きると思って学べ



What I learned and thought in America

Sana Kawai

Choose a harder and more difficult road, not a simple and easy one. This is my belief. I strongly believe that the obstacles and difficulties improve us, so I have kept challenging myself with new things. I sometimes hated myself for being so useless when I faced the difficulty. However in America, I noticed that I didn't have to do so. I think that people in America have strong hearts to tackle their problems. They have a broad mind the same as most of Japanese.

At MIT, we listened to a lecture given by Mr. Furukawa. He told us that he didn't work for the needs of society which had been changing all the time, but for his vision, which couldn't be changed by anyone and would last as long as he worked on his research. His words impressed me. I was eager to have a vision like him. I considered what my vision was. I want to be an emergency physician, but I thought this wouldn't be an answer because the vision would be lost if it is accomplished. I noticed I needed more consideration.

In Boston, I saw some people giving food to homeless people. I guessed they were a kind of NPO or local volunteer group. Then, I wondered whether homeless people could receive medical care. I researched at the hotel and found that some American NPOs were tackling the problem. Also I found that there were much more NPOs and NGO than I had expected. Once I researched AMDA in MS class, but I learn there are more people who struggle to change the world than I think.

At Harvard medical school, we took three lectures given by Japanese researchers and doctors. They taught us why they came to work there. A female doctor who was Japanese said she was studying about the kidney because she wondered why there were few effective treatments for kidney diseases. I learned that their original questions made their vision for them. Given my young age, I didn't have enough knowledge to have original questions, so first step to acquire my vision was to get any information, I thought. She also said "Accept you may get rejected." I was given much courage from her.

Every night in America, I prepared for the next day's activities before going to bed. However, I faced a lot of difficulties. I sometimes couldn't understand their English especially Chinese English. When I went to a Pizza restaurant with American university students, I lost the important chance to talk with them because a sudden opportunity made my shy personality emerge, which I tried to hide in Japan. I couldn't talk with them freely. I was disappointed at myself, but now I notice this is what I am now. I don't need to be disappointed at myself. It is important for me to keep on trying to improve myself and remind myself of what kind of person I am, that is, just accepting what I am now. Having a wide perspective and broad mind, having self-confidence are essential too. Those are what I learned and thought in America.

**LAUGHTER IS TIMELESS.
IMAGINATION HAS NO AGE.
AND DREAMS ARE FOREVER.**

笑い声は時代を超え、想像力は年を取らない
そして、夢は永遠のものだ



Things I gained through the project

Rin Sugimoto

Through the project, I gained precious experience such as getting the chance to study with GSO teachers and seeing the frontier of science. I would like to express my deepest gratitude to people who supported me in the project. In this report, I will tell you things that I got in this project.

First, I learned the pleasure of expressing myself. One of my motives to apply for this project is to change myself. Before the project, it was hard for me to convey my opinions because I cared too much about what other people were thinking and was afraid of making mistakes. In the initial stage of the session with GSO teachers, I shed tears of regret when I couldn't make myself understood in English well. However, by expressing myself many times in the sessions, and recognizing the importance of outputting in America, I came to find it interesting to express myself.

Second, I learned true pleasure of studying. Through seeing the frontier of science directly, I learned a lot of information which aren't written in the text books. That was an exciting experience for me. Also, I came to enjoy using English. It used to be hard for me to tell what I wanted to say to foreigners. Therefore, at the instant I could do it, my heart was filled with joy. These experiences raised my motivation to study more.

Third, through comparing Japan with America in this trip, I started to understand Japan as it really is. For example, when I went to America, I found two big differences between Japan and America. One is public transportation and the other is eco consciousness. As for public transportation in America, I rediscovered the good points of the Japanese transportation system. For example, when I paid attention to comfortableness of Japanese transportation, I thought it is better than American one. However I thought there was still room to improve it. For example, Japanese has less eco consciousness than Americans. There are some ideas in America—such as electric buses, trash cans which are separated into three sections (burnable, leftover, and recycle) and shopping bags which can return to the soil—to protect the environment.

Fourth, I think it is necessary to tell Japanese culture more to foreign people. When I went to America, I felt that Japanese pop culture and food culture spread broadly into America. However the Japanese culture they know is one-sided. There is also some wrong information about Japan. Unexpectedly, some Americans don't know Japanese traditional culture at all.

Fifth, this project is helpful for me to think about my future. I was interested in research jobs. But I could not draw a concrete image of research. In America, the researcher told us about their research, it became possible to grasp the specific contents of research activities (how long it will take what kind of research to conduct research, what research is the challenge) It was.

Finally, through the project I have learned how important friends are. People I met in this project are my friends and also my good competition. They motivated me to work harder in this project. I want to thank them all and I will get along with them from now on.

ACCEPT YOU MAY GET REJECTED.

へこたれない



Study Trip in the U.S.

Ryota Sunami

We, Tsuyama High School students, took the study trip in the U.S. What I was the most interested in is the lecture at Massachusetts Institute of Technology (MIT). It goes without saying that the lecture at MIT was very interesting, but other lectures were also very meaningful for me. I learned a lot of things from everything I experienced in the U.S.

1. Harvard Medical School

We took a lecture about studying abroad. Before I heard this lecture, I was NOT interested in it because I had never found the difference between universities in Japan and universities abroad. However, lecturers told us the benefits of studying abroad. Comparing universities in Japan and ones in U.S., in the point of the information, motivation and internationality, universities in U.S. are superior to ones in Japan. Now I want to study abroad.

2. Massachusetts Institute of Technology

We took a lecture and visited a robotic lab. In the lecture, I learned that it is important for scientists to think from various angles in daily life. Skill is important of course but it is much more important to have vision, such attitude. At the lab, researchers try to develop the system of robots. Their research is strongly related to our lives. They make the robots which help humans in unbelievable ways. They have creative angles and find what will make world better. I realized that whatever little thing we notice in daily life, if we consider it thoroughly, we can get the hint which makes the world better. In addition, I first thought there were few Asians in the U.S. lab but, in fact, the robotic lab had many Asians.

