HOUR OF CODE

EDUCATOR GUIDE

- Theme
- Getting Started
- Lesson Plan
- Learning Standards
- Go beyond the Hour of Code

WELCOME TO MINECRAFT'S HOUR OF CODE: THE SHOW MUST GO ON!

THEME: CODE, CREATE, AND TAKE THE SPOTLIGHT

In a world increasingly shaped by AI, coding is becoming an essential literacy for students to thrive as creators and critical thinkers. Studies show that students with a strong foundation in computing are better prepared to leverage emerging technologies and adapt to rapid digital changes across all fields. By introducing coding through fun, engaging experiences, we're equipping students with the tools to explore, innovate, and lead in an AI-driven era.

This year's coding adventure invites learners of all ages to save a chaotic theater production and unleash their creativity through the power of code. With coding in blocks or Python, Minecraft's Hour of Code allows anyone to learn the basics of coding and how coding can invite creativity into their lives.

In this new Hour of Code adventure, students will explore the theater to find the missing star, the Agent, while solving fun coding puzzles and interacting with lively characters. They will unlock hidden gags, customize the show, and plan an unforgettable performance

As you navigate the theater, you will discover various departments. Learners will use the power of code to:

- Compose toe-tapping tunes in the Recording Studio
- Choreograph dazzling dance routines in the Dance Studio
- Craft eye-catching props in the Prop Department
- Create show-stopping costumes in the Wardrobe

Whether you are new to coding or have more experience, the Hour of Code 2024: *The Show Must Go On*!, will apply key computer science concepts like sequences, loops, and debugging—all while letting their creative vision become real in Minecraft.

Are you ready to code, create and save the show? Together, we'll prove that with creativity, problem-solving, and a little bit of code, the show will ALWAYS go on!

HOW TO GET STARTED – MINECRAFT EDUCATION

Minecraft Education offers a unique learning platform where students can engage in creative builds and various game elements. And, we have the Hour of Code as easy as 1, 2, 3 for you to get started.

Here's how to get setup:
1. Go to Minecraft Hour of Code to download and install Minecraft Education.
2. If you do not have a valid O365 EDU account, you can still try a free demo on Windows, Mac or iPad.
3. Review the lesson plan and resources to begin the Hour of Code!

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

- Learn about Hour of Code 2024: The Show Must Go On! with this "How to Facilitate an Hour of Code" introduction video.
- Use this Educator Guide, Classroom Presentation, and Solutions Guide to help you prepare for your own Hour of Code 2024 experience.
- Play through the Hour of Code 2024: The Show Must Go On! game to get more familiar with the game play!

Moving in Minecraft

Minecraft Mechanics – Keyboard / Mouse

C	Open CodeBuilder
T	Open Chat
ESC	Open Pause Menu; Close In-Game Menus
LEFT-CLICK	Mine a Block
RIGHT-CLICK	Interact with buttons/NPCs in the world
SPACE BAR	Jump
W/A/S/D	Player Movement (forward, back, right, left)
MOUSE MOVEMENT	Player Direction

Minecraft Mechanics – Touch Controls

	Open CodeBuilder
	Open Chat

	Open Pause Menu
	Open the Inventory
	Sneak
	Jump
	Run
	Player Movement (forward, back, right, left)

Helpful Hint – How to use Immersive Reader

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.

HOUR OF CODE 2024: THE SHOW MUST GO ON!

LESSON EXPLANATION

Lesson Overview

Oh no! Our lovable star, The Agent, has pulled a disappearing act moments before the big show. Your mission is to code your way through fun challenges, unlock surprises, and save the show!

Essential Question:

How can coding be used as a tool for creative expression and problem-solving to bring ideas and performances to life?

Lesson Objectives

In this exciting new Hour of Code experience, students will:

1. **Explore and Problem-Solve:** Navigate a theater environment, using movement, coding interaction, and critical thinking skills to complete a series of engaging coding puzzles and challenges.
2. **Apply Key Coding Concepts:** Use foundational coding principles, such as sequences, loops, and debugging
3. **Demonstrate Creativity and Adaptability:** Develop unique solutions by experimenting with coding tasks, iterating on designs for costumes, sets, and routines, and sharing their creative vision.
4. **Reflect and Communicate:** Reflect on the role of creativity in coding, discussing how coding can enhance performances and real-world experiences, and effectively collaborate with peers and instructors to share their final shows.

