

The “Smart” Home

TOPIC: ETHICS

GRADES: 6-8, 9-12

LESSON DURATION: TEACHER DISCRETION

SOFT SKILLS: COMMUNICATION, RESEARCH, COLLABORATION, GRIT, PROBLEM SOLVE (CREATIVE THINKING)

Introduction:

- This lesson utilizes the Engineering Design Process. This asks students to design a “smart” home. It places emphasis on the Internet of Things and designed to be used in an Interior Design or Engineering course.

Learning Outcomes:

- Students will develop a “smart” home while engaging in the Engineering Design Process.
- Students will work together, communicate effectively, and overcome issues to design the final product while considering advancements in technology and the vulnerabilities of those advancements.

Materials:

- [Student handout](#)
- Internet access
- [Forbes video explaining the Internet of Things Background information for the teacher-cybersecurity concepts](#)
- [Glossary of cybersecurity terms created by the National Cyber Security Centre](#)
 - Contains public sector information licensed under the Open Government Licence v3.0.
- Optional Video from SD Luxury Listings available on YouTube: <https://www.youtube.com/watch?v=9K1DkRY8Ugg>

Activities:

1. Place students in groups of 3-4. Each student should be given a [student hand-out](#). The task of each group is to create and design a “smart” home. Students must complete the steps of the Engineering Design Process. (Ask. Imagine. Plan. Create. Improve.). Students may need to be presented background information on the IoT. Information can be found [here](#).
2. Allow the students plenty of time to work. The teacher might consider asking parents or local engineers to come in and help students. The teacher will also need volunteers to come and evaluate the final product. Students should be asked to defend their design but also reflect on what they would have done differently.

© 2018 Teach Cyber



This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/).

3. Students should be prepared to present their home. The teacher could arrange for parents or community members to visit and circulate. The visitors could ask questions of each group and critique their design.
 4. After the visit, students could be given an assessment prompt to evaluate their work.
 - A. Evaluation prompt possibilities: *Reflect on the design process. What went well? What are your favorite aspects of your home? What could be improved upon? What bothers you about your "smart" home?*
 - B. Choose one home device that would be considered part of the IoT. Explain the vulnerabilities of the device. How could the vulnerabilities be avoided prior to consumer purchase?
-

Side Note:

1. The teacher may also choose to utilize design software (CAD) for the students to create their home. This is dependent upon availability of such resources and whether students have prior experience with such software.