

AI- COSMIC

**Parent's guide & teachers pack: instructional
guide to Minecraft Education**

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Parent's guide & teachers pack: instructional guide to Minecraft Education

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What is game-based learning?

Game-based learning (GBL) is an innovative educational approach that integrates games into the learning process to enhance player's engagement, motivation, and outcomes. By leveraging the interactive and immersive nature of games, GBL creates an enjoyable and effective learning experience. One of the primary benefits of GBL is its ability to engage and motivate learners. Games are inherently engaging, and the challenge, competition, and reward systems within them stimulate interest and sustain attention. This engagement leads to active learning, where students interact with the content and make decisions that impact the game's outcome, resulting in better retention and understanding of the material.

Immediate feedback is another key aspect of game-based learning. Games provide instant performance feedback, helping students understand what they did right or wrong, which reinforces learning and allows for quick adjustments. Additionally, games offer a safe environment for experimentation, where learners can take risks and learn from their mistakes without real-world consequences. This fosters **creativity** and **critical thinking**.

GBL also supports **differentiated learning** by tailoring experiences to different learning styles and paces, allowing for personalized education. Games can adapt to the learner's level, providing appropriate challenges and support. Many educational games include multiplayer or team-based elements that promote **collaboration** and **communication**, helping students develop **social skills** and **teamwork**.

On the other hand, Real-world applications are another significant advantage of GBL. Games can simulate real-world scenarios, enabling students to apply theoretical knowledge to practical situations. This enhances **problem-solving skills** and prepares students for real-life challenges. Examples of game-based learning include educational video games like "*Minecraft: Education Edition*" which teaches subjects like math, science, and history through immersive gameplay, and simulation games like "*SimCity*" or "*The Sims*" which teach planning, resource management, and social interactions. Serious games designed specifically for education, such as "*DragonBox*" for learning math or "*DuoLingo*" for language learning, also exemplify the effectiveness of GBL.

The educational benefits of game-based learning

Any student using Minecraft education has access to a range of educational benefits. Participating in build tasks and challenges and the many lessons in the teacher subject kits, learners benefit from being in an immersive environment.

They additionally develop:

- Problem solving through decision making
- Thinking skills through decision making
- Creativity
- Independence
- Collaboration

We can identify mainly 6 principles of game - based learning:

1. **The failure dynamic** - students learn how to take risks in a safe environment.
2. **The flexibility dynamic** - students need to be flexible in life and in the workplace, this teaches them through multiple paths to success rather than having just one way to win.
3. **Construction dynamic** - students create and build with purpose, things that are worthwhile in the Minecraft environment.
4. **The situated meaning** - students learn by doing and experiencing real time in the Minecraft environment.
5. **Systems thinking** - seeing the big picture and how their actions fit into the big picture helps students make progress.
6. **Build empathy** - bring students together in a collaborative process, they communicate and work together, an essential skill for the workplace.

Types of Educational Games:

Educational Video Games: Provide examples like "Minecraft: Education Edition" and discuss how they teach various subjects through gameplay.

Simulation Games: Mention games like "SimCity" and "The Sims" that teach planning, resource management, and social interactions.

Serious Games: Explain how games designed specifically for education, such as "DragonBox" for math and "DuoLingo" for language learning, are used to teach specific skills.

Implementing Game-Based Learning in the Classroom

Integrating game-based learning into the classroom can greatly enhance the educational experience, but it requires careful planning and execution. The first step is **selecting appropriate games** that align with educational goals and curriculum standards. Teachers should choose games that offer educational value and directly relate to the subjects being taught. It's important to review the content and objectives of each game to ensure they match the learning outcomes you aim to achieve. Resources like educational websites, teacher recommendations, and reviews can help in identifying suitable games.

Once appropriate games are selected, **integrating them into lessons** requires strategic planning. Teachers can incorporate games into their lesson plans by using them to introduce new concepts, reinforce previously taught material, or provide hands-on practice. It's beneficial to outline **specific learning objectives** for each gaming session and design activities that tie game content back to the curriculum. Additionally, teachers can create assignments and discussions around the game experiences to deepen understanding and encourage reflection.