3. Others

Before going there, I didn't have confidence with my English skill. After arriving at the airport in America, I got to be confident because I could make myself understood well enough in English, but soon my confidence was broken suddenly. At the Academy of Science, I was not able to understand what the guide said, although I trained my listening skill in Japan. Actually, I was not able to understand the words and phrases. As time passed, I got used to English. Then I got to be able to guess the meanings of the words and tried to use them. It's not perfectly but slightly that I could understand English. I found the best way to improve English skill is to use English. Also in this point, studying abroad is meaningful, I think.

**IT'S BETTER TO LIGHT A CANDLE
THAN TO CURSE THE DARKNESS.**

暗闇を呪うより一本の蠟燭に火を灯せ



Precious experiences

Akihito Takeuchi

About first impression of America

When we arrived at San Francisco, my heart was filled with curiosity, seeing English traffic signs, English announcements and even English nutrition information of food packages. Everything is English, not Japanese.

About my future

We went to Harvard and MIT, where we talked with researchers. I wanted to compare universities in Japan with universities in America in terms of study, so I asked A Japanese scientist about it. He told me about universities in both countries: “We can learn basic study both in Japan and America but we can’t study something deeply in Japan because few universities in Japan share their information with those overseas. However, in Universities in America, we can study deeply and share a lot of information because American researchers at universities are open to other scientists” the researcher said. Thanks to this advice, I decided to study basics in Japan first, and then go to America, where I can study what I really want to more deeply.

About my precious experience

Third day, we were looking for a good restaurant for dinner but we were not able to decide which one was the best. So we asked a beautiful woman walking down the street. However, she didn’t know the area very well, so she went out of her way to call her friend who lived around there. Her friend told us where the best restaurant was and we went there. I had an unforgettable experience there. I came up with one idea after eating dinner. That is showing my magic to the restaurant’s clerks. I said to a clerk, “Can I show you card magic?” He answered “OK” with a smile and he brought another clerk. When I started performing magic, both clerks looked at my fingers and cards carefully, all of my friends were looking at my magic, too. I got so nervous that I could hear my heart beating. When I finished my magic, the clerks looked so surprised and very happy. It made me happy, too.

About my prejudice

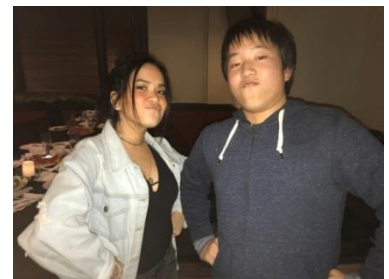
Before this study trip, there were lots of stereotypes and prejudice in my mind. For example, I liked American people just because they can speak English, or I didn’t like Japanese just because I thought they were too shy. These stereotypes and prejudice stick in my mind and sometimes led me to the wrong decisions.

But now, I wonder how many people I spoke to there. I think only about 30 people or so and there are much more people living in America. American people I met there were very kind, however it doesn’t simply mean that all of Americans are kind. So my idea that American people are kind may be just my prejudice. Also, my idea that Japanese people are shy may be my prejudice, too. How many Japanese people have I spoken to in Japan? Not so many. My way of looking at the world greatly changed through this trip as I had a lot of good experiences there.

From now on, I will meet more and more people. I want to talk with them and make them happy by performing magic regardless of their nationalities so that I can understand who they really are.

STAY HUNGRY. STAY FOOLISH.

ハングリーであれ 愚かであれ



What I thought in the U.S.

Namiki Doi

We went to the United States of America to learn about American technologies. I'm going to describe what I thought of in the U.S. I had many wonderful experiences through this trip, but I'm sorry that I can only introduce a fraction of them.

While I got the opportunity to broaden my outlook by this program, I would often had an inferiority complex.

On the first day at California Academy of Sciences, I hit the difficulty of hearing English, and I could not ask any questions. I also keenly realized my lack of ability of speaking English when other students asked many good questions actively. At that night, I regretted my passive attitude, and decided to participate in this trip actively.

In the evening of the fourth day, we had a chance to communicate with local students. I asked them my questions about America, and enjoyed taking with them about our interests and their school lives in the U.S. Thanks to this opportunity, I could have confidence in my English.

By the way, I was greatly shocked by assertiveness of American people. At California Academy of Sciences, I saw a penguin show. Many primary school kids received explanation about penguin from the penguin keeper. I was very surprised to see that many children asked questions as nice as high school students. Some children kept their hands up until their turn. That sight was not seen in Japan. I found a difference of assertiveness between Japanese and American.

At a lecture in Harvard University, I heard that passive output is often seen in Japan. For example, people speak after they are called on. However, in the U.S, people speak actively. It is called active output. In Japan, people think that reading between the lines is a good attitude to communicate with others. However, in the U.S, it is important to show our own volitions. If our opinions clash with those of others, we should argue about that. This leads to a nice agreement. I learned that I should speak actively to convey what I want to say especially in the presentation of research.

At last, many lecturers told us that they were envious of us, who had an opportunity to go to America in high school. Then, I realized what a precious opportunity we received.

In this science trip, I acquired other viewpoints and attitudes that I could not appreciate in Japan, and I also realized that there are many options to achieve my dream. I'll take advantage of many things I learned in the U.S. to improve my life, and convey what I learned to many people.

**FEAR ALWAYS SPRINGS
FROM IGNORANCE.**

恐れは常に無知から生じる



What I experienced in USA

Takaya Nakao

This trip was very short but we had wonderful experience, which changed my mind greatly. It would not have happened if I haven't been there.

We learned about the most advanced science. We visited Harvard Medical School, Massachusetts Institute of Technology and NASA Goddard Space Center. And I saw what I had never seen. So they were very sensational for me. Among those, I was especially impressed by NASA Goddard Space Center. We had lectures about the latest astrophysics such as Planetary Exploration and sunspot. Their lectures were of course interesting. But I was surprised at seeing the lecturers talking happily. I realized what studying was like. It seemed that everybody who we met was pursuing what they wanted to know, and that they were proud of what they were doing. I had already known that it was so difficult to persist in one thing and to be proud of what we were doing because I had experienced project study as a science course student. I admired them and I want to find what I really want to do like them.

