

Developing Cybersecurity Teaching Content through Group Brainstorming



Session 1

Saturday, July 22, 2023, 1:00pm – 2:30pm
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Study Team



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Ice Breaker Activity

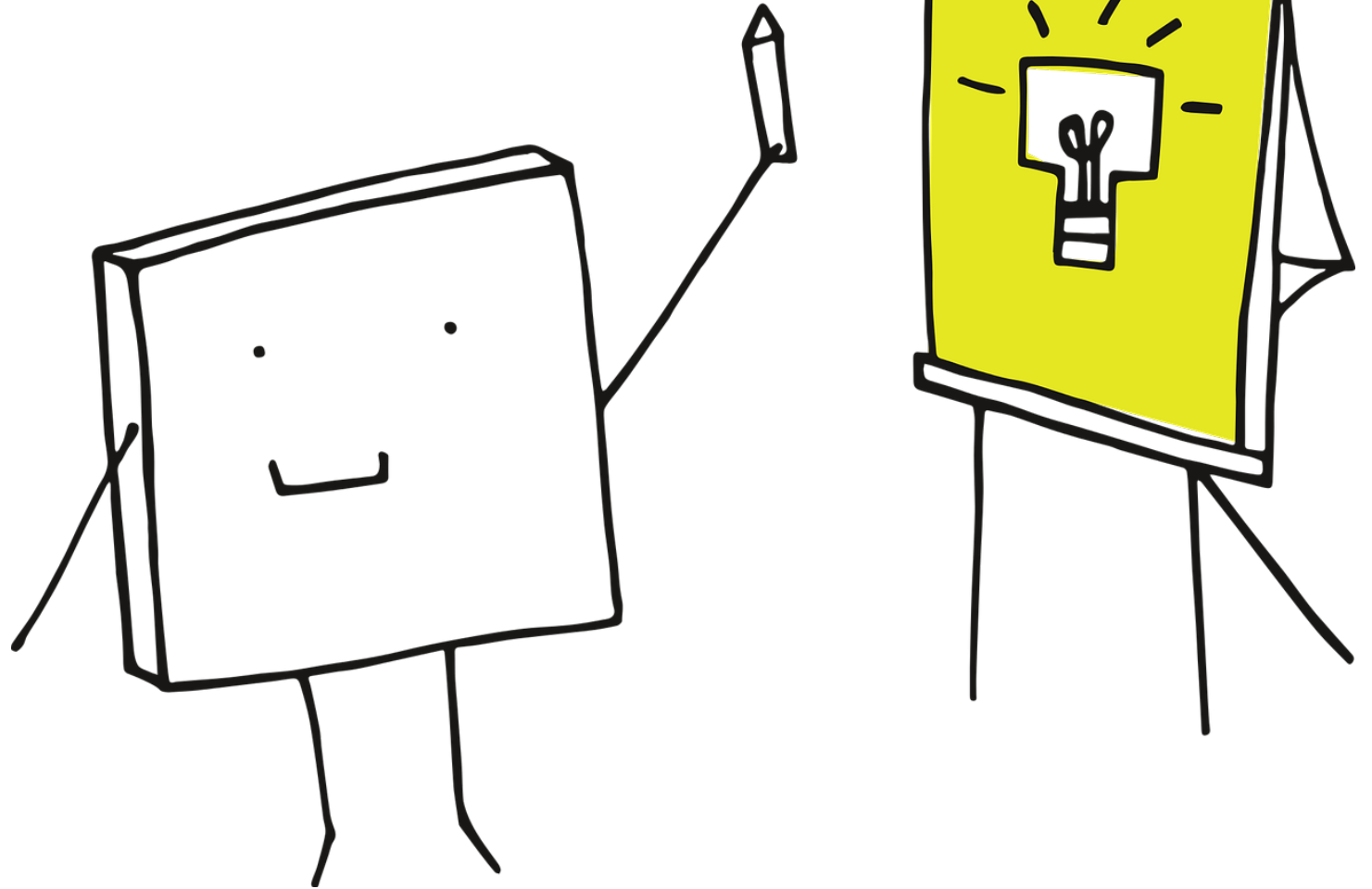
Goal: Create a short story about a knight rescuing a princess locked in a dragon-guarded castle

Starting with the person sitting the farthest left in the room, start the story by saying at most 5 words. The person next to them will follow, until everyone has contributed to the story. The story should be progressively completed as we approach the last person.



Study Goal

Identify threat modeling scenarios that are relevant and personalized to high school students so that these scenarios can be effectively used to teach the students cybersecurity concepts.





What is threat modeling?

Threat modeling is a systematic and proactive approach to identifying, assessing, and mitigating potential cybersecurity threats and vulnerabilities. It is an essential process used by security professionals and developers to understand and address potential security risks during the design and development stages of a software project or system.

The main goal of threat modeling is to anticipate and prevent security breaches by identifying possible attacks and weak points, including those driven by human behaviors.

The threat modeling process typically involves identifying threats by brainstorming and enumerating potential threats.

