

Educator Guide

Cyber FUNdamentals - Unit 3

Single Student

CLOUD CHAMPIONS

EDUCATION.MINECRAFT.NET

THEME OVERVIEW

Cyber FUNdamentals is part of the K-12 cybersecurity progression in Minecraft Education. These lessons are designed for Lower Secondary | Grades 6-8 | Ages 11-14. Cyber FUNdamentals consists of three units, which each contain multiple lessons covering various cybersecurity concepts.

This unit is Cloud Champions. This unit contains 2 lessons:

- Back-Up Data
- Big Bad's Attack

UNIT OBJECTIVES

By the end of this unit, students will be able to:

- Explain what is a digital footprint and actions that contribute to a digital footprint
- Describe how the 3-2-1 data storage method
- Explain the importance of backups
- Articulate the concept of the Internet of Things (IoT)
- Provide real examples of Internet of Things (IoT) devices
- Explain the risks and benefits of IoT devices

Educational Standards - Computer Science

CSTA Standards

Middle Grades (Level 2)
2-NI-05 Explain how physical and digital security measures protect electronic information.
2-IC-23 Describe tradeoffs between allowing information to be public and keeping information private and secure.

ISTE Standards

1.2.b Students engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.
1.2.d Students manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online.

Cyber.org Standards

6-8.DC.ETH Distinguish between ethical and malicious hacking.
6-8.SEC.NET Explain how malicious actions threaten network security.
6-8.DC.FOOT.1 Recognize the many sources of data that make up a digital footprint.
6-8.DC.FOOT.2 Recognize the permanence of a digital footprint.
6-8.CS.IOT Evaluate the risks and benefits of Internet of Things devices.
6-8.CS.LOSS Explain the role and importance of backups.

Computing Programmes of Study - Key Stage 3

Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns.

Australian F-10 Curriculum: Digital Technologies - Year 7 & 8

Investigate and manage the digital footprint existing systems and student solutions collect and assess if the data is essential to their purpose (AC9TDI8P14)

WAYS TO USE THIS LEARNING CONTENT

How can this lesson be used?

Integrated into classrooms	Cyber FUNdamentals is connected to numerous computer science, technology, and cybersecurity standards. You could easily look at your academic standards and use this learning content when you are teaching specific concepts related to digital citizenship, networks, or online safety. This learning content is a great way to introduce and support cybersecurity concepts.
STEAM Labs or Digital Makerspaces	Who wouldn't love to use Minecraft in a fully integrated learning environment where everything from the furniture and technology to curriculum and assessment work together to support hands-on, minds-on learning?! Cyber FUNdamentals content could be used in any of the learning spaces to create safe and responsible digital citizens.
Afterschool learning opportunities	After a full instructional day, students need something fun and engaging to provide motivation for learning. What could possibly be more fun and engaging than Minecraft Education?! Not only will students love playing Minecraft, but they will also learn educational concepts and develop their skills in creativity, communication, collaboration, and critical thinking.
Summer camps	Are you planning or hosting a summer camp? Who wouldn't love to explore and learn in Minecraft?! Whether Minecraft is the entire theme of the camp or even simply a portion of the camp, there are numerous opportunities for Minecraft Education to be a part a fun-filled summer experience!
Homeschool groups and other youth organizations	You don't have to be exclusively at a school or part of a school district to utilize Minecraft Education. Homeschools, families, and other organizations can purchase and manage Minecraft Education through our commercial offer. You can find more information here.