Balancing game time with traditional learning methods is crucial for a well-rounded education. While game-based learning can be highly engaging and effective, it should complement rather than replace other instructional strategies. Teachers should ensure that students also have opportunities for direct instruction, reading, writing, and hands-on

activities. This balance helps to cater to different learning styles and provides a comprehensive educational experience. By thoughtfully integrating game-based learning with other teaching methods, educators can maximize the benefits and maintain a diverse and effective learning environment.

Assessing Learning Outcomes

Effectively assessing learning outcomes is a crucial component of game-based learning, ensuring that educational goals are being met. Measuring progress through game-based learning involves a variety of strategies. One effective method is to set specific, measurable objectives for each game-based activity. Teachers can use **quizzes**, **reflection essays**, and **classroom discussions** to gauge understanding and retention of the material covered in the game. Additionally, observing students as they play can provide insights into their problem-solving processes, collaboration skills, and engagement levels.

Using **in-game analytics and data** is another powerful tool for assessing student performance. Many educational games come equipped with built-in analytics that track various metrics, such as time spent on tasks, levels completed, and specific skills practiced. Teachers can use this data to identify areas where students excel and where they may need additional support. For example, if a student consistently struggles with a particular type of problem in the game, this can indicate a need for further instruction or practice in that area.

Beyond these methods, teachers can also implement formative assessments throughout the gaming sessions. This can include quick **check-ins**, **peer assessments**, and **self-assessments** where students reflect on their own learning and progress. Providing students with rubrics that outline the criteria for success in game-based activities can also help them understand expectations and self-monitor their performance.

Additionally, integrating game-based learning with traditional assessments can provide a more comprehensive view of student progress. For instance, combining game performance data with test scores, project outcomes, and class participation can give a fuller picture of a student's abilities and learning journey.

Creating opportunities for students to present their work and reflect on their experiences can be valuable. **Presentations**, **digital portfolios**, and **in-game screenshots or recordings** can serve as evidence of learning and provide a platform for students to articulate their understanding and achievements.

Addressing Challenges

Implementing game-based learning comes with its own set of challenges, but these can be effectively managed with careful planning and strategies. One of the primary concerns is **screen time**. To address this, it is essential to find a balance between digital and non-digital activities. Teachers can schedule specific times for game-based learning while ensuring that students also engage in non screen related activities and hands-on experiments. Encouraging regular breaks during gaming sessions can help prevent screen fatigue and promote a healthy balance.

Ensuring the educational **value of the games selected** is another critical aspect. It is important to choose games that have clear educational purposes and align with curriculum standards. Educators and parents should review games to ensure they are not only engaging but also instructional. Games should be chosen based on their ability to teach specific skills or concepts and should offer measurable learning outcomes. Avoiding games that are purely for entertainment helps maintain a focus on educational goals and ensures that the time spent gaming is productive.

It is helpful to involve students in the selection process, discussing why certain games are chosen and what educational benefits they offer. This transparency helps students understand the purpose behind their gaming activities and can increase their engagement and motivation.

Teachers should also stay informed about the latest developments in educational gaming. Participating in professional development opportunities, attending webinars, and engaging with online communities of educators can provide valuable insights and recommendations for effective game-based learning tools.

Finally, **open communication** between teachers, parents, and students is vital in addressing any concerns that arise. Regularly discussing the impact of game-based learning on students' overall education and well-being helps to identify and mitigate any negative effects while maximizing the benefits.

Implementing Game-Based Learning at Home

Implementing game-based learning at home can be a highly effective way to support a child's education. **Creating a supportive environment** is the first step. Set up a dedicated space where your child can play educational games comfortably and without distractions. This space should be quiet and well-lit, promoting focus and engagement. Ensuring your child has access to the necessary technology is crucial; a computer, tablet, or gaming console with a reliable internet connection is essential for accessing and running educational games smoothly.

Choosing the right games is equally important. Focus on selecting games that are specifically designed for educational purposes, ensuring they align with your child's age, interests, and educational needs. Look for games that offer clear educational value, targeting specific learning objectives such as math, science, language arts, and more. Utilize reviews, teacher recommendations, and educational websites to identify reputable and effective educational games. This can help you avoid games that are purely for entertainment and ensure that your child's gaming time is productive.

Incorporating a variety of games is beneficial for covering different subjects and skills. By offering a range of educational games, you can help your child develop a broad set of competencies. For example, use math-focused games to enhance numerical skills, language arts games to improve reading and writing, and science games to spark interest in scientific concepts. This variety keeps learning engaging and comprehensive, catering to different aspects of your child's education.

