



CYBER SECURITY BOOT CAMP

Introduction to IoT / Student Projects

Session 7



YELLOW CIRCLE INC
PO Box 2383
Elk Grove, CA 95759-2383

Teacher Lesson Plan

Introduction to IoT / Student Projects

Session Name:

Student Projects

Summary:

This session is a capstone assignment for students who have completed all six sessions of cyber security boot camp. Students will work in teams (2-5 students each team) and select one project from provided list to complete and then present their project overview to class and instructor.

Time Allotment:

75 minutes

Learning Objectives:

Students will learn to work in a team environment to select, research, develop, and deliver a project/presentation on a selected topic as a team project. Teacher will provide all student groups with topics that they can choose from to do their final project on. List will have 20 topics, each team can select 3 of their favorites, and teacher will then select one for them to work on.

Supplies:

- *Scrap paper / notepad to take notes*
- *Projects list (print)*
- *Laptop / computer with Internet access for research on topic of selected project*

Learning Activities:

- **(2 - 5 minutes) - Teacher Introduction**

Introduce yourself to students if you are new to the classroom. If you are continuing from a previous session, start with welcome back.

- **(2 - 5 minutes) - Volunteers Introduction**



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Introduce any new volunteers that might be present. Teachers will be provided with a quick bio of each volunteer who are helping in the classroom. Only new volunteers need to be introduced.

- **(5 minutes) - Session overview**

This is the final session of this cyber security boot camp is divided into two subsections, a quick introduction to Internet-of-things and student projects. Student projects is the time for all of you to show me and other students in class what you have learned, and how it will impact your approach to being secure on the Internet at your home, in school, in public places, and eventually at a work. Explain to students that they will work as a team, and each team will have five students. All teams will be given a list of topics that they can select from to do their final student projects. This will involve reflecting back to all the sessions, research on the Internet, dividing workload among themselves, and then coming up with a verbal presentation for the class, teachers, and volunteers.

- **(1 minutes) - Video : Progressive Insurance Future Son**

<https://www.youtube.com/watch?v=NLTKvGgTb10>

- **(5 minutes) - What is IoT?**

The internet of things, or IoT, is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

The internet of things connects billions of devices to the internet and involves the use of billions of data points, all of which need to be secured. Due to its expanded attack surface, IoT security and IoT privacy are cited as major concerns.

Pass around few of the Raspberry Pi systems to show students that this \$20 programmable computer is a simpler version of IoT ecosystem that can be a device by itself, connect to other devices in your home, make other devices do things, post automated messages to facebook/twitter/snapchat, or simply tell you if you need an umbrella today (right after the morning alarm).



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Use any other examples you can present use of IoT.

- **(5 minutes) - Video : Secret Lives of Hackers**

<https://www.youtube.com/watch?v=DKzi5CYNFAg>

- **(2 minutes) - Video Discussion**

Get students engaged by asking questions about the video.

- **(2 minutes) - Project Selection**

Pass the sheets to all teams with provided project list.

- **(5 minutes) - Project Selection / Assignments**

Let students discuss and determine their top 3 projects that they are interested in. After they select their three projects, teacher will randomly / or based on team performance during other sessions will select one of the three projects that students will work on.

- **(15 minutes) - Student Activity : Final Projects**

Teams work on their projects, they can use Google Slides, or paper to develop their presentation. Give students time warning at 5 minutes, 1 minute.

- **(20 minutes) - Student Project Presentations**

Each team will have 5 minutes to present their project. Slides are optional.

- **(5 minutes) - Teacher Feedback**

Teacher will provide feedback to each team for about 1 minute. Also, hand out additional raffle tickets to students who are presenting before they go back to their seats.

- **(10 minutes) - PBS Nova Labs / Cybersecurity (optional - depends on time available)**

Students can go back to laptops to finish their PBS Nova Labs Cybersecurity challenge.

<https://www.pbs.org/wgbh/nova/labs/lab/cyber/research#/corp/chooser>



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- (2 minutes) - What's next?

Inform students to head back to cafeteria for snacks / break, and closing ceremony for raffles, prizes, giveaways.



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