CLOUD CHAMPIONS – LESSON ACTIVITIES

Overview of the Lessons

Beginning the Map

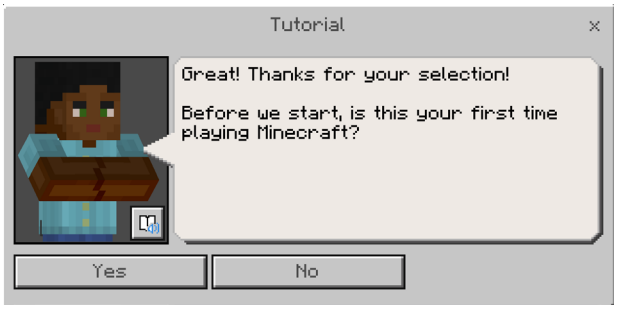
When the world launches, players will immediately be prompted to select their control scheme: keyboard or touch controls.



The player will receive another message, which will ask the player to verify their control scheme. Based on their selection, they will need to confirm by selecting “Yes, it is!” or they will need to select “No, it’s not.” if they selected the wrong scheme.



Next, players will be prompted with the question of, “Is this your first time playing Minecraft?”



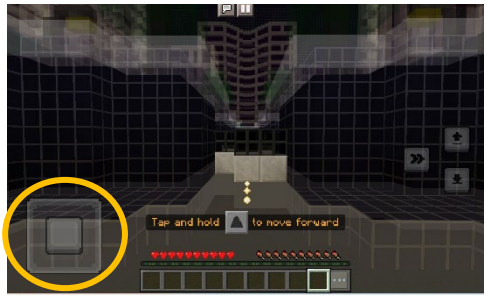
If players select “Yes”, they will proceed to a tutorial of game play mechanics. If they select “No”, they will proceed to the start of the game.

Tutorial Sequence

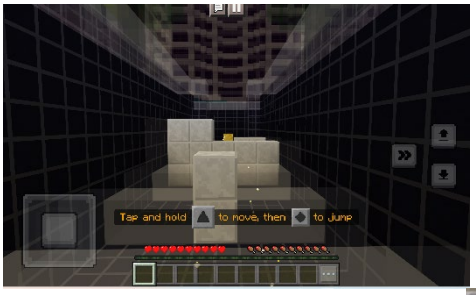
<table>
<tr><th>KEYBOARD</th><th>TOUCH CONTROLS</th></tr>
<tr><td colspan="2">Task 1: Look at the golden orbs</td></tr>
<tr><td>

Players will need to use their mouse and place the “+” (crosshairs) on the golden orbs. The player should look at the golden orb until it disappears. They will look at 9 golden orbs before moving on to the next task.</td><td>

Players will tap and drag the screen to the center of the orb. They will hold until the orb turns white and then disappears. They will look at 9 golden orbs before moving on to the next task.</td></tr>
<tr><td colspan="2">Task 2: Practice moving</td></tr>
<tr><td>

Players will practice moving in the game using the WASD keys.
Press “W” to move forward.
Press “A” to move right.
Press “D” to move left.
(NOTE: Pressing “S” will move the player backwards.)</td><td>

Players will practice moving using the touch controls. The icon of the touch control (on the bottom left-hand side of the screen) will indicate what direction they can move. This will act as a joystick for movement.</td></tr>
</table>

Task 3: Navigate past the wall	
 Players need to move past the wall by either moving left or right.	 Players need to move past the wall by either moving left or right.
Task 4: Practice jumping	
 Players should press “W” to move forward and then press “space” to jump. Players should move towards the gold block.	 Players need to tap and hold the  (forward command) and then press the  to jump.
Task 5: Press the button	
 Players will need to press the button on the top of the gold block. They can press the block by right-clicking on the button.	 Players need to press the button.

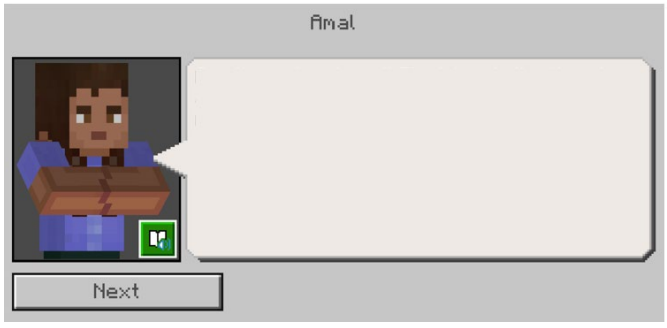
Welcome to Cyber FUNdamentals 3 – Cloud Champions! Let’s get started…



Upon arrival, a dialog box will automatically pop up into the game.