Student Performance Expectations

Main Coding Activities

Students will complete **four main activities**, each located in a different theater department. Each activity is divided into two parts, combining structured puzzles with open-ended creativity:

1. **Sound Stage:**
    - **Puzzle Challenge**: Students arrange musical notes and instruments to solve a code-based puzzle and unlock the next area.
    - **Creative Task**: Compose original music by experimenting with different instruments and sequences, adjusting until they're happy with the song.
2. **Dance Studio:**
    - **Puzzle Challenge**: Students choreograph a routine by coding specific dance moves for the armor stands based on clues.
    - **Creative Task**: Continue choreographing dance moves, with the freedom to sequence multiple routines for the final performance.
3. **Prop Department:**
    - **Puzzle Challenge**: Set up stage scenes by coding the biome, time, and weather elements in a particular order to open a locked door.
    - **Creative Task**: Experiment with creating different stage designs by changing biomes, lighting, and weather conditions for a custom atmosphere.
4. **Wardrobe:**
    - **Puzzle Challenge**: Unlock a door by using code to assemble costumes in a specific order.

- **Creative Task**: Customize costumes for the Agent, experimenting with head, body, and leg combinations to bring their vision to life.

Hidden Gags
In addition to the main activities, there are 12 hidden gags scattered throughout the theater. Each gag is a comedic or silly skit, rewarding players who explore the environment. Every gag adds extra "backup dancers" to enhance the final show, tracked on a backstage board.

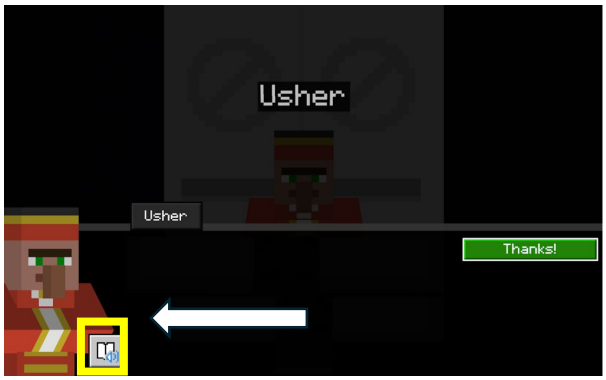
Finale and Re-coding Opportunity
After completing the four main activities, students showcase their work in the final theater show. Following the initial performance, they can choose to re-code specific elements, revisiting the departments to fine-tune their music, costumes, stage designs, and choreography, allowing for further creative expression in the final show.

ACTIVITY EXPLANATION

Beginning the Map

When the world launches, players will be prompted to press the START button to begin the map.

They will then be greeted by the Usher, who will direct them to their seat for the Minecraft Stage Show Extravaganza. Throughout the game, players will see dialog boxes (shown below). This will have important information and/or directions for the player. **Encourage players to read carefully**. The highlighted icon below opens Immersive reader.



Once players have arrived in their seat, they will be asked to select their game controls: keyboard and mouse OR touch/mobile.

While waiting for the show to start, there seems to be something wrong...

The Stage Manager appears and is announcing that they are experiencing “technical difficulties”. They are unable to start the show. They are looking for

someone who can code. This is where the players come in! Players will need to select the “I can code!” button to start their adventure.

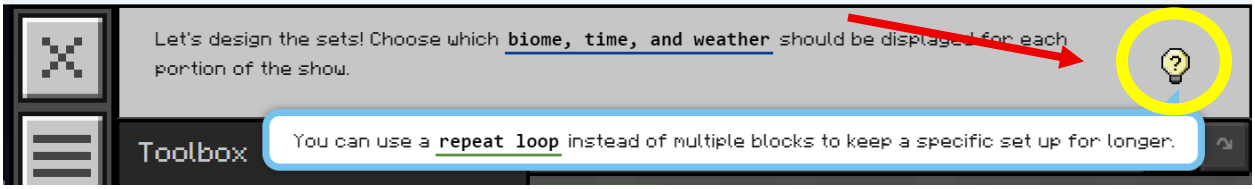
Next, players will be prompted to choose their coding language: Blocks or Python.

