

Industry In The Classroom

Virtual Engagement Lesson Guide How To Rob A Bank

Version 1.0

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Introduction

The web is filled with educational resources that can be used to bring cyber security to life. But it can be difficult to know which ones will work well for young learners, and which are suitable to be delivered virtually in classrooms.

This lesson plan is an example of a high quality cyber security activity suitable for highschool age students. Cyber Skills Live activities are tried-and-tested and are great for industry volunteers to use remotely with a class.

In *How To Rob A Bank* pupils learn to think like hackers in order to find security flaws within (the fictional) Strathclyde Bank. This introduces some of the basics of *penetration testing* and *ethical hacking*.

Each is designed to last around 30 minutes, and learners only need a web browser to use them. These activities may be used to support the teaching and delivery of learning outcomes for the NPA Cyber Security qualification.


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How to use this lesson plan

- ❑ Play through the “How To Rob A Bank” activity:
<https://cyberskillslesson.com/activity/how-to-rob-a-bank/>
- ❑ Watch the playthrough video:
<https://drive.google.com/file/d/1VL4J8ortR1GKqUHSeiC0IjFeV05v2pPB/view?usp=sharing>
- ❑ Read through the lesson plan, this suggests timings and talking points. Where possible use these notes but you should also add in your own knowledge and experience
- ❑ Read the sample slides and adapt them to suit you
<https://docs.google.com/presentation/d/1jj-4P-UH2THSIsnPPiKd4iPvu6Oebm9rUkp-xGoeV9E/edit?usp=sharing>
- ❑ Practice running through the activity using the lesson plan

Remember, for advice on organising and running this virtual engagement session you should refer to the Virtual Engagement Best Practice Guide.

Factsheet

- Topics:** Cyber Security, Penetration Testing, Ethical Hacking
- Target Audience:** S1-S4 (ages 11-16) secondary school students.
- Target Volunteers:** Anyone working in technology with a familiarity with the basics of cyber security. Background knowledge in ethical hacking or penetration testing is useful but not required.
- Skills Level:**  Suitable for Beginners.
- Need to know:** These are really popular with learners and a fun activity to do in the classroom. They're a great way to introduce ethical hacking topics in a way that feels like a game.
- Preparatory work:**
- 1) Read the Virtual Engagement Best Practice Guide
 - 2) Play the activity yourself
 - 3) Build and customise your session
- Required equipment:** Pupils each need access to a modern web browser.
- Websites required:** <https://cyberskillslesson.com/>
<https://strathclydebank.co.uk/>
- The context:** *"In order to stop a cyber criminal, it can help to think like one. Your challenge is to break into Strathclyde Bank. Learners will find a way to remotely connect and log into the Strathclyde Bank website using stolen customer details and transfer the money to our own secret bank account."*
- Hints for on the day:** Play along with the young people, it'll keep your pace right and will mean you can give hints or directly talk about what they are doing.

Lesson Plan

<p>Time</p>	<p>Cyber Skills Live - How To Rob A Bank Volunteer: Teacher:</p> <p>Sample Slides: https://docs.google.com/presentation/d/1jj-4P-UH2THSIsnPPiKd4iPvu6Oebm9rUkp-xGoeV9E/edit?usp=sharing</p>
<p>Hook</p>	
<p>2</p>	<p>Make sure to include:</p> <ul style="list-style-type: none"> ● Your name and how you'd like to be addressed ● Where you are calling from ● What your role is (a brief description of what you do) ● Who you work for and what the company does <p>"Hello, I'm Evelyn Reid. Today you can call me Eve. I'm joining you today from our office in Peterhead. I am a senior ethical hacker at The Peterhead Pen Test Partnership, we're a company that helps other companies learn more about their security issues."</p> <p>"Today you're going to become ethical hackers and see how you can use your digital skills to break into a fictional bank. Our activity is based on a real-life job role, an ethical hacker."</p> <p>"You're also going to get the chance to ask me any questions about my role as an ethical hacker."</p>
<p>Engage</p>	
<p>5</p>	<p>Give a short, 2-3 slide, presentation on the area and what you do. Think about what context the learners might need for the activity - in this case linking it to the need to work digital evidence.</p> <p>Use the question in the slide to prompt discussion: "What is the difference between an 'ethical hacker' and a 'hacker'?"</p> <p>As part you this section you could:</p> <ul style="list-style-type: none"> ● Talk about a task you do at work ● Ask the pupils a question ● Discuss a relevant recent news story
<p>Explore</p>	
<p>2</p>	<p>Starting the activity: "Go to cyberskillslesson.com and select How To Rob A Bank. It'll work in any modern web browser like Google Chrome or Firefox.</p> <p>You'll be asked what school you are joining from, select " _____"</p>