Threat Modeling

This video talks about password creation strategies

It shows different types of passwords that use common words that are meaningful to the person creating them

It discusses how these are easy to guess by an intruder and ways to improve them

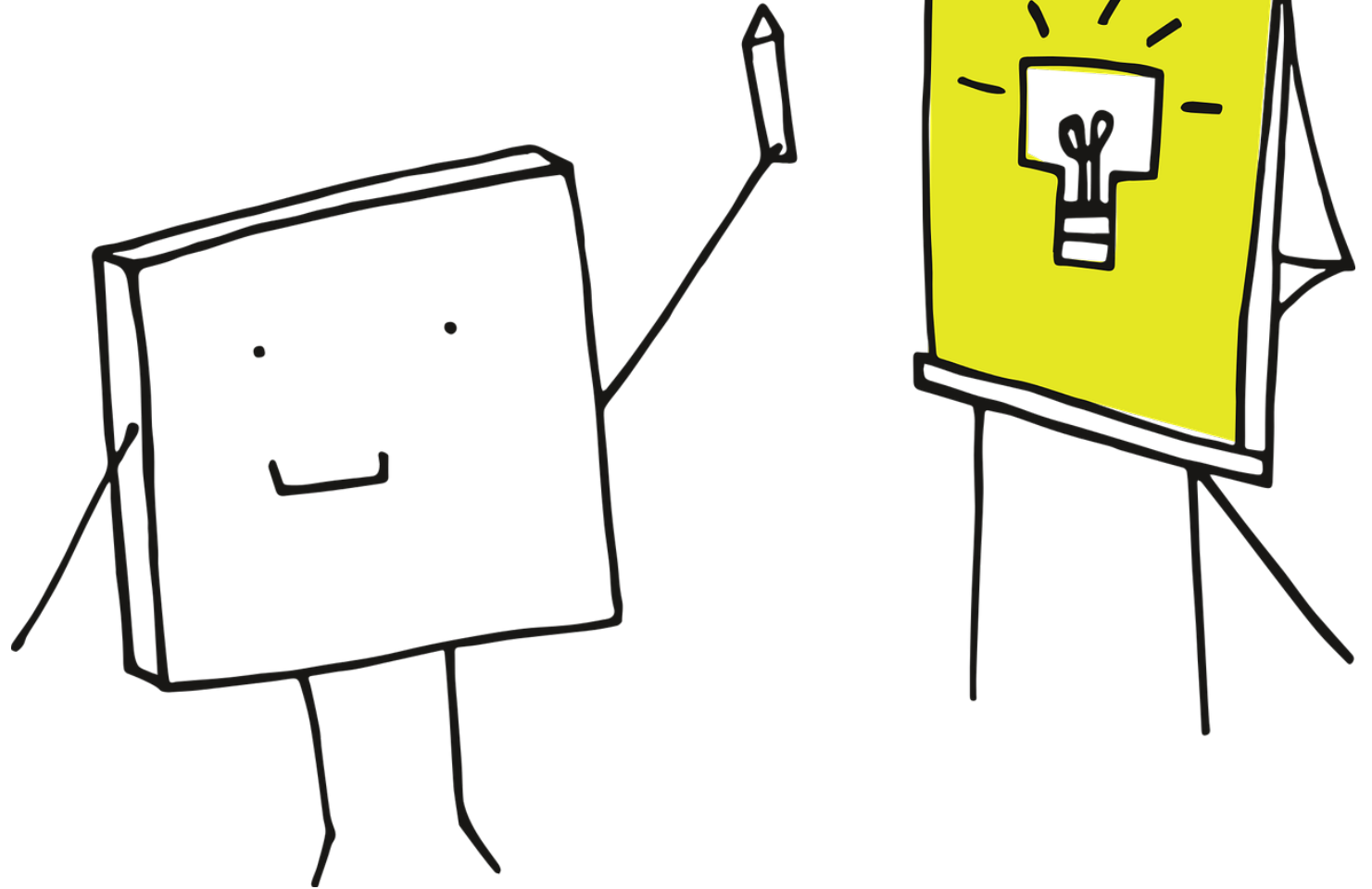


But what it doesn't do is...

- Make the content relatable to high schoolers
- We hypothesize that creating “stories” and “scenarios” to teach the same content would provide a more meaningful and engaging learning experience for high school students
 - *We also think the stories and scenarios might be more memorable if they represent a real-world threat*
- We need your help identifying which stories and scenarios to use

Study Goal (more specifically)

Identify threat scenarios that are relevant and personalized to high school students so that these scenarios can be effectively used to teach **Identity and Access Management.**



What is Identity and Access Management?

Identity and Access Management (IAM) is one of five functions in the National Institute of Standards and Technology's (NIST) Cybersecurity Framework.

IAM regulates access to data and applications for legitimate users.

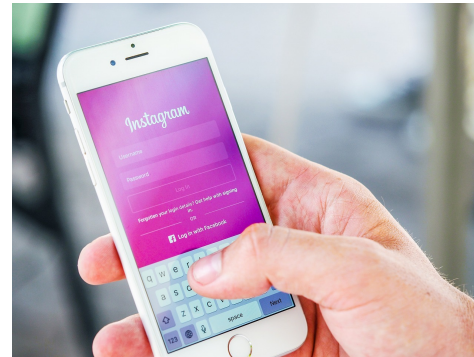
Identity and Access Management “enables the right individuals to access the right resources.”