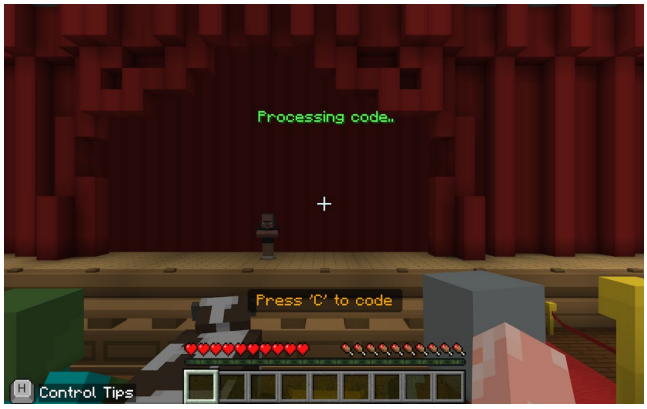
NOTE: Blocks are best for beginners. Python should only be selected if a player has coded in it previously. *Once a player selects a programming language, they are unable to change their selection for the remainder of the game.*

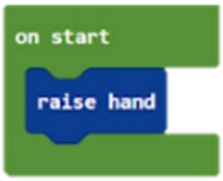
Players will press “C” to begin coding.

HINT BUTTON

Select the light bulb for hints to solve coding puzzles





VOLUNTEER TO HELP	
Players will use the CodeBuilder editor in game to build their code.	
Blocks	**Python**
	`hoc.raise_hand()`

The stage manager will then ask you to follow the Usher to the backstage area.

Tutorial Sequence

KEYBOARD	TOUCH CONTROLS
Movement Sequence	
 Players will practice moving in the game using the WASD keys and the mouse.	 Players will practice moving using the touch controls. The  will allow them to move in all directions.

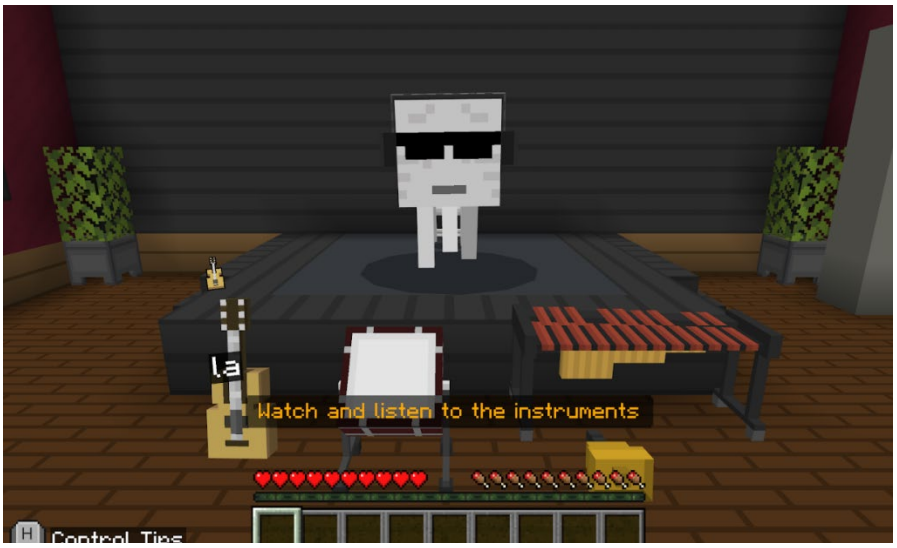
Jump Tutorial	
 Players should press “W” to move forward and then press “space” to jump.	 Players need to press the  to jump.
NPC Tutorial	
 Players will need to aim and right-click the NPC (non-player character) to interact with them.	 Players need to select the “Interact” button to interact with the NPC (non-player character).

Whew! We made it backstage... Now, let’s get started – we must find the Agent!

Game Play Activities

ACTIVITY 1: THE SOUND STAGE

The player will be directed to the first activity – the Sound Stage with Ghast Lee Nethers, the musical director. In this activity, they will need to unlock the door by playing the correct song. There are two gags to discover!