I wanted to study English more and more. There were many opportunities in which we could talk with people living in America. Before this trip, I was very nervous about the level of my English ability. Actually it was no problem when I talked with American people. When I couldn't understand what they said, they were kind enough to say it again and again until I could understand them. So I gained confidence to maintain the minimum standard of living in America. But I also realized what I was required for my future. We have an opportunity to talk with university students living in America. It was the toughest experience for me in this trip. I couldn't enjoy talking with them because of my poor vocabulary and a lack of topics to talk about with them. Through this experience, I found that asking questions is one thing, conversation is another. And I also found what was waiting for me in the next stage of learning English. I decided to improve my English skill in order to have a fluent conversation with foreigners.

I used to assume a man who can study abroad is special and he has extraordinary courage, vitality and immovable propose. Those who we met certainly had all of these but after talking with them, I feel studying abroad come closer to me. Moreover, this trip enabled me to find the fun of pursuing what I want to know and a chance to break down prejudice toward America. I can't make a decision to study abroad right now. However, I'm sure that I will stand on America with my own goal in the near future.

DECISION AND EXECUTION.

結論が出たらすぐに実行するのが、私の流儀だ
決断と実行



What I felt in America

Hikaru Nakatsuka

This was the first time when I went to America. I thought that there were a lot of scary people in America, but it was not true. There were many kind and friendly people and many cultures which were different from those of Japan. For example, the subway doesn't come to the station on time. When I took an elevator in a hotel, a hotel worker and a woman said hello to me with smile inside it and they also said to me, "Have a nice day!" I was surprised at this because a lot of Japanese people don't speak to others inside an elevator if they don't have any business to discuss. I think that Japanese tend to be shy around new people. Most American university students learn about things which they are interested in, but I think that Japanese university students have a tendency to study for getting a job. Then American people can voice their opinions and carry out their will, so they can be good at a discussion. However, Japanese people cannot do it. They tend to agree with others' opinion even if they have another opinion. I felt many different things from Japan. These different cultures are interesting for me!

The most enjoyable thing through an overseas study program was going to the Smithsonian Museum. This museum became the stage of the movie "Night at the Museum", so I had wanted to visit there. My dream came true!

The museum has many kinds of museums in it such as Smithsonian National Museum of Natural History and National Air and Space Museum. There were a lot of valuable exhibits there. I was especially impressed by the Mitsubishi A6M5 ZERO. It is called "Zerosen" in Japan. I was surprised that if we supply fuel for it, it can fly even now. And all of exhibits are real. It is wonderful!

My interest in English grew stronger during this trip. I could experience overseas countries. This is a valuable thing. I will use this interest to make an effort to make my dream come true!

YOU ALWAYS PASS FAILURE ON THE WAY TO SUCCESS!

成功へ向かっているときには、
必ず失敗を乗り越えるものだ



Breakthrough

Taiki HANAYA

I set a target in taking part of this SSH program before going to the United States. It was “breaking the mold of my narrow perspectives.” I was shy and could not express my opinion well. I wanted to change myself. That is why I joined this program. I had a lot of amazing experiences through this tour.

First, I was able to improve my communication skills. Of course there were some opportunities that we talked with foreigners because our teacher prepared for them. However, my friends, especially science course students surpassed my expectations. Some even handed out origami and showed magic. I would say that it was like the war of questions. They tried to communicate with university students and museum staffs harder and harder in a little bit time such as breaks between lectures and moving to another places. Some of my friends were curious to know about the topics teachers were talking about, and highly motivated to communicate in English. I was really stimulated by them and felt that I didn’t want to be defeated. I also realized it is important to make good use of these golden opportunities and I got not only communication skills but also confidence in talking with American people in English.

Second, I learned American culture. There were many differences of customs between America and Japan. American food is one of the examples. I ate so big and oily hamburgers and pizzas at restaurants in America. I felt sick to my stomach, but it was also a good experience. What I was the most surprised at is that there were so many street people who had no houses to live in. In front of any station and convenience store, there was at least one street person. I got surprised because one of them was half-naked and washed his hair in the restroom in a restaurant. In this way, I recognized some good points of Japan.

Third, I raised motivation. I learned American cutting edge technology and looked at historical displays at some institutions such as Harvard University and MIT. I listened to some lectures given by scientists and research fellows when I visited laboratories and universities. They have something in common. It is that they all are very active. I think I should try to make my dreams come true for my future just like them. I also got interested in studying in the United States because I have learned some advantages in studying abroad like huge information networks and various kinds of ways of thinking.

I had a great time in this program. I can definitely say that I had a wonderful time there. The most important thing is “output” – You should share your experiences with your friends, and make use of it for your future. My dream is becoming a math teacher who can speak English well. I know you think that English is not related to math. But we are required to have English skills. For example, there is a teacher who can teach math in English. For achieving that dream, I will try to show that I have totally changed my life.

**IN THE MIDDLE OF DIFFICULTY
LIES OPPORTUNITY.**

困難の中にチャンスがある



My overseas training to America

Honoka Hara

I'm going to write about two things. The first one is the experience of communication with so many people. The second one is my discovery from hearing about studies.

I had a lot of opportunities to talk with foreign people. At first, it was difficult for me to talk to someone. In contrast other members overcame their nervous feelings and started to ask many questions. I was very shocked because I couldn't ask any questions on the first day. That night, I decided to ask at least one thing at each place. From that day I was able to ask many questions. Everyone who I asked something answered my question until I understood what they said. In addition, some of them answered my question repeatedly changing the expressions in order for me to understand them. I felt the difference between Japan and America.

When I asked how to buy tickets to ride on subway, I met a man who gave me the special experience. How to buy train tickets is different from city to city, so all of us were confused. Some of us asked people we thought were used to this ticket-vending machine, but we couldn't understand what they said. Also I tried to buy tickets by myself but I couldn't do it, so I asked the man who was behind me. He was very kind enough to teach me not only how to buy but also which line we should ride on even though I didn't ask. After I heard all about the subway, I told him "Sorry." Surprisingly he told me "Oh, you don't have to say so." I heard that Japanese people are tend to say "Sorry" too much but I only thought that this was a rumor and foreign people also said it as often as Japanese. But I noticed when I came back to Japan, I didn't hear the word "Sorry" while overseas training. I found saying "Thanks" instead of "Sorry" made people happy. It is important to tell our thanksgiving to people around me.