Resources for Game-Based Learning

Utilizing the right resources is essential for effectively integrating game-based learning into education. Several platforms and websites offer a wide range of educational games suitable for various age groups and subjects. Websites like **Kahoot!** and **Quizlet** provide interactive quizzes and learning games that are perfect for reinforcing concepts and engaging students in a fun way. **BrainPOP** and **National Geographic Kids** offer educational games focused on subjects like science, history, and geography, designed to cater to younger learners. For older students, platforms like **Code.org** and **Scratch** introduce programming and coding through game-like experiences that develop critical STEM skills. **Minecraft: Education Edition** itself is a powerful tool, offering immersive lessons across subjects such as math, science, and social studies. Within the AI-Cosmic Erasmus+ project, those resources have been presented and can be found in the AI-Cosmic Handbook: A practitioner's approach to AI and Coding in Minecraft.

Professional development is also crucial for teachers to effectively implement game-based learning. Participating in courses and workshops can enhance their understanding and provide practical strategies for integrating games into the curriculum. The **Minecraft Teacher Academy** offers a range of professional development courses that help educators get started with Minecraft: Education Edition and use it effectively in their teaching. Additionally, platforms like **Edutopia** and **Common Sense Education** provide articles, webinars, and resources on game-based learning and its benefits. Teachers can also join communities like **ISTE (International Society for Technology in Education)**, which offer conferences, courses, and a network of educators sharing best practices in technology integration.

Minecraft Education

What is Minecraft Education?

Minecraft is a popular sandbox video game that allows players to explore, build, and create within a blocky, procedurally generated 3D world. It has become one of the best-selling video games of all time. The game offers both creative and survival modes, providing players with the freedom to build structures and mechanisms, gather resources, and fend off various in-game threats.

A glimpse of Minecraft Education

Navigating Basics

Once signed in, click on Play, then, View Library, you can use the search bar or scroll down to view the build worlds. Click on your choice, then, Create world. Messages pop up regarding the downloading of files and building the terrain for your chosen world/game.

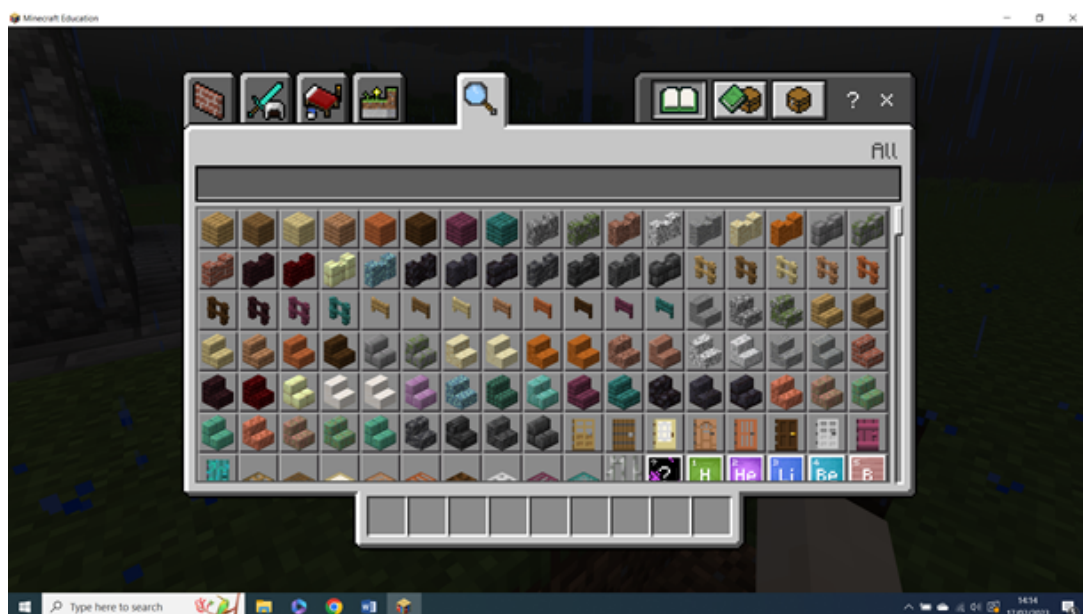
The keyboard controls

You can select H to see the controls. Movement is controlled by using the WASD keys, spacebar, shift and E to show the Inventory.