	Enter your first name, and choose an avatar”
2	<p>Step 1 - Ping:</p> <p>Steps:</p> <ul style="list-style-type: none"> • Ping Google • Ping Strathclyde Bank <p>Things to talk about:</p> <ul style="list-style-type: none"> • Ping, checking whether a computer is switched on and available • Using a terminal, what people use one and why
2	<p>Step 2 - SSH</p> <p>Steps:</p> <ul style="list-style-type: none"> • Login to the network via SSH <p>Things to talk about:</p> <ul style="list-style-type: none"> • Why people might need to login to a corporate system remotely (working from home, remote engineers, contractors) • Importance of keeping passwords secret • Removing accounts when staff leave the company
2	<p>Step 3 - Navigate Around</p> <p>Steps:</p> <ul style="list-style-type: none"> • Use ls and cd to navigate around folders • Output a file using cat <p>Things to talk about:</p> <ul style="list-style-type: none"> • Using ls to list files • Using cd to change folders • Using cat to display a file
5	<p>Steps 4 and 5 - Looking At Business Accounts</p> <p>Steps:</p> <ul style="list-style-type: none"> • Navigate to business accounts folder • Output all_accounts.log - fails due to insufficient permissions • Navigate to IT support folder • Output pwords.txt file <p>Things to talk about:</p> <ul style="list-style-type: none"> • Files can have different permissions, so different users can do different things. Catering shouldn't see staff health files for example. • Problems with storing passwords as plaintext
5	<p>Steps 6 and 7 - Switch User and Navigate Back</p> <p>Steps:</p> <ul style="list-style-type: none"> • Use su to switch to the Bank Manager account (along with their permissions!) • Navigate back to the business_accounts folder • Output the all_accounts.log file again <p>Things to talk about:</p>

	<ul style="list-style-type: none"> • Why it's good to try and 'escalate privileges' when doing a penetration test • The poor use of password protection again, plaintext
5	<p>Steps 8 - Rob The Bank Open the totaliser and have on display at this point (link at bottom of activity)</p> <p>"Great. Every time you steal some money from the bank the totaliser will ker-ching - let's see how much money we can steal together" - this is a good opportunity to have fun as people steal large amounts of money. Encourage them to keep going.</p> <p>Steps:</p> <ul style="list-style-type: none"> • Go to strathclydebank.co.uk • Choose one of the customers, and login as them • Transfer an amount of money (up to their balance) to our secret bank account • Repeat and watch the totaliser rise <p>Things to talk about:</p> <ul style="list-style-type: none"> • How easy it is to steal money, or information once you have someone's password • How else they could protect against this - 2FA • How to choose a strong password - 3 random words
Involve	
10	<p>Q&A with the class. The teacher will relay questions to you.</p> <p>Common Questions and sample answers:</p> <p><i>"How much do you get paid?"</i> <i>"Starting salaries for graduate or junior penetration testers typically fall between £20,000 and £30,000. With experience you can earn between £40,000 and £65,000, rising to £70,000 for senior and team leader roles. However, this figure can be significantly higher depending on the industry you work in." [prospects.ac.uk]</i></p> <p><i>"Where can I study ethical hacking?"</i> <i>"There are different options, some universities have degrees in ethical hacking, but there are also modern and graduate apprenticeships. Studying cyber security is a good start. I went to Abertay University and studied computer science, then changed job roles after a few years at my previous company."</i></p> <p><i>"What school subjects should I pick?"</i> <i>"People in cyber security have a wide range of backgrounds. Computing is probably the most important subject. Maths and Physics are useful too."</i></p> <p>Link what you say to everyday life, make it relatable to the learners.</p>

	Share <i>your</i> experience, you can give so much more than generic career information.
Sustain	
2	<ul style="list-style-type: none"> ● Visit the Digital World website (https://www.digitalworld.net/cyber-security-careers) ● Play more Cyber Skills Live activities ● Does your company have any outreach planned? ● Teachers: register for next event

Activity Screenshots:

