

Form B-2
(FY2022)
Must be typed

Date (日付)
24/06/2022 (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): Chloe Salhani (ID No. P20724)

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

No lecture assistant

- Participating school (学校名): Ochanomizu University Senior High School

- Date (実施日時): 13/06/2022 (Date/Month/Year: 日/月/年)

- Lecture title (講義題目):

Materials science: a look at physics at the nanoscale

- 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))

Projector

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

A look at the evolution of materials science over the past century, following the technological development of computers. We looked at the inception of the computer, starting from Charles Babbage's all-mechanical Analytical Engine, to the modern-day computer. Along the way, we took a closer interest at the emergence of new technologies (the relay, the electron tube, the transistor, etc) and how each of these technological "jumps" drove the race towards miniaturization and the explosion of computing power. As we reached the modern era of computers, after the invention of the transistor, we introduced integrated circuits and the cleanroom fabrication processes that allow us to fabricate billions of devices on a single chip. We finally introduced the concept of Moore's Law, and its limits, as we reach quantum scales and the limits of miniaturization.

The aim of the lecture was to show the importance of materials science, and how the emergence of new technologies can shape society. We discussed the omnipresence of computers in the modern day, how much research, development and innovation went into the convenience that we can now take for granted.

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At the end of the lecture, we took some time to discuss what the future of computing might look like, some of the technologies being studied at present time, and also what other applications of material science exist beyond just the development of more powerful computers – such as power generation, or medical applications.

In summary, I hoped to give the students an overview of the field, and an intuitive understanding of what 'nanoscale' truly means, and how fundamental research can relate to our daily lives.

◆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。):