Inventory

The Inventory is where you select the building materials from the comprehensive lists and drag them into 9 spaces on the hotbar. You use the mouse scroll wheel to move between items on the hotbar.



How is Minecraft Used?

Minecraft can be utilized in a multitude of ways, ranging from pure entertainment to educational purposes. The game's versatility allows players to engage in various activities:

Explore: Players can wander through different biomes, discovering a vast array of resources, creatures, and landscapes. This exploration can be both a relaxing and adventurous experience, encouraging curiosity and discovery.

Build: One of the core aspects of Minecraft is building. Players can construct buildings, machines, and other structures using a variety of blocks. This aspect of the game fosters creativity and spatial reasoning as players design and construct complex structures.

Survive: In survival mode, players must gather resources to craft tools and weapons while managing their health and hunger levels. This mode introduces elements of strategy and resource management, as players must plan and adapt to survive in the game's environment.

Create: Creative mode removes the constraints of resource gathering and threats, allowing players to build anything imaginable. This mode is perfect for artistic expression and large-scale projects, giving players unlimited resources to bring their visions to life.

Collaborate: Minecraft's multiplayer servers enable players to join friends or strangers in collaborative projects or competitive mini-games. This aspect of the game promotes teamwork, communication, and social interaction, as players work together to achieve common goals or compete in various challenges.

Educational use of Minecraft: Education Edition

Minecraft: Education Edition is a specialized version of the popular game designed specifically for educational settings. It incorporates features that facilitate classroom use and enhance the learning experience. This version of Minecraft engages students in subjects such as **science, technology, engineering, and mathematics (STEM)** through interactive and immersive experiences. By allowing students to explore and experiment within a virtual environment, Minecraft makes abstract concepts tangible and understandable.

In addition to STEM learning, Minecraft: Education Edition supports **social-emotional learning**. It encourages collaboration, communication, and problem-solving skills, as students work together on projects and share their ideas. The game's multiplayer features provide a safe and secure environment for students to play together. Teachers can manage and monitor student interactions, ensuring a controlled and positive learning atmosphere.

Assessment tools are integrated into Minecraft: Education Edition, allowing teachers to assess student progress and understanding. These tools help educators track performance and provide feedback, making it easier to identify areas where students may need additional support. The game also offers standards-aligned content, with lesson plans and activities that adhere to educational standards across various subjects. This alignment ensures that the educational experiences within Minecraft are relevant and beneficial to the curriculum.

Minecraft users

Minecraft attracts a diverse audience that includes gamers, educators, students, and content creators.

Teachers and educational institutions use Minecraft: Education Edition to enhance classroom learning. By incorporating the game into their teaching, educators can create engaging and interactive lessons that resonate with students.

Learners from elementary school to higher education engage with Minecraft for both educational and recreational purposes. The game's versatility makes it a valuable tool for learning and a popular choice for leisure.

YouTubers, streamers, and modders create and share content related to Minecraft. These creators contribute to the game's vibrant community by developing new modifications, creating tutorial videos, and sharing gameplay experiences.

Platforms and Accessibility

Minecraft is available on multiple platforms, ensuring accessibility to a wide audience. The game can be played on Windows, Mac, iPad, and Chromebook through Office 365 Education and Microsoft 365, providing flexibility for various users. This wide range of compatibility means that students and educators can access Minecraft: Education Edition on the devices they already use, whether at home or in the classroom.

One of Minecraft's key strengths is its cross-platform compatibility, which allows players to enjoy the game together regardless of the device they are using. This feature is particularly beneficial in educational settings, where students might have different types of devices. Cross-platform play facilitates collaboration and communication, enabling students to work together on projects and participate in multiplayer activities seamlessly.

The game's availability on multiple platforms ensures that it can reach a diverse group of learners. By being accessible on common educational devices like iPads and Chromebooks, Minecraft: Education Edition can be integrated into various teaching environments, from traditional classrooms to remote learning setups. This broad accessibility helps to ensure that all students, regardless of their technological resources, can benefit from the educational opportunities that Minecraft offers.

The resources of Minecraft Education

Minecraft: Education Edition offers a wealth of resources designed to support educators, parents, and students in maximizing the educational benefits of the game. Here are some of the key resources available, such as lesson plans, curriculum resources, professional development for Educators, community, In-Game educational features and tools, parents resources, and so on.