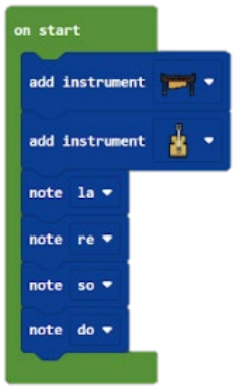


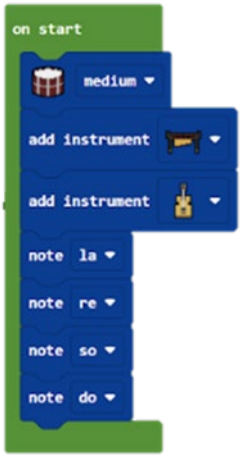
Players will need to watch the musical instruments to see what notes are playing and in what order. They will use this information in their code. Then, they will add in the additional instruments.

Coding Solution

SOUND STAGE		
	Blocks	**Python**

Song 1		`hoc.add_instrument(Instrument.GUITAR)`
		`hoc.note(Note.LA)`
		`hoc.note(Note.RE)`
		`hoc.note(Note.SO)`
		`hoc.note(Note.DO)`

Song 2		`hoc.add_instrument(Instrument.Xylophone)`
		`hoc.add_instrument(Instrument.Guitar)`
		`hoc.note(Note.La)`
		`hoc.note(Note.Re)`
		`hoc.note(Note.So)`
		`hoc.note(Note.Do)`

Song 3		`hoc.drums(Drums.MEDIUM)`
		`hoc.add_instrument(Instrument.Xylophone)`
		`hoc.add_instrument(Instrument.Guitar)`
		`hoc.note(Note.La)`
		`hoc.note(Note.Re)`
		`hoc.note(Note.So)`
		`hoc.note(Note.Do)`

The door will open, and the player will continue to the next room. In this room, they will encounter the Agent!

The Agent has stage fright! Can you help the Agent write a song for the show?

You have the ability to compose your own music using code. You can add and remove instruments, add drum beats, and use the notes to create a song. Players can continue to iterate until they are happy with their song.

Unfortunately, this was not good enough to convince the Agent to go on with the show! You must continue on... THE SHOW MUST GO ON!

At this point, you are welcome to release players to finish the remaining activities. The remaining activities may be completed in any order.

There are three remaning coding and creative sandbox activities:

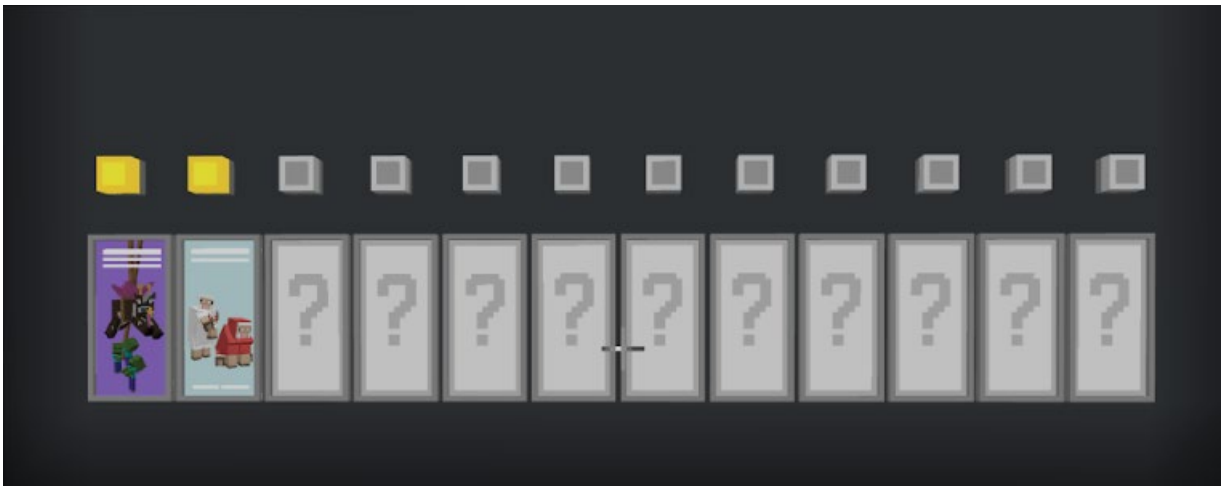
Dance Studio	Prop Department	Wardrobe
		

You will know when you have completed an area when you see the green check mark on the colored door frame.

In addition to the coding activities, there are 12 hidden gags for the players to collect. They are funny/silly skits depicting comedy and mischief. They are scattered all around the game.

