## Slide 1: Lesson Title

**LUNAR BASE RECONSTRUCTION**

**Lesson 2: Interactive Systems Programming**

*Year 5 - Age 10*

## Slide 2: Lesson Objectives

**By the end of this lesson, you will be able to:**

* Program buttons to control doors using "when clicked" events
* Apply different gravity settings to simulate space zones
* Use "push with velocity" to create realistic character movement
* Make objects behave differently in low-gravity environments
* Create systems that respond to user interactions

**Key Skills:** Event programming, physics simulation, cause and effect

## Slide 3: Input - Teacher Shows Example

**Watch this interactive base in action:** *[Teacher demonstrates clicking buttons to open doors]*

**See How:**

* Buttons make doors open and close automatically
* Characters jump differently in low gravity
* Different areas have different gravity effects
* Systems respond immediately to clicks

**Building on Your Base:** Your reconstructed base from Lesson 1 is perfect for adding interactivity! We'll make those buttons and doors actually work like real space systems.

## Slide 4: Core Task - All Students Start Programming

**Essential Code Blocks to Use:**

**Door Control System:**

when ButtonGroup1 is clicked

move Air\_Lock\_Door1 to y: -2 in 2 sec

wait 5 sec

move Air\_Lock\_Door1 to y: 0 in 2 sec

**Character Physics:**

when Regular\_man is clicked

push Regular\_man with velocity 2 forward

when program starts

set gravity pull to 0.17

**Start Programming:** Make your buttons control your doors and add physics to your characters!

## Slide 5: Mini Plenary

**Test Your Interactive Systems:**

✓ Do your doors open and close when buttons are clicked?

✓ Can you make characters jump or move when clicked?

✓ Does the low gravity setting make objects behave differently?

✓ Are your interactive systems responding consistently?

✓ Do your doors close automatically after opening?

**If your systems are working, you're ready for the challenge levels!**

## Slide 6: Foundation Challenge (LA)

**BASIC BUTTON-DOOR SYSTEM**

**Your Mission:** Make your 1-dome base interactive with working systems

**What You Need to Program:**

* 1 button controls 1 door (open/close cycle)
* Characters respond to clicks with simple movement
* Set lunar gravity (0.17) for the entire base

**Success Looks Like:**

* Door opens when button is clicked, then closes automatically
* Characters move when you click them
* Everything feels lighter due to low gravity

**Perfect for:** Learning the basics of interactive programming!

## Slide 7: Intermediate Challenge (MA)

**MULTIPLE INTERACTIVE SYSTEMS**

**Your Mission:** Create independent control systems for your 2-dome complex

**What You Need to Program:**

* 2+ button-door pairs working separately
* Characters with different click responses (jumping, pushing)
* Different gravity in different areas
* Doors that give feedback (sounds or visual changes)

**Success Looks Like:**

* Multiple working systems that don't interfere with each other
* Varied character interactions throughout the base
* Different zones feel different to move through

**Perfect for:** Managing multiple systems at once!

## Slide 8: Advanced Challenge (HA)

**COMPLEX BASE OPERATIONS**

**Your Mission:** Create sophisticated control systems for your 3-dome network

**What You Need to Program:**

* Multiple gravity zones (different gravity in each dome)
* Emergency systems (all doors open at once)
* Advanced character behaviors affected by interactions
* Physics-based puzzles using gravity to move objects
* Complex timing sequences

**Success Looks Like:**

* Professional-level interaction design
* Creative problem-solving with physics
* Systems that work together seamlessly

**Perfect for:** Pushing programming skills to the limit!

## Slide 9: Plenary

**WHAT WE'VE ACHIEVED TODAY:**

🤖 **Programmed** interactive systems that respond to user input

⚖️ **Simulated** realistic space physics and gravity

🚪 **Created** working airlock systems like real space stations

🎮 **Built** responsive user interfaces

**KEY LEARNING:** Your bases now work like real space systems! You've learned how cause-and-effect programming makes technology respond to human actions.

**You're thinking like real space engineers!**

## Slide 10: Next Steps

**YOU'RE READY FOR LESSON 3!**

**What's Coming Next:** 📋 Add information panels that teach about space science ❓ Create quiz systems to test space knowledge 📹 Design educational tours using camera movement 🎓 Transform your base into a teaching tool for others

**Your Challenge:** Your interactive base will become an educational experience that teaches others about space exploration!