Minecraft: Education Edition provides a comprehensive library of **pre-made lesson plans** that cover various subjects and grade levels. These lesson plans are meticulously designed by educators and aligned with **national and international educational standards**, making it straightforward to integrate Minecraft into your teaching. The curriculum alignment ensures that the content is not only engaging but also relevant and meets educational objectives.

To support educators in effectively using Minecraft: Education Edition, the **Minecraft Teacher Academy** offers professional development courses. These courses cover a range of topics from basic game mechanics to advanced teaching strategies, helping educators maximize the game's educational potential. Additionally, regular webinars and workshops provide ongoing learning opportunities, keeping teachers updated on the latest features and best practices. The global **Minecraft Education Community** is another valuable resource, allowing educators to share lesson plans, ideas, and experiences, fostering collaboration and innovation.

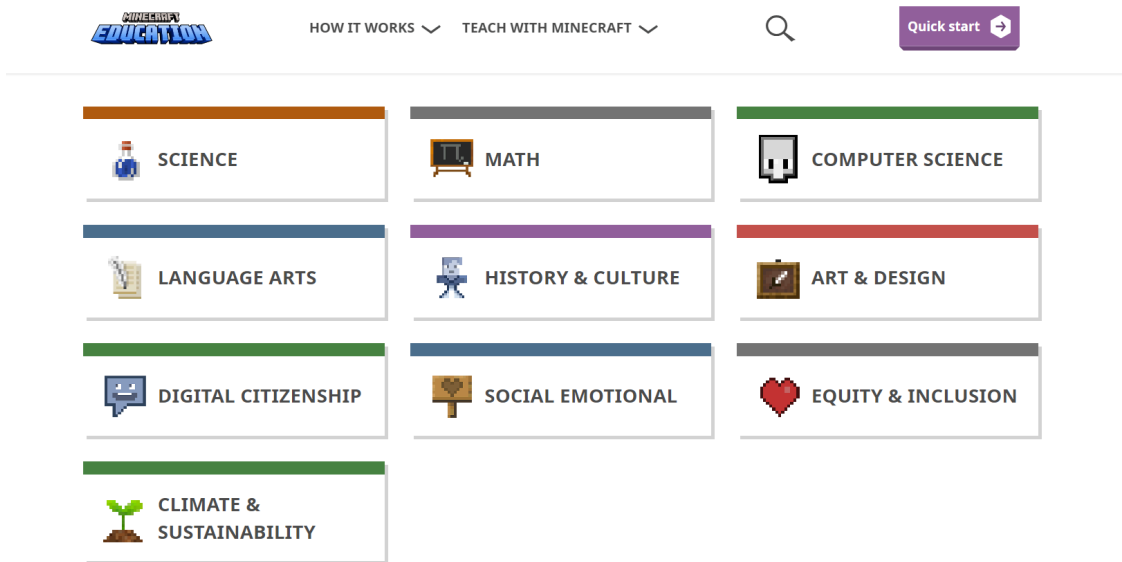
Tools like **Classroom Mode** enable teachers to manage the classroom experience, controlling settings, managing student permissions, and monitoring student activity in real-time. The in-game Code Builder teaches students the basics of coding by integrating with popular platforms like Microsoft MakeCode and Tynker, offering a hands-on approach to programming. Additionally, the Camera and Portfolio tools allow students to document their work, taking screenshots of their projects and compiling them into portfolios to showcase their learning progress.

Multiplayer mode supports teamwork, communication, and collaborative problem-solving by enabling students to work together on projects in real-time. Educators can access a variety of **pre-built Minecraft Worlds** designed for educational purposes, covering topics like history, science, and art, providing immersive learning environments. Lesson kits with detailed instructions, objectives, and assessment tools help guide students through specific learning activities.

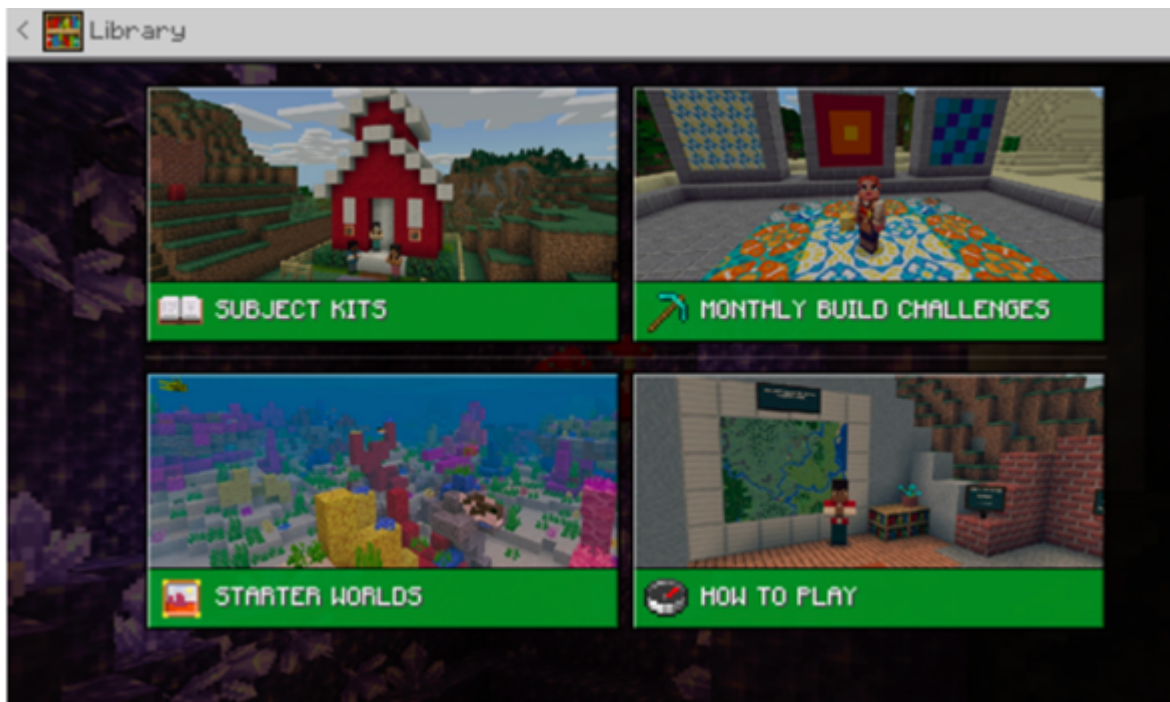
Inclusivity is a core feature of Minecraft: Education Edition, with features like text-to-speech, alternative input methods, and **customizable settings** ensuring accessibility for all students, including those with disabilities. The game's support for **multiple languages** makes it accessible to students worldwide, aiding in language learning. Parents can also find valuable resources, including guides and tutorials, to help them understand how Minecraft: Education Edition can support their child's learning at home. Additionally, activity ideas provide ways for parents to extend learning beyond the classroom, engaging with their children in educational play.

You can explore hundreds of lessons created by educators around the world, for students of all ages. For example, Computer Science has over 200 hours of lessons. There are synoptic links between International Primary curriculums and UN sustainable goals.




Subject Kits are available through the Minecraft education website:




Or from with the Minecraft Education Library:



Lesson plans within each subject area with lesson objectives, student activities and teacher notes and prep. Links in order to assign the lesson via Google Classroom and others. There are recommended starter worlds. The graphical user interfaces are appealing and engaging and a very motivating experience for students.

| | | |
|--|---|--|
|  <p>World <u>NGĀ MOTU - THE ISLANDS</u> Welcome to the Māori world of Aotearoa.</p> |  <p>World <u>FANTASTIC MR. FOX</u> The world of Fantastic Mr. Fox in Minecraft.</p> |  <p>World <u>FLUFFLETOPOLIS</u> The Imaginormous winner's story comes to life</p> |
|--|---|--|

With tutorial worlds for total beginners:

| |
|---|
|  <p>World <u>TUTORIAL WORLD</u> No newbies here, lets learn to play!</p> |
|---|