While on this program I was able to listen to many kinds of lectures. All of the researchers who study abroad and make something new said that "I have failed at this point before, so this time I improved it. But this time I have problems about these parts." They seemed that they weren't afraid of failure. I realized incalculable mistakes allow them to make such great things. Also they never gave up their research. I think this also made it possible for them to keep their motivation up.

Through this trip I learned a lot of things from many people and I could know the differences between Japan and America. I will say "Thanks" instead of "Sorry" to tell my gratitude and encourage many Japanese to use "Thanks" more and more. In addition, I won't give up when I face something difficult because after we overcome difficulty, we can make something wonderful. I want to tell to my friends these stories and how important communication is. This overseas training gave me a lot of things.

BOYS BE AMBITIOUS.

少年よ大志を抱け



What I learned through this trip

Keito Hishikawa

“Going abroad must broaden your horizons”—That was obvious even before we went to America, which has a lot of differences in culture, different ways of thinking, and values from Japan. The most important thing is what I could find in this trip. I saw too many things to write down this report and discover new perspective. I'll write about this.

First, we went to MIT. What I found there was the difference of the student's mind between America and Japan. Some Japanese students go to university just because they have to; however, students at MIT are eager to study to improve themselves or to make use of them in their experiment. In addition, they're so active. They learn from mistakes, try a lot, exchange opinions, and study for further developments.

Second, we visited Harvard Medical School. We met five Japanese researchers and listened to their presentations. I was influenced by their interesting stories and deep research mind. Frankly speaking, they have great energy to research in America even if they're Japanese. Also, the relationships between researchers and professors are so different, compared with Japan. Japanese professors are like God beyond our reach. Therefore, it's not easy to ask questions frequently. As for America ones, they're so friendly that we couldn't recognize them as professors. So, it's easy to ask questions and make strong relationships.

In the quality of research and equipment for researching, ones in Japan are as good or convenient as ones in America, which means we're able to study cutting-edge technology in Japan, too. We should be proud of Japan having such a wonderful system.

Third, during the seven days, I asked some questions not only to MIT and Harvard students, but also to citizens in each city where we stayed. One thing I realized is that they have firm opinions for questions. They were willing to express their own ideas and to share them. We should follow America's example because some Japanese can express their opinions clearly, but others have unclear opinions and can't express them properly to others. The national traits are greatly different between Japan and America, I suppose.

Finally, as a classical music fan, let me write about it a little. In America, there're lots of orchestras which are also famous in the world. I asked local people what they thought of local orchestras, and they said that they felt their local orchestra was close to them, which is totally opposite to Japan. Accepting the diverse culture allowed them to enjoy classical music.

During this trip, I experienced so many valuable things and some of my stereotypes had changed completely by going abroad. We ought to go abroad to know, see, feel, and grow.

**GOING ABROAD MUST BROADEN
AND DEEPEN YOUR HORIZONS.**

海外へ行けば、未来が開く



Words Changing My Way of Thinking in the U.S.

Megumi Magosaki

I disliked talking about my dream in the future because of the fear that I might be criticized by others. This concern also led to lacking confidence in achieving my dream. However, on this study trip to the U.S, I met people who changed my negative thoughts like this. Let me introduce their words which gave me some hints for thinking about my future.

I would like to start with Mr. Furukawa, a graduate student in economics school at MIT. He told us what a researcher is like and how to set our goals. In the latter topic, he said that our own awareness of the goals is the most important. Although there are some people who got great results just by following public demands, most achievers worked in what they were really interested in. In other words, we can perform at our full ability by following our awareness and we don't have to mind the discordance of our interests and public needs too much. Others' opinions become a great matter only if we crave titles or honor, but I don't need such things in my life. His lesson helped me make the decision that I will do what I want to. At the same time, I realized I didn't need to be ashamed to discuss my dream or be afraid to be criticized.

At the Harvard Medical School, I met two impressive women. One of them was Ms. Murakami, who is a Kidney physician. She had an American physician's license and worked at the Brigham & Women's Hospital. In her lecture, "10 things I wish I'd known in high school", she taught us that it wasn't important to decide just one course. If our passes become one eventually, we can do anything any times. It should also be allowed to study things which seem to have nothing to do with our dream. To hear her lesson, I realized that I don't need to feel impatient and anxious for my future. With the principal axis of my dream, I want to learn and experience as many things as possible.

The other woman taught me how to achieve our dream. She was Ms. Kashiwa who studied there as a postdoctoral researcher. "More than anything, accumulating small actions is only way to achieve our dream," she said. "Imagine you want to eat pork cutlets for dinner. If you don't take any actions, you can't eat it. On the other hand, if you took a little action such as telling your mother what you want to eat or buying pork yourself, the possibility that you can eat it will increase." Each step is not so difficult to take but they will allow you to reach your goal when you do as many as you can. I found searching for short effective way is not always good.

For me, this trip became a turning point in my life which changed my way to think of my future. I began thinking about my dream more positively and with the confidence that I have the potential to take part in state-of-the-art projects and become leaders of society. And now I've become be able to talk my dream confidently.

**THERE IS NOTHING LIKE A DREAM
TO CREATE THE FUTURE.**

夢，これ以外に将来を作り出すものはない



In MIT

Suguru Yamaguchi

On the third day in the U.S., we went to MIT and first received a lecture by Dr. Furukawa and second went to the robotics lab.

Dr. Furukawa's lecture

He has pursued 'mathematical sociology' in MIT for several years. He has rich experiences in foreign countries because when he was a junior high school student, he started to study abroad. This made me astonished. His story was completely out of the expectation from my way of living so far. He added "my home circumstances let me go without any resistances." Even though we take his home background into consideration, he was grand and brave.

As I state above, he introduced himself to us at the start of his lecture and his next topic was about studying. He said there are three important points in studying, first is vision, second is needs of society and third is technology. They are important in that order.

It is true that 'needs' and 'technology' is also essential, but were it not for 'vision,' 'needs' and 'technology' would never be born and follow with you.

