様式 A-1
(FY2024)

令和 7 年 1 月 29 日

サイエンス・ダイアログ　実施報告書

1. 学校名・実施責任者氏名：富山県立富山高等学校　岡本 彩可

2. 講師氏名：Dr. Samuel Hans BARNIER

3. 講義補助者氏名：坂井 延行

4. 実施日時：令和7 年 1 月 29 日（ 水 ） 13 ： 40 ～ 15 ： 40

5. 参加生徒：1 年生 27人、 ___年生 ___人、 ___年生 ___人（合計 27 人）
   備考：理数科学科の生徒

6. 講義題目：About Astrophysics

7. 講義概要：講師の現在に至るまでの経歴、外国人研究者として大学で研究を続ける苦労、母国についての紹介

8. 講義形式：
   ☒対面 ・ □オンライン （どちらか選択ください。）
   1) 講義時間 80 分　質疑応答時間 10 分　準備・休憩・アンケート 30 分

   2) 講義方法（例：プロジェクター使用による講義、実験・実習の有無など）
   プロジェクター使用による講義

   3) 事前学習
   （有）・ 無 （どちらかに〇をしてください。）
   使用教材 事前学習プリント（講義の概要を英語でプリントにしたもの）

9. その他特筆すべき事項：
   特になし

SD4581

Form B-2
(FY2024)
Must be typed

Date（日付）
01/02.2025 （Date/Month/Year：日/月/年）

Activity Report -Science Dialogue Program-
（サイエンス・ダイアログ 実施報告書）

- Fellow's name（講師氏名）: Samuel Hans Barnier （ID No. P23773 ）

- Name and title of the lecture assistant（講義補助者の職・氏名）
Nobuyuki Sakai, M2 student

- Participating school（学校名）: Toyama Prefectural Toyama Senior High School

- Date （実施日時）: 29/01/2025 （Date/Month/Year:日/月/年）

- Lecture title（講義題目）:
Unlocking the Mysteries of the Universe: Astrophysics and the Enigma of Black Holes

- Lecture format（講義形式）:
◆☒Onsite ・ □Online (Please choose one.)（対面 ・ オンライン）（（どちらか選択ください。））
◆Lecture time（講義時間） 60 min（分）, Q&A time（質疑応答時間） 30 min（分）
◆Lecture style（ex.: used projector, conducted experiments）
（講義方法（例：プロジェクター使用による講義、実験・実習の有無など））
Used projector

- Lecture summary（講義概要）: Please summarize your lecture within 200-500 words.

The lecture plan is structured into three main sections, each designed to engage students through presentations, discussions, and group activities, fostering an interactive and comprehensive learning environment.

In the first part, the focus of the presentation was to present France (where I come from) and its difference to Japan. I presented some of its cultural and historical sights. I then took the time to explain the French school system and how it differs from the Japanese school system. I especially focused on High school as this was the target audience. This part lasted about 20 minutes with 5 minutes of questions.

In the second part, we focused on what scientific research was. Here I asked students to work in small groups of 4 to 5 to answer some questions and propose definitions. We discussed what the scientific methodology was as well as the notions of reproducibility and refutability. We used an example to clarify. Then I presented possible motivations for becoming a researcher and the

importance of English as a common language to exchange with scientist all around the world. Finally, I took 5 minutes to discuss gender equality in science and how this isn't the responsibility of women but from the entire society to change the situation. I presented a few successful female researchers both internationally and in Japan to encourage the students to pursue science if they wish to. This part lasted also about 20 minutes with 10 minutes of questions and interactions.

Finally, in the last part, the presentation focused on what astrophysics is. I asked the sudents to define astrophysics and gravity. From there, we discussed about the scale of the solar system, and then the universe and we discussed Carl Sagan's famous 'pale blue dot' letter. We then discussed about gravity and how one can escape Earth gravity, introducing the notion of escape velocity. From there, I questioned them about a case where the escape velocity would be as large as the speed of light, introdcuing the notion of a black hole.I then discussed the different scale of blakc holes, and presented the first images of Sgr A*, the supermassive blakc hole at the cneter of our galaxy. This part lasted about 20 minutes with 15 minutes of quetsions and interactions.

◆Other noteworthy information（その他特筆すべき事項）:

- Impressions and comments from the lecture assistant（講義補助者の方から、本プログラムに対する意見・感想等がありましたら、お願いいたします。）:

No comments.