**Behind the Black Box**

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| **5-Part Plan Title:** | **Behind the Black Box** |
| **Engineering Grand Challenge(s) Covered:** | **Advance Health Informatics** |
|  | **Engineer the Tools of Scientific Discovery** |
| **Fellow Contributor:** | **Max Jin** |
| **Grade Level(s):** | **10-12** |

**5-Part Make-It-Happen Plan**

1. **Learn It:** Brainstorm different devices used in the home and hospital settings that make human lives easier. Explore how scientists made different discoveries about the human body and how engineers used prior understanding to create medical devices. Introduce and explain to students the basics of circuits and physiology and how that relates to engineering.
2. **Do It:** Discover how the human body oxygenates blood and use those principles to understand how a pulse oximeter is built.
3. **Share It:** Explore, analyze, and try to determine different object and tools that are used in a medical setting. How did the doctor determine the need for a tool? What type of process is involved in making such a tool? Finally what does the tool do?
4. **Create It:** Students will learn the vocabulary words related to biomedical engineering and pulse oximetry. As a class, they will initially brainstorm different tools of scientific discovery. Each student will learn about the human body system and the physics of light transmission. Each student is allowed to use a pulse oximeter and given time to explore how it was created.
5. **Teach It:** Students will be divided into groups of 3 to 4 students and will articulate findings about their own bodies and how these measurements were taken.