Immersive Gamebox School Bookings STEM Program

- *Gamebox Adventure Week*: Middle School Plan and Worksheets
  - Slides 2-12

Game Adventure Week
Middle School Plan and Worksheets

Gamebox Adventure Week: Middle School Plan and Worksheets

- Requirements
- How it would work
- Activity Sections
  - Gamebox Servers
  - Tracking Cameras
  - Lidars
  - Projectors
  - Rack System and Storage Space
  - Software
- Glossary Sheet
- Fill in the blank test

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Worksheet Sections

Each section is designed to be engaging and informative for middle school students, with a focus on interactive learning and real-world applications.

Each activity includes:

1. What
2. How
3. Activity
4. Real life Applications
5. Glossary
6. Safety
7. Discussion Questions

Understanding Gamebox Servers

What is a Gamebox Server?

- Imagine you're playing a video game, and you want your friends to join in from their homes. How does this happen? This is where a "Gamebox Server" comes in. Think of it as a powerful computer that lets many players join and play the same game from different places!

How Does It Work?

- Connection: Just like how you connect to the internet to browse websites, the gamebox server connects players from all over.
- Power: It's like a supercharged computer, much more powerful than what we use at home.
- Storage: It stores all the game's information, like the levels you play and your game progress.

Activity: Let's Build Our Own

- Using cardboard boxes, colored paper, and markers, create a model of a gamebox server. Label parts like "storage" (where the game is kept), "processor" (the brain of the server), and "connection ports" (where players join in).

How It's Used in Real Life

- Gamebox servers aren't just for games. Similar technology helps people watch movies online together or join virtual meetings from different places.

Glossary

- Server: A computer system that provides data or services to other computers.
- Processor: The part of the computer that performs calculations and runs programs.

Discussion Questions

- Can you think of other ways servers are used in our daily lives?
- Why do you think powerful servers are important for online gaming?

Safety First!

- Remember, handling real servers requires care. They have sensitive parts and need to be kept in cool, dry places. Always ask an adult if you want to explore more about

Understanding Tracking Cameras

What are tracking cameras?

- Imagine playing a video game where your character moves as you do. Tracking cameras make this magic happen! These special cameras watch your movements and tell the game what you're doing.

How Do They Work?

- Seeing Movement: These cameras are like eyes that can follow how you move.
- Sending Information: They quickly send this information to the game, making your character move like you.

Activity: Motion Detective

- Using a smartphone camera, record a friend doing different movements. Play detective and observe how each movement is different.

How It's Used in Real Life

- Tracking cameras are used in sports to follow players and in stores for security.

Glossary
Discussion Questions

Understanding Lidars

What is a Lidar?

- Lidar is like radar, but with light! It sends out light beams to measure distances and create maps of areas.

How Does It Work?

- Light Beams: Lidar uses light to measure how far away things are.
- Mapping: It helps in making detailed maps of places, even forests and cities.

Activity: Light Mazing

- Create a maze with strings and mirrors to simulate how Lidar uses light to navigate and map.

How It's Used in Real Life

- Lidar technology is used in self-driving cars to 'see' the road.

Glossary

Discussion Questions

Safety First!

Understanding Projectors

What are projectors?

- Projectors let us show videos or pictures on a big screen, turning any room into a movie theater.

How do they work?

- Big Pictures: They take small images and make them big on a screen or wall.
- Light Magic: Using light, they display the image onto a flat surface.

Activity: DIY Cinema

- Build a simple projector using a shoebox, a magnifying glass, and a smartphone to project an image.

How It's Used in Real Life

- Projectors are used in schools for teaching, in offices for presentations, and in theaters for movies.

Glossary

Discussion Questions

Safety First!

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Understanding Rack System and Storage Space

Discovering Rack Systems

- In a rack system, we store and organize lots of computer servers and storage devices in one place.

How do they work?

- Organization: It's like a big shelf where each server has its own spot.
- Efficiency: This setup helps keep everything running smoothly and securely.

Activity: Tech Organizer

- Create a model rack system using boxes or LEGO, labeling different parts for servers, storage, and cooling systems.

How It's Used in Real Life

- These systems are the backbone of internet services, storing lots of data and making sure websites work fast.

Glossary

Discussion Questions

Safety First!

Understanding Software

Understanding Operating System (OS) Software
- OS is a type of software that helps manage and control different technology systems in a place, like a sports arena or theater.

How does it work?

- Control Center: It's like the command center for technology, controlling lights, sounds, and screens.
- Integration: It lets different tech work together smoothly.

Activity: Software Designer

- Design a simple interface for a software on paper, imagining how you would control different tech in a room.

How It's Used in Real Life

- Operating System Software like VenueOS is used in big events for managing lights, sounds, and displays to create an amazing experience.
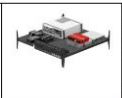
Glossary

Discussion Questions

Safety First!

Hardware Glossary Worksheet
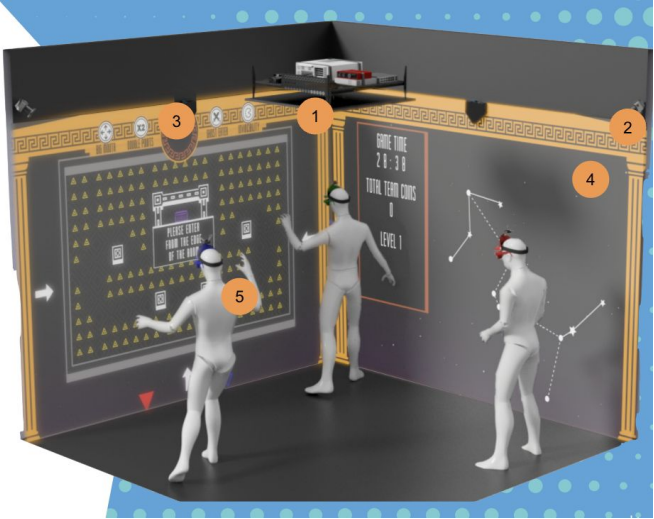
Gamebox

Game Shelf		Contains all the gamebox servers needed to run the games. There are data and power connectors at the front which connects the rest of the external equipment inside the gamebox
Tracking Cameras		4x Vicon tracking cameras in each corner of the room. They have LEDs which flash according to their status. The cameras track the hats inside the room and feed the data to the games
Touch Lidars		3x Lidars in the upper middle part of the projected walls. They spin when they are active and provide the touch wall in the games
PCC Camera		Located in the middle of the back wall. The camera turns on and grabs a gif at the end of the game.
Audio Speakers		4x speakers in each corner of the room. They are powered by an amp that sits on the game shelf

Projectors		4x projectors that hang from above, surrounding the game shelf.

Rack System

Synology NAS Drive		Storage for CCTV cameras It has a series of LEDs that indicate status by blinking. A single power button in the middle next to the Synology logo
Supermicro		A Virtual Machine server, running the venue Control System, VenueOS (Portal) and compositor (PCC).
Central Switch		All network connections are fed into the central switch, you will see a lot of short patch cables plugged into it.
Central NUC		Small square computer which is used to remote into a venue by the tech team, this would be connected to a screen that sits on top of the Rack
Server Rack		A metal storage box containing of the central machines mentioned above

Fill in the blank Test

3. Leaderboards / check-in desks