

(For JSPS Fellow)

Form B-5

Date (日付)

25 / 12 / 2013 (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): Abdelrasoul Mahmoud GADELMOULA (ID No. P12361 )

- Participating school (学校名): Nagoya city Koyo High School

- Date (実施日時): 17 / 12 / 2013 (Date/Month/Year: 日/月/年)

- Lecture title (講演題目):

(in English): Tribology Science: Towards A Better Understanding, Reliable Design, and Consumer Satisfaction

(in Japanese): 摩擦学: より良い理解、信頼性のある設計と消費者満足のために

- Lecture summary (講演概要):

The lecture started with a brief introduction to my academic background, cultural background, and some facts about Egypt location, area, history, and famous historic places to visit. Then, the presentation emphasized the importance of learning English language as an important key to excel in different sciences; the objective was to push the students to learn English language so as to know and communicate with others worldwide. After that, the presentation focused on Tribology science, the science of friction, lubrication, and wear. Examples of useful as well as harmful frictions were introduced and the importance of reducing harmful friction to save energy and increase the lifetime of machine elements was declared. The presentation showed how ancient Egyptians used animal fats to reduce friction more than 3900 years ago compared with modern lubrication technology. In easy-to-understand English, I explained my research interests at Assiut University (Egypt), Yonsei University (South Korea), and finally at the University of Tokyo (Japan). For that, I have explained the operation of computer hard disk drive (HDD) and how to reduce the vibration of HDD motor so as to improve its performance and increase its life time. Also, the presentation showed the evolution of archival data storage starting from the typical VCR tapes through CD's, DVD's till the Blue-ray Disc (BD) and highlighted the current researches by NHK and RICOH Japanese companies to increase the storage capacity with next generation flexible optical disks. Finally, the presentation explained the importance of reducing friction in airplane jet engines and cars turbochargers to save the lost friction energy and maximize the output power. A lot of illustrations, photos, and movies were used to present these ideas in such a simple way for the students.

- Language used (使用言語): English

- Lecture format (講演形式): Power Point Presentation

- ◆Lecture time (講演時間) 90 min (分), Q&A time (質疑応答時間) 10 min (分)
  - ◆Lecture style (ex.: used projector, conducted experiments)  
(講演方法 (例: プロジェクター使用による講演、実験・実習の有無など))  
Power Point Presentation using a projector and loud speakers.
  - ◆Interpretation (ex.: assistance by accompanied person, provided Japanese explanation by yourself) (通訳 (例: 同行者によるサポート、講師本人による日本語説明))  
I am so grateful to Mrs. Haruka Nakaya, the English language teacher at Nagoya city Koyo High School for providing necessary interpretations to the students.
  - ◆Name and title of accompanied person (同行者 職・氏名)  
No one
  - ◆Other note worthy information (その他特筆すべき事項):  
It was a nice experience and the interaction with students was enjoyable.
- Impressions and opinions from accompanied person (同行者の方から、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。):