"How impressive the word 'vision' is," I felt. I couldn't help thinking, though what he wanted to tell us were the points in studying or experiments, that the word 'vision' was the theory of life. I think you can interpret the word as 'will' and 'view,' in other words. You need the wide observation or the capacity in order to broaden your sight as well as a will to accomplish success. He also said that he couldn't compete with others in speed of work, so that he had to look around and study an unexplored area, which surely broadened his capacity and sight.

The robotics lab in MIT

In the tour of the lab, a Japanese student who belongs to the lab introduced its several interesting projects. Here are the examples: mechanical supporting feet looking like a centaur, analyzing mechanicals exported abroad and small models of human organs in order to see the effect of medicine on human body. One of its most interesting projects is "attaching extra hands," attempting to control the inorganic hands added to the body, which requires many years of practice. It looks a little bit funny, but it will be greatly helpful.

Above all, I felt that the robotics lab or MIT as a whole were covered with a relaxing and rough atmosphere. So, MIT's robotics lab was proceeding with not only interesting but exciting and enormously helpful projects.

Finally

There are so many old-fashioned buildings in the U.S than I thought. Its history is not longer than ours, but its landscape made me feel its traditions. Why? Here is my reason; America is always as it is. It has been going its own way since it was born, so old and new-fashioned culture and people are there.

SOMETHING OLD WAS SOMETHING NEW.

古いやつも新しかったんだ



My Great Experience in America

Nanako Yamamoto

The word “challenge” in English means a new or a difficult task that tests our ability and skill. In Japanese, the word “challenge” means trying something. In my experience in America, I felt both meanings of “challenge”

Before I decided to apply for this experience in America, I thought I couldn't communicate with scientists in English. I didn't have confidence with my English or myself. However, I thought I should change myself. This was why I wanted to go to America.

In America, I was able to ask scientists a lot of questions. I had a passion; I wanted to ask them more questions than any other student, so I asked them many questions. Although my questions were not complex and not scientific, I learned a lot of things from this experience. The most important thing is to take a step forward with courage. It's also important to try everything, not being afraid of making mistakes. Simply, I'm glad I could make myself understood by foreigners in English. I took a big step forward.

In addition, I made friends with a lot of foreign people. At first, I couldn't talk with them well because I had no confidence with my English, but I eventually enjoyed talking with them in English, because I kept trying to do it. In this experience, I realized that it is important for us to try to know each other as much as possible although we can't understand each other perfectly.

By the way, I'll explain both meanings of “challenge” I felt through this study trip. This experience was full of new and difficult tasks that tested my ability and skill, but these were what I wanted to have. That is, I wanted to change myself. To do that, a new or difficult task was needed. Thanks to trying such a “challenge”, I grew up. In my opinion, “challenge” means trying a new and difficult task, and I should continue to “challenge.”

Before joining this overseas tour, my dream was to work abroad as a nurse, but my dream has become bigger through this trip in America. Now, my dream is to be a person who can give someone a lot of dreams. The people who I met in this study tour including GSO teachers gave me a lot of dreams. In the future, I want to give many people dreams like the people who I met.

Finally, I want to say thank you to my parents and teachers. Because of this experience, I had a great opportunity to change myself. The most important thing in our life is to continue to try everything including new and difficult tasks, and not being afraid of making mistakes. I want to finish my report with famous words that I like.

After this experience, I want to live with this phrase of Ralph Waldo Emerson's:

OUR GREATEST GLORY IS NOT IN NEVER FAILING, BUT IN RISING UP EVERY TIME WE FAIL.

偉大な栄光とは失敗しないことではない
失敗するたびに立ち上がることにある



What I realized in America

Kanji Yuasa

In March, 2018, I visited the United States of America. This was my first trip to go abroad, so everything I saw was fresh and looked interesting. We, Tsuyama High School Students, went to a lot of places such as universities, museums, and laboratories and learned countless things. All of us also asked questions whenever and wherever we wanted to. What we learned there are indispensable and the latest of the world, but the most impressive experience for me is not those but common things of America. I was shocked and surprised at the differences between Japan and America many times. I felt what is called culture shock especially about the national characteristic of American people.

In MIT, Massachusetts Institute of Technology, our group did an interview with the students of MIT. At first, I was shy about asking some questions to students because that was the first time to talk with native English speakers by myself in America. So, I was not able to ask them easily and when I asked some questions to a student shyly, sad to say, she didn't treat me with kindness and quickly walked away. Since then, I tried to speak to them with confidence, smile, and a clear voice. Then the students I asked stopped and answered happily. I was very glad that they answered me, and felt confidence in conversation.

Also, I asked them about their majors and motives to lead them to study in MIT. Almost all the students were very interest in their studies and strongly answered about their incentive and talked about their dream. In our school, I think few students can talk about their dreams like MIT students did. I felt the difference between Japanese students and American ones. I heard that American people can talk about who they are and what they can do. That was real.

Also, when I went to a hamburger shop and had trouble in ordering, a man spoke to me friendly and helped a lot. Then while waiting for our order, I told him who I was and what I was doing in America. He asked me about Japan and I answered his questions. At last, he said good bye and praised my English. The best thing sticks in my mind is this conversation with him. I was moved by his kindness and friendly personality very much. I've never seen such a fine person even in Japan. At this point, Japanese people lose to American people.

Studying is very important, but I found more invaluable things through this trip. I'll do like those who I met and was moved by for our world.

