Age/ grade level: 14-16/ grade 10

Skills taught: Using Sugar Labs, making a simulated machine to carry out a specific task

Learning Objectives:

* Understand the life and works of Rube Goldberg
* Explain what is a Rube Goldberg Machine
* Independently use the Physics Activity in Sugar Labs to aid in their learning
* Understand the importance of engineering and simulation

Lesson flow:

|  |  |
| --- | --- |
| Activity | Estimated Time |
| Introduction to Rube Goldberg Machine   * Who is Rube Goldberg? * History of Rube Goldberg * Works of Rube Goldberg * Rube Goldberg Machine and its uses | 30-45 minutes |
| Introduction to Sugar Labs and Physics Activity   * What Sugar Labs do * Why Sugar Labs * Using the Physics Activity | 30-45 minutes |
| Hands-on activity: get students to make their own Rube Goldberg Machine that carries out a specific task using the Physics Activity | 1 hour |
| Presentation of student’s own simulated Rube Goldberg Machine | Depending on number of students; each student should have around 5-10 minutes of presentation time + 2-3 minutes of Q&A |
| Wrap Up and Conclusion   * Significance of machines and engineering * Importance and benefits of simulation in the real world | 20-30 minutes |

Instructional sequence:

|  |  |
| --- | --- |
| Step | Assessment Criteria |
| 1. Use the tools in the Physics Activity to make a simulated Rube Goldberg Machine which carries out a specific task | * Number of tools/ object used * Effectiveness and uniqueness of each step * Being able to independently use the activity |
| 1. Presentation of Rube Goldberg Machine | * Presentation skills (clarity, eye contact) * Content (physics concepts, purpose of the machine) |
| 1. Q&A | * Able to answer on the spot * Confidence * Understands the importance of simulation and engineering |