The dialog boxes often provide important information. Players should be encouraged to read all of the information. If you have younger players or readers who need additional support, consider demonstrating and encouraging the use of the Immersive Reader feature.

Immersive Reader is an integrated feature of Minecraft Education. It supports learners in reading or translating in-game text, including the character dialog. When a dialog box is opened, you will see an icon in the bottom right-hand corner of the NPC picture in the dialog box.



The students are back! Well... they aren't exactly students anymore. Amal, Lee, Taylor, and Malik all have jobs within the cybersecurity field. It appears that they are still trying to figure out the culprit behind those cyber attacks from all those years ago!



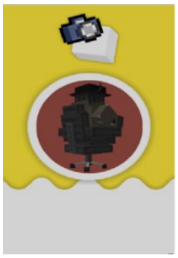
Lesson 1: Back-Up Data

In this activity, players will reinvestigate the cyber attack from years ago. Amal, Taylor, Lee, and Malik will lead them through a series of activities to learn the importance of data storage.

ACTIVITY: INVESTIGATE THE NEW INFORMATION



The teacher will visit the former students. It appears that there were some old logs that may reveal some information about the attacker's identity and plans. The players will use Amal's computer to investigate. There are three online sites the players will look through, collect information, and then create a report to explain their findings. It looks like the cyber attacker's has left a digital footprint…

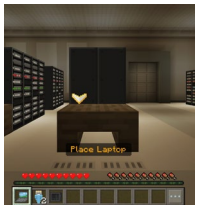
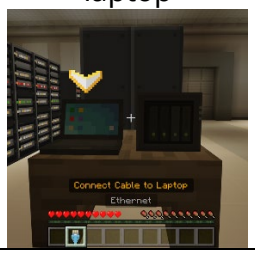
Email	Block.Hackerz Message Boards	SnapBlock
		

It looks like BiGB4D1's plan is to break into the Block Net's new datacenter and release the new malware – G.H.O.S.T. v2 onto the cloud!

