Trashketball and the First Ten Principles

Learning Objectives/Outcomes

- Describe the ten principles of cybersecurity
- Explore how people are the weakest link in any security system

Activity Length of Completion: ~25 mins.

Activity Mode: Group

Activity Description

Students will demonstrate their understanding of the F10P through a competitive game of Trashketball.

Resources Needed

Paper, pen, tape roll, basket/bin/empty trash cans (whichever is available, enough for there to be one bin for every two teams of four), beach balls (enough for there to be one ball for every two teams of four)

Applicable Cyber Security Principles (highlight all applicable)

Security Layers: Physical, Network, Operating System, Application, Data

CIA: Confidentiality, Integrity, Availability

F10P: Abstraction, Data Hiding, Domain Separation, Layering, Least Privilege, Minimization, Modularity, Process Isolation, Resource Encapsulation, Simplicity

Activity Instructions (for Instructor)

1. Before the activity begins, ensure that there is at least one instructor for every two teams of four.

2. Rearrange the terms and definitions on the page labeled "Key," and print enough copies for each instructor to have one. Have other instructors make sure that the students should not be able to see the answers on the paper during the game.

3. At the beginning of the activity, split the groups of four up so that one team of four will compete against another team of four (Note: each group of four should be the same group of four that the students have been in for the camp so far).

4. Place an empty trashcan/bin/basket an equal distance away from each team and place a piece of tape on the floor ~2-3 feet from the basket on either side(This will be where students stand to make their basket toss).

5. Have one instructor lead each set of teams in starting the game. Explain the rules outlined below to both teams and hand the starting team the ball when they are ready. Be sure to keep track of each team's score as the game goes on.

6. If, at some point, neither team guesses correctly, reveal the term and have the team who guessed first continue with the next definition.

7. After the game has finished, let the students know which team won and have them answer the discussion questions 2a and 2b. Spend extra time talking about the answer to 2b. The question should emphasize that if people do not know how to properly protect their data, then the system could be placed in jeopardy. Essentially, it should communicate to students that people are the weakest link.

Activity Instructions (for Students)

1. In this activity, you will review the first ten principles of cybersecurity through a game of Trashketball! Here are the rules:

- The first team will be tossed a ball and read the definition of one of the principles of cybersecurity. It is their job to guess which term the definition belongs to. The person who catches the ball is in charge of answering for their team, but they can consult other team members if they do not know the answer.
- If, at any point, a player catches the ball and they have already been a spokesperson, they should give the ball to another person on the team that has not gotten a chance to answer.
- If the team guesses the term correctly, they get 1 point. The person who answered for the team then has a chance to throw the ball into the basket. If the ball makes it in the basket, the team gets another point. The spokesperson then tosses the ball to the other team.
- If the ball misses the basket, the spokesperson still throws it to the other team. The process is then repeated.
- If the team guesses incorrectly, the other team has a chance to steal. The ball should be tossed to the other team and whoever catches the ball acts as the team's spokesperson. If the second team also guesses incorrectly, no points are awarded. The instructor reveals the term and the game continues with the next definition.
- The game continues until all terms have been guessed. Whichever team has the most points at the end wins a special prize!

2. When the game is finished, discuss the following questions with your team:

a. Do you see any of the ten principles as more important than the others? If so, why?

b. In this game, if your teammates did not know the different principles, then your team did not

perform as well. How does this relate to the role of people in protecting computer systems?

Key

1. Hide information that users do not need to access → **Data Hiding**

2. Assign each user only the permissions that they need → **Least Privilege**

3. Exclude any details about how the system works that the user doesn't need to know → **Abstraction**

4. Security mechanisms should be easy to follow and maintain → **Simplicity**

5. Separate data and processes into different domains → **Domain Separation**

6. Separate a program into interchangeable parts → **Modularity**

7. Security should be implemented in each level of the system → **Layering**

8. Place data and functions that act on that data together in one component → **Resource Encapsulation**

9. Components should be as small and simple as possible while still meeting the user's needs → **Minimization**

10. Separate each running process from one another → **Process Isolation**