IAM involves

- ✓ the creation of user IDs
- ✓ defines users' memberships and roles
- ✓ validates user IDs through user authentication
- ✓ authorizes information and system access
- ✓ manages user authentication systems (e.g., password rules and policies)
- ✓ and revokes user permissions as needed.

User Authentication (UA)

- User authentication plays a critical role in IAM
- The process of determining the validity of one or more authenticators used to claim an identity
- User authentication is often a prerequisite to allowing a legitimate user access to resources in a system
- There are three primary authenticators for carrying out user authentication --- knowledge-based, token-based, and biometric authenticators



Why is UA important?

The U.S. is one of the most highly targeted countries of global cyber attacks

IAM credential-related account compromises are among the most common types of cyber attacks and are the leading cause of data breaches

One study reports that there are 15 billion stolen credentials from at least 100,000 data breaches in circulation

Today's Activity: Brainstorming



Today's Activity: Brainstorming

Goal: Rapid Idea Generation

- ✓ Quantity over quality
- ✓ No idea is a bad idea
- ✓ Creative and wild ideas are encouraged
- ✓ Jot down everything
- ✓ Avoid criticizing or praising ideas
- ✓ Avoid lengthy discussion
- ✓ Use many tools to express your ideas



The table facilitator will

1. Take pictures of everything the group produces during **Capture and Clean-Up** and upload them to
 1. If you're in Group A: ...
 2. If you're in Group B: ...
2. Try to order items in sequential order from most to least important in the pictures
3. Take and upload pictures **BEFORE** anything is erased or discarded
4. Help enforce the rules within the group

Decide on a
table
facilitator...



Brainstorming Questions

1. Why would personalizing threat scenarios be useful?
2. Why would personalizing threat scenarios promote learning?
3. How do you think students would respond to personalized threat scenarios?

Today's goal is to establish the utility of this approach. Once we've identified **why** this could be useful in this session (usefulness assessment), we'll identify **how** to implement it in the next session (scenario identification).



Your approach to brainstorming should fit the personality of your group, but here's an example...



Let's Start: Question 1

Quantity over quality!
No idea is a bad idea!
Creative and wild ideas are encouraged!
Jot down everything!
Avoid criticizing or praising ideas!
Avoid lengthy discussion!
Use many tools to express your ideas!

Why would personalizing threat scenarios be useful?

00 : 15 : 00

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Digital

Duration:

00

15

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TimeUp Reminder (Optional):

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Choose Sound Effect



Question 1: Capture and Clean-Up

Why would personalizing threat scenarios be useful?

Quantity over quality!
No idea is a bad idea!
Creative and wild ideas are encouraged!
Jot down everything!
Avoid criticizing or praising ideas!
Avoid lengthy discussion!
Use many tools to express your ideas!

Table Facilitator

1. Take pictures of everything the group produces during Capture and Clean-Up and upload them to
 1. If you're in Group A:
[REDACTED]
 2. If you're in Group B:
[REDACTED]
2. Try to order items in sequential order from most to least important in the pictures
3. Take and upload pictures BEFORE anything is erased or discarded
4. Help enforce the rules within the group



Let's Start: Question 2

Quantity over quality!
No idea is a bad idea!
Creative and wild ideas are encouraged!
Jot down everything!
Avoid criticizing or praising ideas!
Avoid lengthy discussion!
Use many tools to express your ideas!

Why would personalizing threat scenarios promote learning?

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second changed successfully!

Duration: 00 15 00

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Question 2: Capture and Clean-Up

Why would personalizing threat scenarios promote learning?

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Duration: 00 05 00

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Table Facilitator

- Take pictures of everything the group produces during Capture and Clean-Up and upload them to
 - If you're in Group A:
 - [Redacted]
 - If you're in Group B:
 - [Redacted]
- Try to order items in sequential order from most to least important in the pictures
- Take and upload pictures BEFORE anything is erased or discarded
- Help enforce the rules within the group



Let's Start: Question 3

Quantity over quality!
No idea is a bad idea!
Creative and wild ideas are encouraged!
Jot down everything!
Avoid criticizing or praising ideas!
Avoid lengthy discussion!
Use many tools to express your ideas!

How do you think students would respond to personalized threat scenarios?

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Question 3: Capture and Clean-Up

How do you think students would respond to personalized threat scenarios?

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Duration: 00 05 00

TimeUp Reminder (Optional):
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Table Facilitator

1. Take pictures of everything the group produces during Capture and Clean-Up and upload them to
 1. If you're in Group A: [REDACTED]
 2. If you're in Group B: [REDACTED]
2. Try to order items in sequential order from most to least important in the pictures
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Thank You & Reminders

A special thank you for your participation today!

Reminders:

Session 2: Saturday, July 29, 2023, from 1:00 PM to 2:30 PM in ENB 313

Virtual Session: Saturday, August 5, 2023, from 12:00 PM to 1:00 PM via Microsoft Teams.

