MINECRAFT EDUCATION

THE FIRST NIGHT

AI BUILD CHALLENGE



AI BUILD CHALLENGE TOOLKIT – INTRODUCTION

BUILD YOUR OWN AI AGENT TO HELP THE WORLD

Welcome to the exciting world of AI agents in Minecraft Education! This toolkit helps you and your students explore artificial intelligence by creating helpful agents that solve real problems in our communities. No complex coding required – just imagination, creativity, and a desire to make the world better!

WHAT IS AN AI BUILD CHALLENGE?

Imagine having a helpful robot assistant in Minecraft that can think, make decisions, and take action to solve problems! That's what students create in an AI Agent Build Challenge. Students design their own AI agents that can:

- **Sense** the world around them (What's happening?)
- **Think** about what to do (What's the best action?)
- **Act** to help solve problems (Let's do it!)

Whether it's an agent that helps farmers during droughts, protects villages at night, or keeps our environment clean, students learn how AI works by building solutions that matter.

WHY AI AGENTS ARE AMAZING FOR LEARNING

The AI Build Challenges offer students an incredible way to:

- Understand how AI really works through hands-on creation
- Develop problem-solving skills for real-world challenges
- Learn responsible AI design by considering who their agent helps
- Practice computational thinking without needing to be coding experts
- Collaborate with peers to create meaningful solutions

Students can envision themselves as AI designers who can shape how technology helps humanity!

Remember: The goal isn't to create perfect AI agents. It's to help students understand how AI works, think critically about technology, and imagine how they can use it to make the world better. Every agent they create is a step toward becoming responsible, creative problem-solvers.

GETTING STARTED IS EASY!

What You Need:

- Minecraft Education installed on devices (Need to install? Go HERE. Already installed? Great!)
- 30-120 minutes (or you can adapt the lesson over several days)
- Student groups of 2-3 (teamwork makes the dream work!)
- A flat world or a biome of your choice to build in
- Imagination and enthusiasm

AI BUILD CHALLENGE TOOLKIT – BUILD CHALLENGE OPTIONS

Quick Start Options:

Option 1: Use Our Ready-Made Challenges: Jump right in with pre-designed scenarios that are classroom-tested and student-approved!

Option 2: Create Your Own Challenge: Design a custom AI agent challenge that fits your curriculum or addresses issues in your local community!



OPTION 1: USE OUR READY-MADE CHALLENGE PROMPTS

READY-TO-USE AI AGENT CHALLENGES

THE SMART FARMING AGENT

The Problem: A drought is threatening the village's food supply!
Your Mission: Build an AI agent that can autonomously care for crops by:

- Checking if soil is dry
- Watering plants when needed
- Planting seeds in empty spots
- Harvesting ripe crops

Real-World Connection: Learn how AI helps farmers feed the world!

THE NIGHT GUARDIAN AGENT

The Problem: Villages are vulnerable to dangers at night!
Your Mission: Create an AI agent that:

- Patrols the village after dark
- Places torches in dark areas
- Rings the bell if danger is spotted
- Keeps villagers safe

Real-World Connection: Explore how AI enhances security and safety!

THE ECO-CLEANUP AGENT

The Problem: Our environment needs protection from litter!
Your Mission: Design an AI agent that:

- Collects trash items
- Sorts materials into recycling chests
- Identifies pollution sources
- Keeps spaces clean

Real-World Connection: Discover how AI helps protect our planet!

THE HEALTH HELPER AGENT

The Problem: Villagers need quick access to health supplies!
Your Mission: Build an AI agent that:

- Monitors villager health levels
- Delivers food to hungry villagers
- Distributes healing potions when needed
- Alerts players to emergencies

Real-World Connection: Learn how AI supports healthcare!

THE TRAFFIC MANAGER AGENT

The Problem: The village roads are getting congested!
Your Mission: Create an AI agent that:

- Directs Minecart traffic
- Opens and closes gates at the right times
- Prevents collisions
- Optimizes travel routes

Real-World Connection: See how AI improves transportation!

OPTION 2: CREATE YOUR OWN CHALLENGE

CREATE YOUR OWN AI AGENT CHALLENGE

Considerations for your AI Build Challenge

1. **Choose a Real Problem:** What issue in your school or community needs solving?
2. **Define the Agent's Role:** What will it sense, think, and do?
3. **Set Clear Goals:** What does success look like?
4. **Create the World:** What environment will the agent work in?
5. **Add Constraints:** What limitations make it realistic?