	
If you see a character, approach them. If it is a gag, then the game will launch into a cinematic scene about that gag.	After the cinematic plays, you will see the title of the gag. You will also see your progress of gags collected.

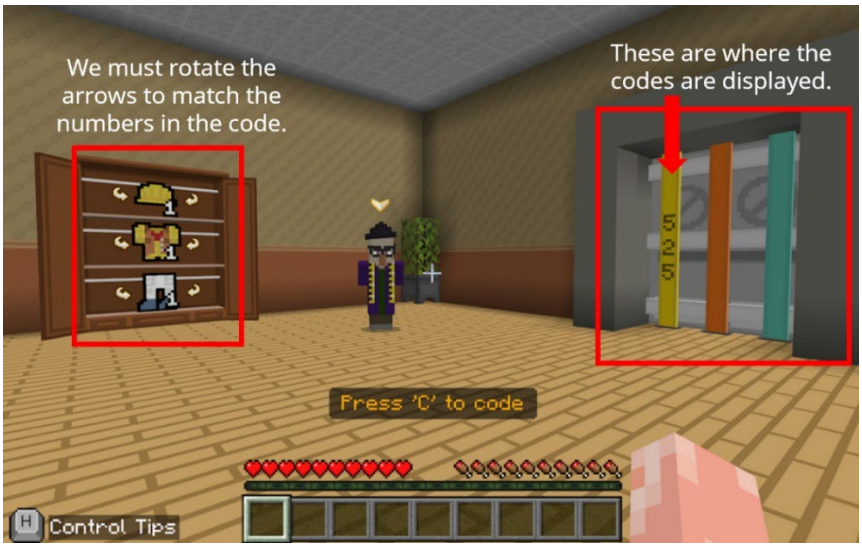
You can track your progress of how many gags you have collected by checking on the board backstage. The more gags you collect, the more backup dancers you will have for your final performance!



ACTIVITY: THE WARDROBE

Players will interact with Swampy Wichez, the costume designer. Due to the sudden entrance, poor Swampy Wichez was frightened, and all the costumes were scattered onto the floor. Go around the room and collect all the costumes and accessories. You will have a tracker for your progress.

After collecting the costumes, the player will interact with Swampy Wichez to find out that the Agent has ran through the locked door. They must complete the coding puzzle to unlock this door. This door using a special combination of numbers referring to the costume catalog.



The head is the first number.
The body is the second number.
The legs are the third number.

Puzzle 1	Code: 525	
Puzzle 2	Code: 352	
Puzzle 3	Code: 155	

Coding Solution

WARDROBE		
	Blocks	**Python**
Puzzle 1		`hoc.costume(HeadWear.COWBOY_HAT, MidWear.BALLERINA_SHIRT, LowerWear.Ballerina_Tutu)`
Puzzle 2		`hoc.costume(HeadWear.Knight_Helmet, MidWear.ASTRONAUT_TOP, LowerWear.KNIGHT_LEGS)`
Puzzle 3		`hoc.costume(HeadWear.CONSTRUCTION_HELMET, MidWear. ASTRONAUT_TOP, LowerWear.BALLERINA_TUTU)`

Great work! The door is opened – go find the Agent!

The Agent still has stage fright! Can you help the Agent put together costumes for the show?

You have the ability to create costumes for the Agent using code. You can choose something for their head, body, and legs. You can sequence as many costumes as you would like the Agent to change into for the show. Players can continue to iterate until they are happy with their costume design.

Unfortunately, this was not good enough to convince the Agent to go on with the show! You must continue on... THE SHOW MUST GO ON!

ACTIVITY: PROP DEPARTMENT

Players will interact with Zom B. Walker, the set designer. Players will ask Zom B. Walker if they have seen the Agent – just to find out that the Agent yet again ran behind a locked door. To open the locked door, they must put together a specific sequence of sets together to open the lock.

Players will need to search the room to find the 3 scripts with each stage set. The stage set will have numerical order, scene's biome, scene's weather, and the scene's time. All this information will be needed for the code.

The scenes can be found on the 3 lecterns around the room.

Scene 1	
Scene 2	
Scene 3	

Coding Solution

WARDROBE	
Blocks	**Python**

	`hoc.set(Biome.Taiga, Time.Day, Climate.Snow)`
	`hoc.set(Biome.Desert, Time.Sunset, Climate.Clear)`
	`hoc.set(Biome.Jungle, Time.Night, Climate.Rain)`

The Agent still has stage fright! Can you help the Agent design the sets for the show?