**ROLLING STONE
GATHERS NO MOSS.**

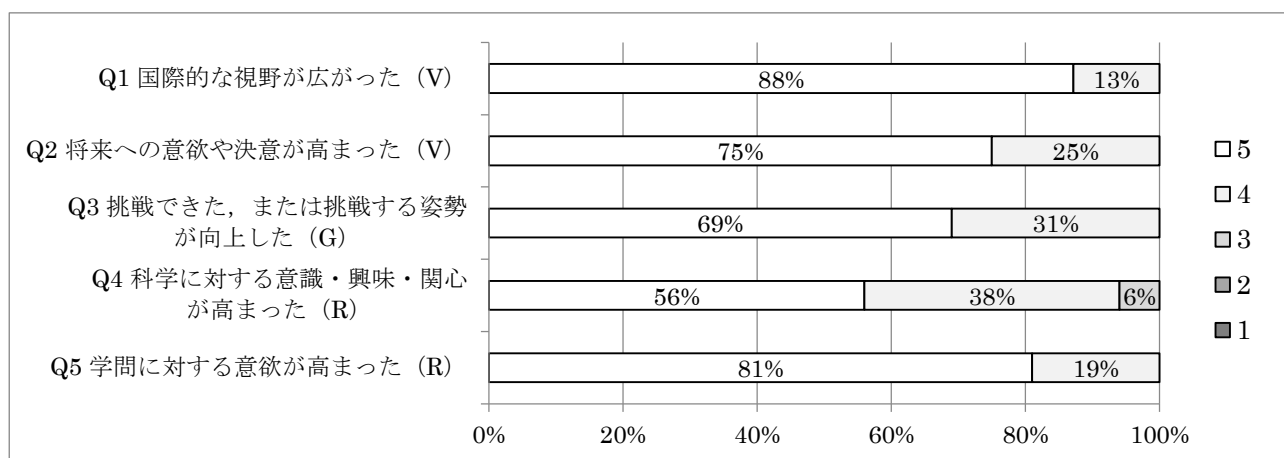
転がる岩は苔生さない



IV 成果と検証（生徒アンケートより）

研修終了時に行った参加者を対象とするアンケートを実施し、分析を行った。

1. VGRの効果について（5=とてもあてはまる 4=あてはまる 3=ふつう 2=あまりあてはまらない 1=あてはまらない）



① V (Vision)

例年と同様に、全員が「5」あるいは「4」の高評価である。海外研修を通じて Vision を明確にできるという効果は、非常に大きいと思われる。

- ・自分の将来を日本ではなく、海外でできることを含めて見つめ直すことができると分かった。
- ・留学や海外での活躍は自分とは縁遠いことだと思っていたが、自分の意思次第で可能なことであると信じられる自信がついた。
- ・英語で話すことは楽しい。英語があれば世界中の人とつながれる。英語とともに生きていきたい。
- ・英語で話すことに抵抗はなくなったが、将来英語で仕事をするために、もっと英語力を高めていきたいと思った。

② G (Grit)

全員が「5」あるいは「4」の高評価である。ほとんどの生徒が今回が初めての海外生活であったが、限りある時間の中で徐々に主体的に行動できるようになっていた。そして、意識の高い集団の中で互いに刺激し合う経験もとても有効であったと思われる。

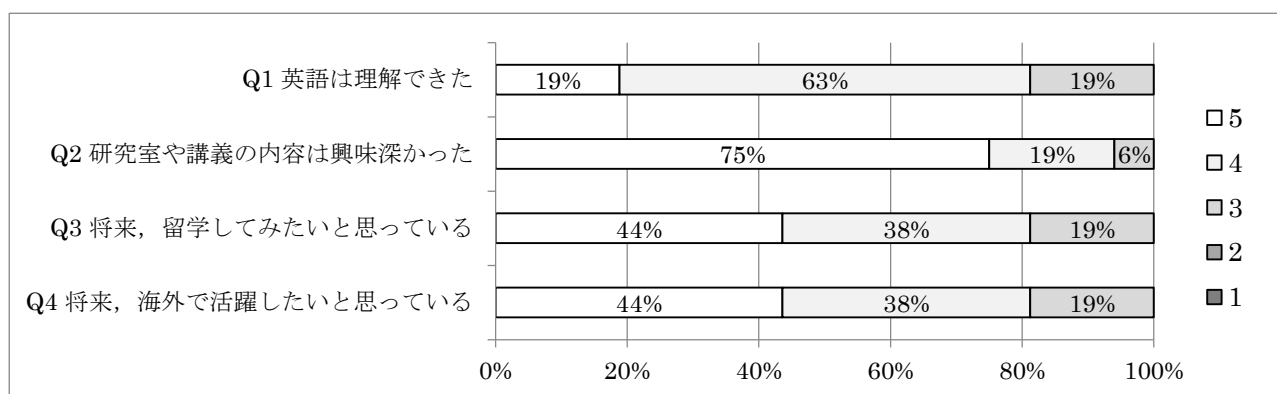
- ・以前より積極性が増したと自分でも感じる。周りのメンバーに触発され質問を積極的にしたり、街中の人にも自分から声をかけたりできた。
- ・自ら情報や知識を他人から吸収するように、積極的に行動することができるようになった。
- ・アメリカにいる人はみなアクティブで、とても刺激になった。
- ・行動をすることとしないことの非等価性を感じた。
- ・失敗を恐れず、チャレンジする勇氣と自信を持てるようになった。自分ではできないと思っていたことに挑戦すると、予想以上にできた。
- ・事前学習では、慣れない英語を使って話す際、声のトーンや表情で相手に伝えようと努力することが大切と学び、積極的に自分の考えを発信できるようになった。

③ R (Research Mind)

今回参加した生徒は、人文コースの生徒も含まれているため Q4 の評価が低いですが、Q5 については Q1 に次ぐ高評価となっている。海外に来たからこそ得られる新鮮な情報が、知的好奇心を高めることに大きく効果があったと思われる。

- ・日本の中の考えでしか物事を見てこなかったが、外国の考え方を知ったことで、自分自身に足りないものを知ることができた。
- ・日常の中で当たり前と決めつけていたものが案外あやふやに説明づけられており、自分の頭で考えなければいけないと思った。
- ・研修中、目に映る新しい物事について自分なりに考えることがとても楽しかった。考えることが楽しいことに気が付いた。
- ・様々な学問に触れ、その1つ1つがとても興味深く、学校の勉強だけで満足してはいけなないと強く思った。

2. 研修全般について (5=とてもあてはまる 4=あてはまる 3=ふつう 2=あまりあてはまらない 1=あてはまらない)