Inspiration Starters:

- School library assistant agent
- Playground safety monitor agent
- Garden watering system agent
- Lost-and-found organizer agent
- Cafeteria helper agent
- Bus route optimizer agent

AI BUILD CHALLENGE TOOLKIT – AI AGENT CHALLENGE PROCESS

STEP 1: UNDERSTAND THE CHALLENGE	Provide an explanation of the AI Build Challenge to the students. Allow them to ask clarifying questions. Encourage them to consider the following: • Who/what needs help? • What problem(s) are we solving? • How will the AI Agent make things better and/or help solve this problem?
STEP 2: DESIGN YOUR AI AGENT	Have students plan their AI Agent with the following criteria in mind: • SENSE: What information does the Agent need to solve this problem? • THINK: What decisions will it take? • ACT: What actions will it take? TIP: Use sticky notes or drawings to help get ideas together for the build. NO coding is needed yet!
STEP 3: BUILD IN MINECRAFT	Now, it's time to bring your AI agent to life! • Set up your testing environment • Create your agent • Build / place the items, blocks, or systems it will interact with • Add signs to explain how it works It is okay to start simple and add more features later.
STEP 4: TEST AND IMPROVE	Next, you should test your Agent to see if it works the way you intended. • Run your Agent through different scenarios to see how it will react • Watch what works and what doesn't work • Make improvements based on testing • Document your changes
STEP 5: SHARE YOUR SOLUTION	Finally, you should share your solution. • Present your Agent to the class • Explain who it helps and how • Share what you learned in this challenge • Celebrate your learnings and your new creation!

AI BUILD CHALLENGE TOOLKIT – TIPS & TRICKS

TIPS FOR FACILITATION

Before You Begin:

- Make sure Minecraft Education is working on student devices
- Review the challenge with students
- Prepare example agents to show
- Set up student groups

During the Challenge:

- Encourage experimentation
- Celebrate creative solutions
- Focus on the process, not perfection
- Ask "What if?" questions
- Connect to real-world AI

MAKING IT WORK FOR ALL LEARNERS

As with any kind of learning content, facilitators may need to make adaptations and modifications to support their individual learners. Here are some examples and suggestions for various ages groups.

For Lower Primary Students (grades K-2):

- Draw agent actions
- Role-play scenarios
- Use picture cards for logic

For Upper Primary (grades 3-5):

- Focus on storytelling and role-play
- Use visual flowcharts instead of code
- Work with block-based coding if desired
- Create posters or drawings to explain

For Lower Secondary/Middle School (grades 6-8):

- Introduce simple decision trees
- Try pseudocode planning or basic MakeCode or Python
- Create slide presentations
- Record demo videos

For Upper Secondary/High School (grades 9-12):

- Implement full coding solutions

- Address complex ethical considerations
- Write detailed documentation
- Create professional presentations

COMMON QUESTIONS

Q: Do students need to know coding?
A: Not at all! Students can design agents using signs, blocks, and creativity.
Q: How long does this take?
A: This depends on how you would like to set up the lesson delivery. Older students could complete this in 30-45 minutes as an independent project; however, usually, approximately 90-120 minutes for a basic challenge works great for learners. You could also spread the learning over multiple days for deeper exploration.
Q: Can this work for different grade levels?
A: Absolutely! The challenge scales from grades K-12 (ages 6-18) with appropriate scaffolding by the facilitator.

CONNECT TO THE REAL WORLD

Career Connections:
Students are exploring careers in:

- AI Development
- Robotics Engineering
- Data Science
- UX/UI Design
- Ethics in Technology
- Environmental Technology

Current AI Applications:
Help students see how their agents connect to:

- Smart farming systems
- Autonomous vehicles
- Healthcare robots
- Environmental monitoring
- Smart home assistants
- Game AI development

AI BUILD CHALLENGE TOOLKIT - ASSESSMENT RUBRIC

ASSESSMENT RUBRIC

CRITERION	EMERGING	PROFICIENT	ADVANCED
Problem Definition	Identifies basic problem	Clear scope with user impact	Complex problem with stakeholder analysis
AI Design	Simple if/then logic	Multiple decision points	Complex behavior chains
Implementation	Partial prototype	Functional agent	Optimized, creative solution
Testing	Basic scenarios	Multiple test cases	Edge cases considered
Communication	Explains basics	Clear documentation	Professional presentation

CELEBRATE AND SHARE

Ways to Showcase Student Work:

- Host an AI Agent Fair
- Create a gallery walk
- Share videos with families
- Post on school social media (with permission)
- Submit to @PlayCraftLearn on Twitter/X

Certificates and Recognition:

- Print certificates for all participants
- Recognize creative problem-solving
- Celebrate teamwork
- Highlight responsible AI design

AI BUILD CHALLENGE TOOLKIT – RESOURCES & SUPPORT

RESOURCES & SUPPORT

Additional Materials:

- Build Challenge Jumpstart Kit
- Custom Build Challenge Toolkit
- Minecraft Education website
- AI Foundations curriculum

Need Help?

- Join the Minecraft Education Teacher Lounge
- Check out tutorial videos on YouTube
- Visit the Minecraft Support Center
- Connect with other educators using #MinecraftEdu

RESPONSIBLE AI PRINCIPLES

As students build their agents, encourage them to consider:

- **Fairness:** Does the agent help everyone equally?
- **Transparency:** Can people understand how it makes decisions?
- **Privacy:** Does it respect people's information?
- **Safety:** Could it cause any harm?
- **Accountability:** Who's responsible for the agent's actions?

These conversations help students become thoughtful technology creators!

LET'S BUILD A BETTER WORLD, ONE AI AGENT AT A TIME!