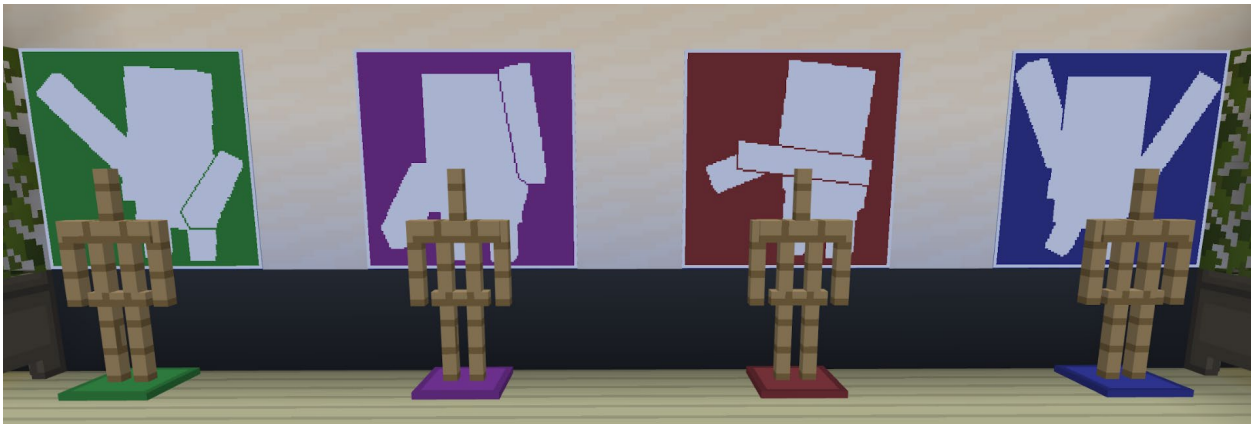
You have the ability to design the sets for the Agent using code. You can choose the biome, time, and weather. You can sequence as many sets as you would like for the show. Players can continue to iterate until they are happy with their set design.

Unfortunately, this was not good enough to convince the Agent to go on with the show! You must continue on... **THE SHOW MUST GO ON**!

ACTIVITY: DANCE STUDIO

Players will interact with Ann Derman, the choreographer. Players will ask Ann Derman if they have seen the Agent – just to find out that the Agent yet again ran behind a locked door. To open the locked door, they must have the armor stand dancers perform the correct dance routine.

Each dancing armor stand must perform a specific dance move. The posters above them should give you a hint on which dance move each armor should perform. You will need to code them to perform the correct dances.



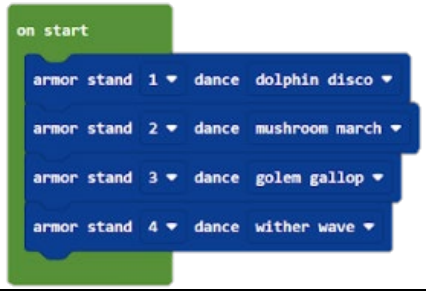
HINT: Run the existing code first to watch and see what dance moves the armor stand dancers do. Match the moves to the posters.

The colored outlines on the armor stands will help you to match with the posters.

Coding Solution

DANCING STUDIO

Blocks	Python

	`hoc.armorstand_dance(ArmorStand.One, Dance.DOLPHIN_DISCO)`
	`hoc.armorstand_dance(ArmorStand.Two, Dance.MUSHROOM_MARCH)`
	`hoc.armorstand_dance(ArmorStand.Three, Dance.GOLEM_GALLOP)`
	`hoc.armorstand_dance(ArmorStand.Four, Dance.WITHER_WAVE)`

The Agent still has stage fright! Can you help the Agent with some dance moves for the show?

