

Form B-2
(FY2020)
Must be typed

Date (日付)
2020/10/21 (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): Jonas Kai Hendric FISCHER (ID No.P 18803)
- Name and title of the accompanying person (講義補助者の職・氏名)
Takahiko OSHIMA, student
- Participating school (学校名): Hirosaki Minami High School
- Date (実施日時): 2020/10/09 (Date/Month/Year: 日/月/年)
- Lecture title (講義題目):
Finding new materials for fast and energy-efficient computers of the future
- Lecture format (講義形式): Online via Zoom
- ◆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))
Short self-introduction, introduction to the topic in Japanese, explanation of our research in English, short lab tour
- Lecture summary (講義概要): Please summarize your lecture within 200-500 words.
Before the scientific part of the lecture, I introduced myself, my career and my home country. In addition, I tried to encourage the students to keep studying English and stay curious. I especially wanted to get across the importance of critical thinking and experiencing new things, be they a new language, travel, learning an instrument or anything else.
To introduce our research to the students, I first spoke in Japanese for 10 minutes. The English lecture then began with an introduction to magnetism and electric order, starting from the origin of all things: atoms. Via the electron and magnetic fields, I tried to introduce magnetism in an understandable way. From there I ventured to introduce why a control of magnetism with electric fields would be an ideal solution for data storage in our IT devices, while also explaining the need for basic research.
The main lecture contents were as follows:
Recently, more and more computers, phones and other IT devices are being used. At the same time, the amount of energy needed by these devices is growing fast. The servers that power the

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internet are already consuming 3% of the total electricity worldwide.

How can we develop fast and energy-efficient computers for the future? One possibility are materials that have magnetic and electric order at the same time. These so-called “multiferroics” have the advantages of both orders and could replace the inefficient hard drives of today. The aim of our research is to find and improve such materials, so that they can one day power our computers, phones and completely new devices!

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

Via Zoom it was somewhat difficult to tell if the students are engaged. There were 6 computers for the students from which they sat quite far away. At least during the experiment with electric fields (rubbing balloons on the head), I could tell that the students were excited. In the Q&A session almost all the students had questions prepared, but it would have been even nicer if they had felt comfortable enough to ask me whatever came to their minds.

- 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。):

研究内容を高校生に紹介する機会は貴重でした。オンライン開催だったが故にその場に残って雑談をするなどの機会はありませんでした。生徒さんたちは学問的なものにこだわらず積極的に質問をしてくれ、楽しんでいるように見受けられました。