

様式 A-1
(FY2023)

2023 年 6 月 22 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: 兵庫県立神戸高等学校 上原 励
2. 講師氏名: Dr. Ellis Richard Owen
3. 講義補助者氏名: なし
4. 実施日時: 2023 年 6 月 19 日 (月) 15 : 00 ~ 17 : 00
5. 参加生徒: 2 年生 39 人、 ___ 年生 ___ 人、 ___ 年生 ___ 人 (合計 ___ 人)
備考: 総合理学科の生徒
6. 講義題目: 全粒子種族を用いたコンパクト銀河群における銀河間相互作用の解明
7. 講義概要: この講義では、重力と潮汐相互作用、合体、フィードバック、恒星の誕生など、銀河の進化を促すさまざまなメカニズムを探求します。私たちは、銀河が何十億年にもわたってどのように成長し、変化し、雄大な渦巻きから奇妙な楕円形まで、さまざまな形や大きさに進化するかを発見します。
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 90 分 質疑応答時間 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○をしてください。)
使用教材 メールによる事前打ち合わせでリストアップしてもらった専門用語や講義概要を示すワークシート
9. その他特筆すべき事項:
講師の方には Power Point を用いて英語で講義をしてもらいました。
課題研究を担当する教員(理科、数学科の教員 8 名)、本講義実施責任教員(1 名)が補助する形で参加しました。
生徒アンケート配布対象者数は、当初の予定より 1 名減って 39 名となりました。(1 名は欠席)

Form B-2
(FY2023)
Must be typed

Date (日付)
19/06/2023 (Date/Month/Year: 日/月/年)

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

- Fellow's name (講師氏名): Ellis Richard Owen (ID No. P22327)

- Name and title of the accompanying person (講義補助者の職・氏名)

N/A

- Participating school (学校名): Hyogo Prefectural Kobe High School

- Date (実施日時): 19/06/2023 (Date/Month/Year: 日/月/年)

- Lecture title (講義題目):

Exploring the lifecycle of galaxies

- 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) 75 min (分), Q&A time (質疑応答時間) 45 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; worksheets; Q&A session; free discussion

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

Our Universe is vast and mysterious. It is filled with billions of galaxies, each containing billions of stars. In this lecture, I discussed how all these galaxies came to be. I explained that some galaxies look just like our cosmic home, the Milky Way, while other galaxies are very different. They can be cold and quiet, or violent and energetic. They come in all sorts of shapes and sizes, and interact with each other to change their appearance through gravitational forces. I discussed how various mechanisms shape galaxy evolution, including gravitational and tidal interactions, mergers, feedback, and the relentless dance of stellar birth and death. I showed how galaxies grow and change over billions of years, how they evolve into diverse shapes and sizes, from majestic spirals to strange ellipticals, and how we can understand their evolution by looking at the color of their emitted light. I provided an overview of stellar evolution, the emission spectra of different stars, the stellar initial mass function and how stellar populations and their emission properties provide us with crucial information about the age of a galaxy and its evolutionary progression. At the end of the lecture, I provided an introduction of career paths in science, and my own career background. I highlighted the importance of creativity, diversity and inclusivity in

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science and explained to the students why inter-cultural understanding and cooperation are becoming ever-more important as research enters an era of “big” science involving large facilities that require broad international collaborations.

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

I also included a section on what a career in science is like, and what may be ahead for people considering doing Physics professionally. Some of the students mentioned they found this particularly insightful. Some of the students additionally initiated interesting discussions about the benefits of science to society, and whether countries are right to support science with public funds (e.g. what are the wider benefits to society, what are the public/economic benefits).

I found that the level of English of the students was excellent, and I did not need to do much to help them to understand. Some were less able to speak English easily, but we spent time to help them to ask their questions (they preferred to practise their English rather than ask their teachers to translate from Japanese).

The students preferred to wait a while before they felt comfortable to ask questions. The teachers helped to encourage them to start asking, and when the first students asked their questions, many more were comfortable to ask too. The Q&A session became very lively, and ended up going on for around 1 hour. Generally the students do seem to have many questions, but they need help to feel “safe” to ask what they want. Switching to more “free discussion” style seemed to help them to feel more comfortable – in particular, they would be less worried about making mistakes with their English if they were not asking questions in front of an entire room of people.

- Impressions and comments from the accompanying person (講義補助者の方から、本事業に対する意見・感想等がありましたら、お願いいたします。):

N/A

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集めてゴミ箱へ
捨ててください

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What can you see?

Tohoku University

Observing Why the stars

- 10000 planets in the field
- Some isolated galaxies
- Some in groups
- Some merging

