

様式 A-1

2026年 7月 27日

サイエンス・ダイアログ 実施報告書

1. 学校名: 愛知県立西尾高等学校
2. 講師氏名: Dr Lipsa Rani Nath
3. 講義補助者氏名: なし
4. 実施日時: 2026年 7月24日 (金) 14:00 ~ 16:00
5. 参加生徒: 3年生 15人、2年生 8人、1年生 9人 (合計 32人)
備考: 3年生希望生徒、1, 2年生オーストラリア研修参加予定生徒、留学生
6. 講義題目: Beyond Earth: Could plants save our future?
7. 講義概要: 植物は宇宙空間で育つのか。
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 30分 質疑応答時間 10分 ワークショップ 70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
グループに分かれて、どの植物が宇宙で育てるのによいか、利点、問題点、解決策を議論し、発表
講師からのフィードバック
 - 3) 事前学習
☒有 ・ ☐無 (どちらか選択ください。)
使用教材: 講師作成資料
9. その他特筆すべき事項:

Form B-2

Date (日付) 28/07/2026

(Date/Month/Year: 日/月/年)

Must be typed

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

1. Fellow's name (講師氏名): Lipsa Rani Nath (ID No. P25435)
2. Name and title of the lecture assistant (講義補助者の職・氏名) None
3. Participating school (学校名): Aichi Prefectural Nishio Senior High School
4. Date (実施日時): 24/07/2026 (Date/Month/Year: 日/月/年)
5. 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) 90 min (分), Q&A time (質疑応答時間) 30 min (分)
◆ Lecture style (e.g., 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))
- Slides and projector
6. Lecture title (講義題目):
Beyond Earth: Could Plants Save Our Future

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

This lecture introduced students to the exciting field of space agriculture and explored a fundamental scientific question: Can rice grow in space? The session began by discussing why plants are essential for future long-duration space missions. Plants not only provide food but also produce oxygen, recycle carbon dioxide, and contribute to astronauts' physical and mental well-being, making them a key component of sustainable life-support systems on the Moon and Mars.

Students learned that gravity plays a critical role in plant growth. Under Earth's gravity, roots grow downward while shoots grow upward through a process called gravitropism. In space, however, the absence of normal gravity disrupts these directional growth signals, creating challenges for plant development. This led to the discussion of how scientists investigate space-related biological questions without leaving Earth.

The lecture introduced simulated microgravity devices, which recreate some of the effects of microgravity in laboratory settings. Using these systems, researchers can study how plants respond to reduced gravity under controlled conditions. As an example, the lecture presented a research workflow using rice plants: seeds are germinated and grown under either normal gravity or simulated microgravity, RNA is extracted from the seedlings, gene expression

is analyzed using quantitative PCR (qPCR), and the results are compared to identify genes involved in gravity responses.

To encourage active participation, students completed a "Mission Moon" group activity in which they designed experiments to help astronauts grow plants in space. Through discussion and problem-solving, they considered the challenges of growing crops beyond Earth and proposed possible solutions.

Overall, the lecture demonstrated how plant biology, molecular genetics, and space science work together to address one of humanity's most important future challenges: producing food beyond Earth. It highlighted the importance of scientific research, collaboration, and innovation in supporting future human exploration of space while inspiring students to think like scientists and engineers.

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

9. 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。):