ACTIVITY: VISIT THE DATA CENTER

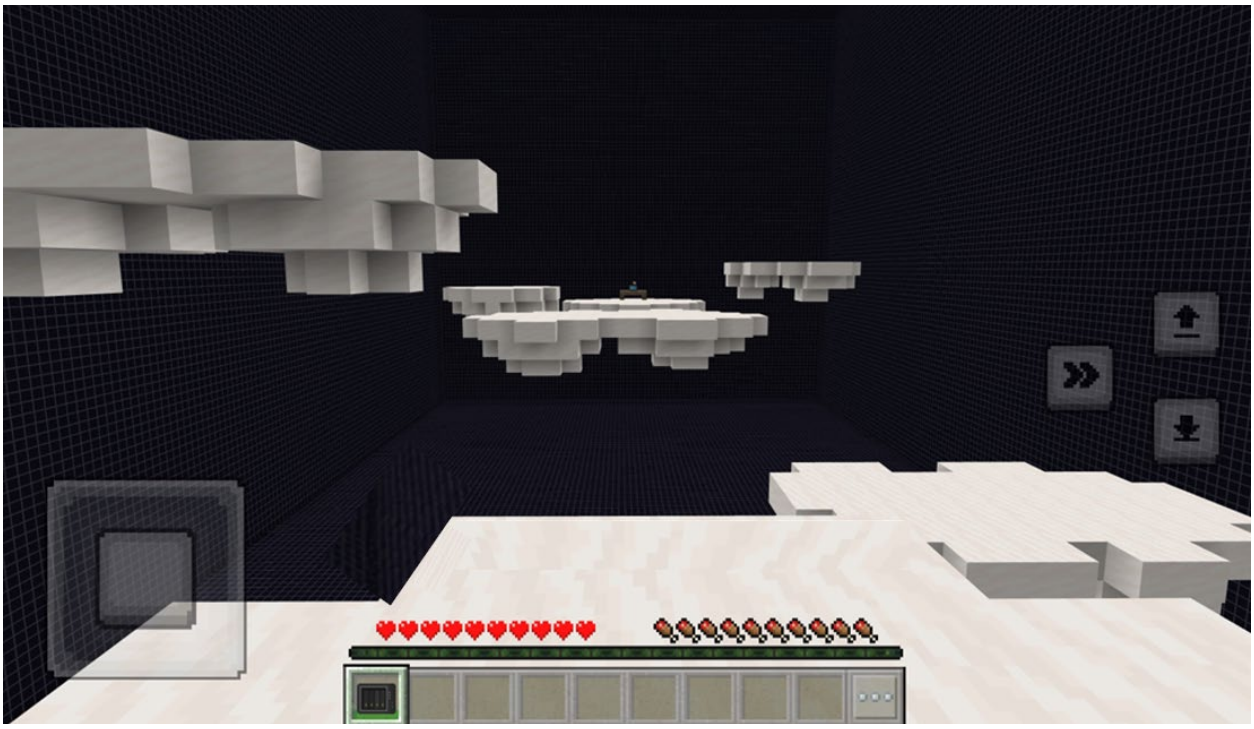
Players will visit the data center with Taylor to upload Malik's program. This program uses the 3-2-1 method for backing up files.

- 3 copies of the data
- 2 types of storage
- 1 copy of the data offsite (or in the cloud)

Step 1: Place laptop 	Step 2: Connect cable from laptop to server 	Step 3: Interact with computer to copy files 
Step 4: Place NAS box 	Step 5: Connect cable to laptop 	Step 6: Copy files to NAS 

ACTIVITY: COMPLETE THE BACK-UP PROCESS

Players will need to escort the data to the cloud server by jumping from cloud to cloud to complete the back-up process. If a player misses the jump and falls, they will have to start over again.



IMPORTANT VOCABULARY:

Vulnerability – weakness in an information system, system security procedures, internal controls, or implementation that could be exploited or triggered by a threat source

Hacker – someone who identifies and then exploits weaknesses in a computer system or network

Ethical – describes a person or behavior as right in the moral sense (i.e., truthful, honest, fair)

Cloud – global network of servers; not a physical entity, but a vast network of remote servers around the globe which are hooked together and operate as a single ecosystem

Ransomware – malicious software designed to block access to a computer system until a sum of money is paid

Digital footprint – information about a particular person that exists on the Internet as a result of their online identity

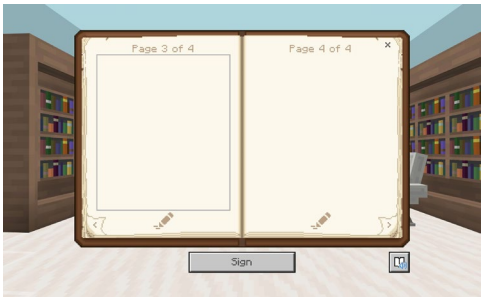
FORMATIVE ASSESSMENT

WELCOME TO THE FOCUS ROOM!

Players will have the opportunity to reflect and think about what they just learned in Lesson 1. They will receive a book & quill in their hotbar. Upon opening the book, they will find the following prompts:

- What are some of the risks with oversharing personal information on social media?
- In your own words, what do the numbers in the 3-2-1 back-up method represent?
- Describe how you could use the 3-2-1 back-up method at home or school.

Players should capture their answers by turning to a new page in the book and typing directly into the blank page.