**Excellent Programming, Space Engineers!**

Retry

P

and for lesson 3

Edit

## Slide 1: Lesson Title

**LUNAR BASE RECONSTRUCTION**

**Lesson 3: Educational Information Systems**

*Year 5 - Age 10*

## Slide 2: Lesson Objectives

**By the end of this lesson, you will be able to:**

* Create information panels that explain how your base works
* Design quiz systems that test space exploration knowledge
* Build educational tours using camera movement and timing
* Add text displays that teach real space science
* Transform your interactive base into a teaching tool for others

**Key Skills:** Information design, educational content, user experience, knowledge sharing

## Slide 3: Input - Teacher Shows Example

**Watch this educational base in action:** *[Teacher demonstrates clicking domes to show info panels]*

**See How:**

* Clicking domes shows information about their purpose
* Quiz questions test space knowledge with helpful feedback
* Camera moves to show different areas during tours
* Real space science facts are included

**Building on Your Interactive Base:** Your working doors and character systems from Lesson 2 provide perfect opportunities for educational content!

## Slide 4: Core Task - All Students Start Programming

**Essential Code Blocks to Use:**

**Information Panel System:**

when Dome\_1 is clicked

show info panel with title "Habitat Dome"

text "Living quarters with life support systems. Gravity set to 0.17g"

**Quiz System:**

when Space\_Hanger is clicked

show quiz panel with question "Why do lunar bases need airlocks?"

correct answer "To prevent air loss"

when correct: say "Correct! Air would escape into the vacuum of space"

when incorrect: say "Think about what happens to air in space..."

**Start Programming:** Add educational content to teach others about your base!

## Slide 5: Mini Plenary

**Test Your Educational Systems:**

✓ Do your information panels provide useful facts about space exploration?

✓ Are your quiz questions appropriate for teaching others?

✓ Can users easily navigate and learn from your base?

✓ Does your educational content connect to real space science?

✓ Are your explanations clear and accurate?

**If people can learn from your base, you're ready for the challenge levels!**

## Slide 6: Foundation Challenge (LA)

**BASIC INFORMATION SYSTEM**

**Your Mission:** Make your 1-dome base teach others about space living

**What You Need to Create:**

* 2-3 information panels explaining your dome and airlock
* 1 simple quiz question about lunar gravity or space
* Clear, accurate information that your classmates can understand

**Success Looks Like:**

* Working info panels that appear when clicked
* Educational content that teaches real space facts
* Quiz with helpful feedback for wrong answers

**Perfect for:** Creating your first educational content!

## Slide 7: Intermediate Challenge (MA)

**COMPREHENSIVE LEARNING EXPERIENCE**

**Your Mission:** Create a rich educational experience for your 2-dome complex

**What You Need to Create:**

* 4+ detailed information panels covering different space topics
* 2-3 quiz questions with helpful feedback
* Guided introduction sequence for new users
* Mix of base-specific and general space science information

**Success Looks Like:**

* Rich educational content throughout the base
* Good user guidance for visitors
* Combination of facts about your base and real space science

**Perfect for:** Building comprehensive learning experiences!

## Slide 8: Advanced Challenge (HA)

**INTERACTIVE SPACE EDUCATION CENTER**

**Your Mission:** Transform your 3-dome network into a professional educational experience

**What You Need to Create:**

* 6+ information systems covering complex space science topics
* Multi-question quiz system with scoring
* Multiple tour modes (construction, daily life, science, emergency)
* Interactive experiments (gravity comparisons, airlock demonstrations)
* Guided tours with different camera angles

**Success Looks Like:**

* Professional educational quality
* Innovative teaching methods
* Multiple ways to explore and learn

**Perfect for:** Creating museum-quality educational experiences!

## Slide 9: Plenary

**WHAT WE'VE ACHIEVED TODAY:**

🎓 **Created** complete educational experiences about space exploration

📚 **Combined** construction, programming, and teaching skills

🚀 **Built** learning tools that teach real space science

👨‍🏫 **Became** educators who can teach others

**KEY LEARNING:** You've taken basic building components and created sophisticated learning environments that could actually help train future astronauts!

**You're now space education experts!**

## Slide 10: Next Steps

**PROJECT COMPLETE - WELL DONE!**

**What You've Mastered:** 🏗️ **Construction Skills:** Logical base design using modular components 🤖 **Programming Skills:** Interactive systems with buttons, doors, and physics 🎓 **Educational Design:** Information systems that teach real space science

**Real-World Connections:**

* Your airlock systems work like those on the International Space Station
* Your gravity settings match actual lunar conditions (1/6th Earth gravity)
* Your modular base design reflects real space habitat planning

**You've become Space Engineers, Programmers, AND Educators!**

Retry