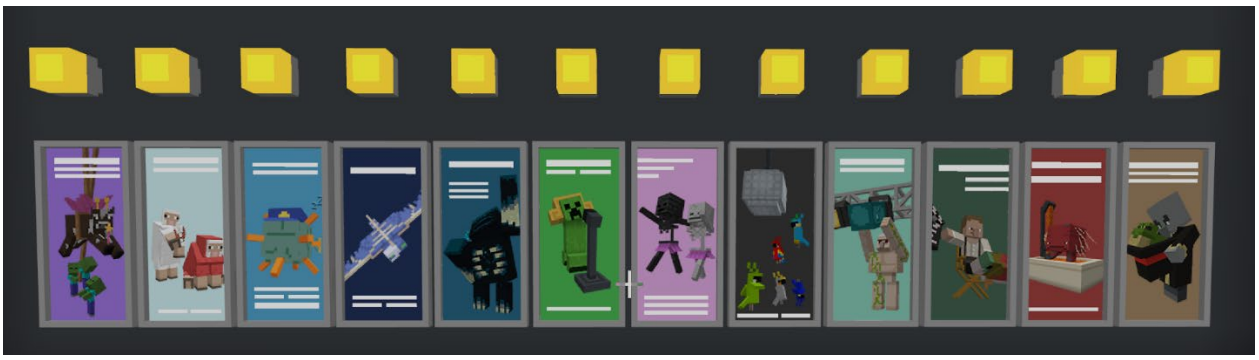
You have the ability to choreograph dance moves for the Agent using code. You can choose from the available dance moves. You can sequence as many dance moves as you would like for the show. Players can continue to iterate until they are happy with their choreography.

FINALLY... The Agent is ready...

WATCH YOUR SHOW ON THE STAGE!

After your initial show, players will have the option to change up their code and make some adjustments to the show. They can choose to specifically return to a section or simply just explore...

This is also a great time to explore the backstage area and the theater if players have not found all of the gags!



REFLECTION & CELEBRATION

After game play has finished, gather students back together to recap their learning and to discuss the **reflection questions.**

- How do you define creativity?
- How can you use creativity in coding?
- How is creativity used in our everyday lives?
- Tell us about which element of the show was your favorite: Sound Stage, Wardrobe (costume design), Dance Studio (choreography), or Prop Department (set design)?

END THE LEARNING EXPERIENCE BY PRESENTING STUDENTS WITH THEIR CERTIFICATION OF COMPLETION!

Educational Standards - Computer Science

Computer Science Teachers Association (CSTA) - United States

CSTA Standards			
Elementary (K-2)	**Elementary (3-5)**	**Middle (6-8)**	**High (9-12)**
1A-AP-14 Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops. **1A-IC-16** Compare how people live and work before and after the implementation or adoption of new computing technology.	**1B-AP-15** Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended. **1B-IC-18** Discuss computing technologies that have changed the world, and express how those technologies influence, and are influenced by, cultural practices.	**2-AP-17** Systematically test and refine programs using a range of test cases. **2-IC-20** Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options.	**3A-IC-24** Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices. **3B-IC-27** Predict how computational innovations that have revolutionized aspects of our culture might evolve.

International Society for Technology in Education (ISTE) - United States

Empowered Learner
• 1.1d Students understand the fundamental concepts of technology operations; demonstrate the ability to choose, use and troubleshoot current technologies; and are able to transfer their knowledge to explore emerging technologies.

Computing Programmes of Study - National Curriculum in England

Key Stage 3

Aims

- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems

Subject content

- Recall that a general-purpose computing system is a device for executing programs.
- Describe how AI differs from traditional programming.
- Identify examples of AI in the real world.
- Associate the use of artificial intelligence with moral dilemmas.

EDUCATIONAL STANDARDS – COMPUTER SCIENCE

AUSTRALIAN F-10 CURRICULUM – DIGITAL TECHNOLOGIES

Year 7 and 8

Investigate the ways in which products, services and environments evolve locally, regionally and globally and how competing factors including social, ethical, sustainability considerations are prioritised in the development of technologies and designed solutions for preferred futures (ACTDEK029)

- investigating how ethics, social values, profitability and sustainability considerations impact on design and technologies
- identifying needs and new opportunities for design and enterprise

Year 9 and 10

Explain how products, services and environments evolve with consideration of preferred futures and the impact of emerging technologies on design decisions (ACTDEK041)

- considering how creativity, innovation and enterprise contribute to how products, services and environments evolve
- explaining the consequences of social, ethical and sustainability decisions for products, services and environments
- predicting the impact of emerging technologies for preferred futures
- constructing scenarios of how the future may unfold (forecasting) and what impacts there may be for society and particular groups, and back casting from preferred futures