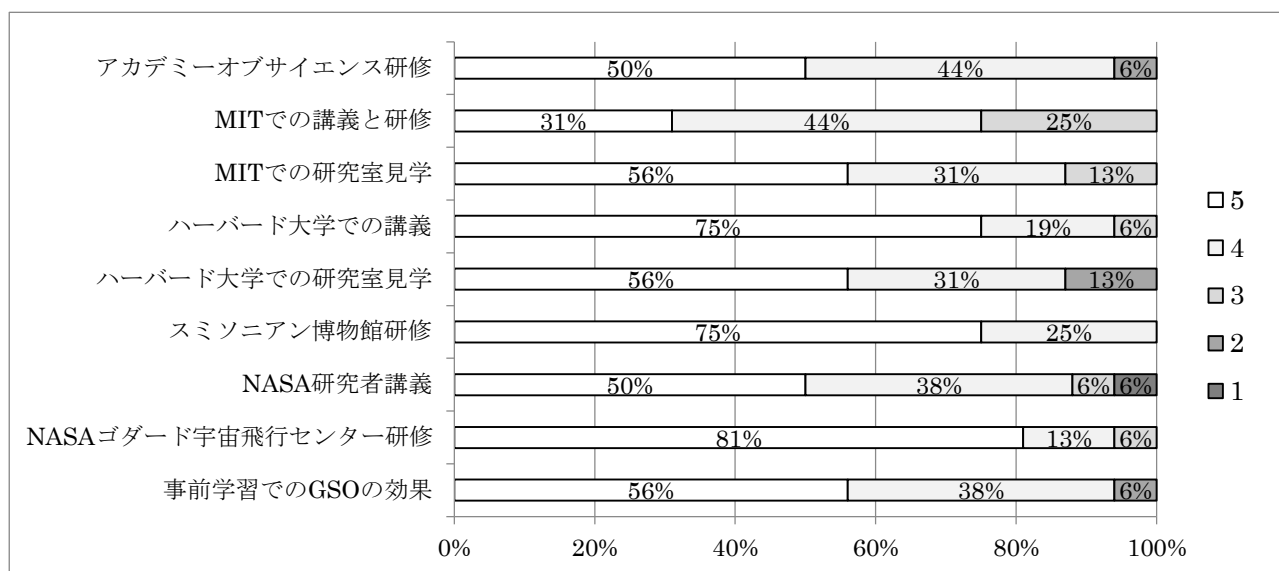


研修に参加した生徒たちは、授業での英語は得意な生徒たちである。しかし、外国人と接する機会の少ない本校の生徒にとっては、事前学習での GSO の方々による英語指導、課題研究発表での英語プレゼンテーション指導などは、非常に効果的であり、英語への学習意欲がより向上している。研修先での研究者の方々からの研究紹介でも、通訳を介さずに内容をしっかり把握し、馴染みのない「科学専門英語」があれば、即座に意味を質問することで理解を深めることができた。会話の速さに多少の困難を感じたこともあったようだが、物怖じすることなく堂々とした姿勢で対応できており、今後の大きな自信へとつながっていくものと思われる。また、研究者の方々の人柄やバイタリティーに触れることで、自分の将来進む道への一歩を踏み出す後押しとしても、貴重な経験だった。

- ・完全に理解することはできなかったが、現地の人とコミュニケーションをとれるレベルには理解できた。もっと英語力を磨き、ハイレベルなことを理解したいと感じた。
- ・なまったり、速くなると聞き逃すことが増え、それが悔しかった。
- ・スピードが授業のリスニングに比べ桁違いに速く、これがネイティブのスピードか、と感じた。
- ・自身の研究欲・探究心が掻き立てられた。
- ・自分に知識がないのもあり、講義がとても新鮮でわくわくし、勉強に対しての考え方が変わった。

- ・研究の役割や見通しを立てることの重要性、アメリカ留学の利点、将来の目的などを聞くことができるなど、学ぶことの多い講義だった。
- ・最先端の研究内容に加え、進路を考える上でのヒントも得られる話を、海外で活躍する方から聞くことができ、視野が広がった。
- ・日本よりも、海外で研究したいと思った。

3. 各研修内容について (5=とてもよい 4=よい 3=ふつう 2=あまりよくない 1=よくない)



① アカデミーオブサイエンス研修

生徒たちにとって、海外研修で最初に訪れた研修施設である。はじめは緊張している様子であったが、徐々に英語で質問ができるようになった。博物館内や緑化された屋上での講義、標本室まで見学できて、非常に有意義な研修となった。

- ・英語で何を言われているのか全然理解できなくて、自分の至らなさを痛感させられた。おかげでモチベーションが上がった。
- ・幅広く自然についての展示が多くあり、飽きることなくいられる。バックヤードの見学は内容だけでなく、初めての高度なリスニング、質問になれる良い機会であった。
- ・どんな質問でも丁寧に答えていただけ、満足できた。

② MITでの講義と研修

午前、大学院生による講義を受けた。研究内容や留学について、ご自身の経験を含めてお話をいただいた。留学に対する考え方、留学中の海外での生活など、今まで知り得なかったことを多く学ぶことができたのは大きな収穫だったと思われる。積極的に質問する姿も頼もしく見えるようになっていった。昼食後の研究室見学までの時間を利用して、MIT キャンパス内の学生に事前研修で作成しておいたアンケートを実施した。積極的に声をかけてアンケートをお願いし、英語コミュニケーションに次第になっていく様子を感じられた。

- ・Vision が大切という、学校 (SSH) で普段言われていることを再確認させられた。

- ・普段話を聞くことのない文系研究者の話がきけ、研究の在り方についての視野が広がった。
- ・自分のビジョン、社会の一員として活動していく中で、自分が持つべき信念を考えるきっかけになった。

③ MITでの研究室見学

工学系の研究室であり、話の内容には専門的なものが多かったが、分からない単語はすぐに質問するなど、さらに生徒たちの積極性が増したと感じられる研修だった。人文コースの生徒も、積極的に英語で質問する場面も見られた。

- ・現地学生の話聞き、研究に誇りと情熱を持っているのだと感じた。
- ・初めて開発中のロボットを見て、普段見ている滑らかな体を持つロボットには創意工夫や開発者の苦労が詰め込まれていると分かった。
- ・説明を8割くらいは理解でき嬉しかった。質問もたくさんできて自分の成長を感じられた。