Lesson 2: Big Bad's Attack

In this lesson, players will learn about the Internet of Things (IoT), identify types of IoT devices, and discover both the benefits and vulnerabilities of using IoT devices. Players will finish up the lesson by entering the supercomputer to defend against Big Bad's G.H.O.S.T. v2 attack!

ACTIVITY: INVESTIGATE THE WAREHOUSE



Malik's program has found the hacker loading malware onto some devices in a nearby warehouse. Players will need to investigate the devices in the warehouse to figure out which one(s) have been exploited. Players will receive a scanner in slot 1 of their hotbar. IoT devices will be indicated by gold particles.

IoT Devices in the Warehouse

Door Lock 	Doorbell Camera 	Motion Sensor 	Smart Hub 	Smart Fridge 
Time Clock 	Smart Thermostat 	Smart Switch 	Alarm Panel 	Smart Speaker 

ACTIVITY: WORLDWIDE BOTNET ATTACK



Oh no! It looks like Big Bad deployed the G.H.O.S.T. v2 software! Lee, Amal, Malik, and Taylor have been compromised – it's time to go back into the supercomputer!



Players will need to help protect the central server while they shut down the network portals. Players will be given a data launcher to stop the bots and data disrupters to shut down the network portals.

DATA LAUNCHER	DATA DISRUPTERS
	
Hold it in your hand, hold right-click to load it with data, aim and interact to launch the data at the bots to stop them.	Hold it in your hand, run to the portal, and interact with the portal to deploy it.

Players can find the network portals by looking in the sky for beacons. The beacons designate the location of an activated portal.



IMPORTANT VOCABULARY:

Internet of Things (IoT) – everyday objects that can connect to the Internet (both in person and remotely)

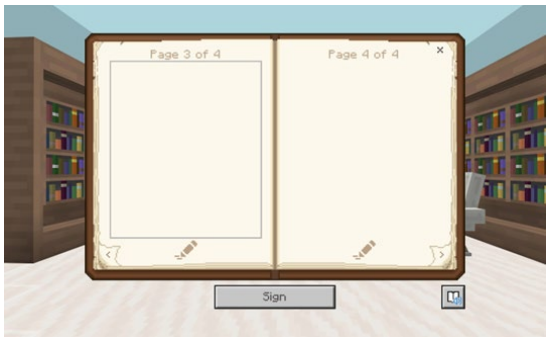
FORMATIVE ASSESSMENT

WELCOME TO THE FOCUS ROOM!

Players will have the opportunity to reflect and think about what they just learned in Lesson 2. They will receive a book & quill in their hotbar. Upon opening the book, they will find the following prompts:

- Give some examples of Internet of Things (IoT) devices.
- Describe the risks and benefits of IoT devices.
- Why is cybersecurity important?
- What are the cybersecurity practices you could use in your life?

Players should capture their answers by turning to a new page in the book and typing directly into the blank page.



Upon completion of this world, players will receive their [CyberFUNdamentals Certificate]!



HOW TO GET STARTED - MINECRAFT EDUCATION

Minecraft Education offers a unique learning platform where students can engage in creative builds and various game elements.

If you are licensed to use Minecraft Education through your O365 EDU account, download directly at aka.ms/download or reach out to your IT department for assistance. More information on deployment and license assignment can be found at aka.ms/meedeployguide.

Here's how to get setup:
1. First, check here to see if your school account is eligible.
2. If you do not have a valid O365 EDU account, you can still download and try a free demo on Windows, Mac or iPad.
3. Download Minecraft Education for Windows, Mac or iPad.

Once you are set-up with Minecraft Education, you should:

- Learn about Cyber FUNdamentals with this video: aka.ms/cyberfundamentalstrailer
- Use this Educator Guide and the corresponding classroom presentation!
- Play through Cyber FUNdamentals: Cloud Champions to get a better understanding of the lesson and how to navigate through the Minecraft world.