④ ハーバード大学での講義

メディカルスクールにて、歯学部の研究内容や留学の意義等についても講義を受けた。海外留学について、特に医学系の大学への進学に関する詳しい説明もあり、留学を身近に感じたようである。また、現地研究員の方の現在の生活スタイルや、高校時代における考え方などを聞き、将来への道筋が見えた生徒もいたようである。

- ・大学で留学したいと考えていたが、より行きたいと思えるようになったし、そのために必要なことも分かった。
- ・どの先生も自分をしっかり持っていて芯がぶれない方ばかりで、将来自分も先生側に立って10代の若い子たちに夢を与えられる人になりたいと思った。
- ・自分が生み出した疑問を軸に研究に取り組んでいて、他人からもらったものでない自分だけの疑問が原動力になることが感じられた。
- ・高校生である私たちが今何をすべきなのか、世界の最先端にいる方々からじかに話をいただける良い機会だった。

⑤ ハーバード大学での研究室見学

ハーバード大学歯学部のラボを見学させていただくことができた。それぞれの学生、研究者に与えられる研究スペースが日本の大学とはかなり異なっており、興味深かった。骨の形成過程について説明を受けることもでき、世界最先端の研究施設を見学できたことは生徒たちにとって大きな経験だった。

- ・実際にラボと研究内容を見せていただけたら、研究の実情（スパンなど）を聞くことで、将来へのビジョンが明確になった。
- ・一番楽しかった。あと3時間くらいほしかった。日本とアメリカの小児科の違いについて考えることができた。
- ・「研究者とは」という問いに対して、きっちりと返していただきました。

⑥ スミソニアン博物館研修

毎年、高評価の生徒が多い研修である。世界屈指の博物館であり、様々な研究を志望する生徒の要望に応えられる展示内容であった。やはり「本物」を見ること、触れることは、最高のメッセージであると改めて実感した生徒も多かったようである。また、予想以上の規模の大きさに見学計画の必要性を感じたという感想もあり、事前学習の重要性を改めて認識できた。

- ・とにかく感動した。同じ班のメンバーが航空宇宙で熱く語ってくれ、自分の知識が深まった。
- ・展示物も限りなく多く、とにかく巨大であった施設にただただ唖然としました。
- ・アメリカの博物館は、日本よりも見せ方がうまいと感じた。
- ・展示物のみならず、飛行の仕組みを紹介する部門もあり、見て学べて多種の経験ができた。
- ・自然、航空宇宙、美術の世界有数の展示品に感動した。時間が短いのが惜しかった。

⑦ NASA 研究者講義

NASA で活躍されている3人の日本人研究員の講義を受けた。宇宙に関わる内容については興味・関心が高い生徒も多く、質問は途切れることがなかった。その一方で、他国の研究員の話英語で聞きたかったという、英語の聞き取りについて相当自信がついたと思われる感想が生徒から散見された。

- ・未知のことを研究するのは楽しそうだと思っていたけど、やはり研究には明確な目標がなければいけないということを話を聞きながら思った。
- ・説明の中に高校物理が使われていて、感動した。
- ・来年、火星から帰ってくるローバーからどんなサンプルが出てくるかが楽しみ。
- ・尽きることのない探究心でいっぱいだった。研究していく中での苦勞、困難、やりがいについても詳しく聞きたかった。
- ・専門的なことをとても分かりやすく教えていただけで、とてもわくわくした。あまり宇宙航空に興味はなかったが、もっと勉強したいと強く思った。

⑧ NASAゴダード宇宙飛行センター研修

研修先の規定で帯同した通訳が、バス移動中に施設等の説明をしてくれたことで研修にスムーズに入ることができた。最後の研修ということもあり、自分の英語力を試そうと、疑問に思ったことをすぐに質問しようとする生徒たちの姿が印象的で、熱心にディスカッションを行っていた。アンケート結果では、最高の評価となった研修である。

- ・最終日で慣れたからか、外国人にも分かるようにしゃべってくれたからかは分からないが、一番聞き取りやすく理解もはるかに深くできたため、英語に対して自信が持てた。
- ・宇宙という酷な環境に挑むための理想的な作業場を整えており、その結果あのような望遠鏡が作られているのだと分かった。
- ・とても楽しそうに解説をする職員の方から、思いが伝わってきた。
- ・JWSTについて事前に調べていたので、直接詳しい話が聞けたのは嬉しかった。
- ・研修も最後ということなので、みな競い合うように質問をしていた。

⑨ 事前研究でのGSOの効果

- ・GSOでたくさん話したり，先生たちと出会ったりしたことで自分の視野が広がった。
- ・とても貴重な時間だった。アメリカへの抵抗がかなり和らいだ。
- ・自分のスピーキングの力に向き合えたのがよかった。
- ・最初は英語で自分の考えを表現するのが難しく，歯がゆい思いを経験したが，徐々に慣れてくると，英語で自分の考えを表現するのが楽しめるようになった。
- ・楽しく英語を学ぶことができたし，何より会話を続ける大切さを学んだ。
- ・話すコツを教えてくれたおかげで，現地でもそれほど苦労しなかった。

4. 次回に向けて

これまで同様，研修先，研修内容，事前学習でのGSOの活用など，それぞれ高い効果が確認できた。次年度も概ね今回に近い内容で実施する計画であるが，より内容を充実させて有意義な研修にするため，継続して研修内容を改善していく予定である。

なお，今回の研修が充実したものになった1つの要素に，生徒たちの「意識の高さ」が挙げられる。これは，厳しい選抜や課題をこなしてきた生徒たちの自力と責任感もあると思われるが，その基となったのは昨年度の本研修に参加した先輩たちからのメッセージである。実際に研修で得たことや感じたこと，自分の中で変わったことを的確にまとめた上に明確に表現してくれたことが，生徒たちの意識を更に高くしたものと考えている。その経験を経て選抜された生徒たちは，事前研修から高い意識で臨み，失敗を繰り返しながらも勇気を忘れずに行動へと移すことができた。そして研修後，先輩たちと同じように研修の意義を後輩たちへと熱いメッセージを伝えてくれた。その場に立ち会い，生徒たちの大きく成長した姿に感動しつつも，この流れを継続することが本研修をより良いものにする確信できた。

最後に，本研修に関わってくださったすべての方々に感謝申し上げます。



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