Minecraft Teacher (training) Academy

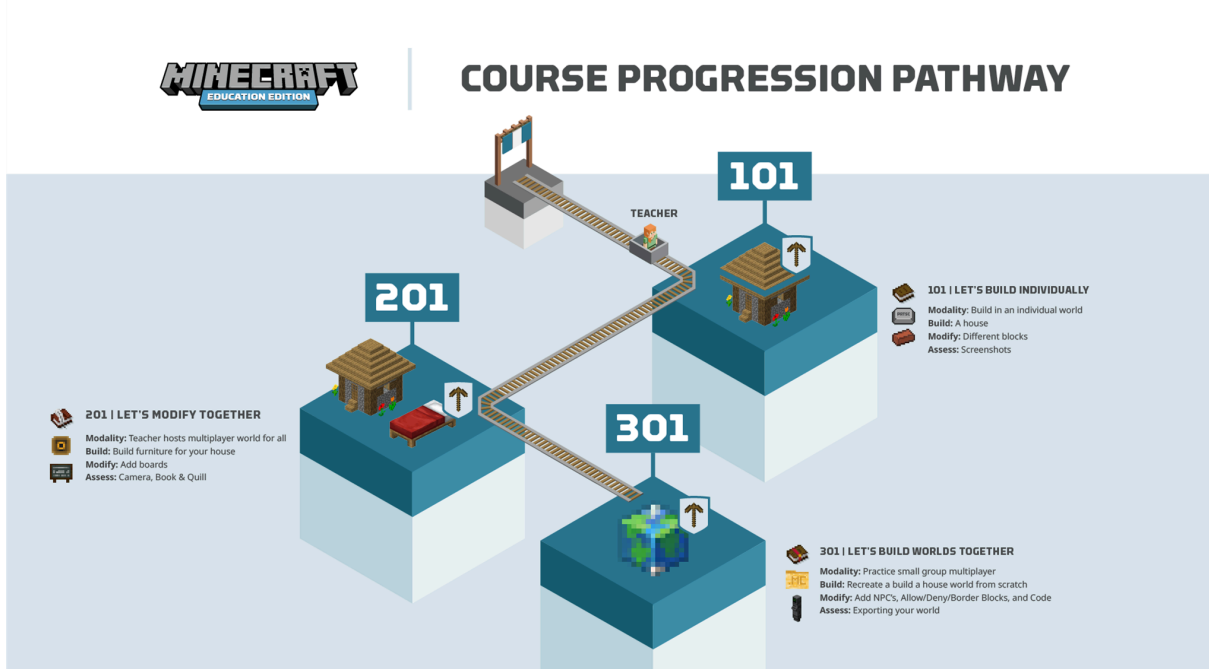
There is a professional development pathway that educators can progress through, taking the courses and earning the badges.

Minecraft 101 - Lets build Individually

Minecraft 201 - Lets Modify together

Minecraft 301 - Lets Design Worlds Together

- Minecraft 401 - Lets Get Advanced
- Minecraft Teacher Academy - Initial Mastery
- Global Training Partner - Lets Train Others Org
- Global Mentor - Lets Coach Others
- Microsoft Trainer Academy - Lets Train Others
- ESports Teacher Academy - Lets Compete
- Student Ambassador Sponsors - Lets Empower Our Students



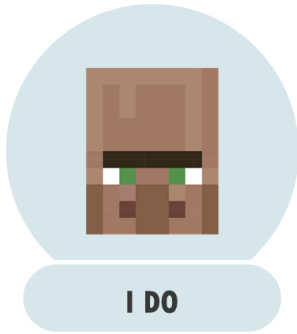
Why integrate Minecraft Education in my teaching?

Unlike traditional passive learning methods, Minecraft promotes **active learning** by allowing students to experiment with concepts and apply their knowledge in practical scenarios. This **hands-on approach** deepens understanding and retention of the material, as students can see the immediate impact of their actions. Additionally, many educational activities in Minecraft require teamwork, which helps students develop essential collaboration and communication skills. Working together on projects, students learn to share ideas, negotiate roles, and support each other's learning, which are valuable skills both in and out of the classroom. The game provides a platform for students to engage in complex problem-solving, coding, and design tasks. Furthermore, it promotes social-emotional learning by encouraging empathy, resilience, and cooperation among students as they work together on shared goals.

The content in Minecraft: Education Edition is aligned with various educational standards, making it easier for teachers to integrate it into their existing curricula. The platform includes tools that allow teachers to assess student progress and provide feedback in real-time. These features help educators track students' development, identify areas where they may need additional support, and celebrate their successes, making assessment an integral part of the learning process. Additionally, Minecraft: Education Edition includes built-in security features that ensure a safe and controlled environment for students. Teachers can manage and monitor student interactions, control access to multiplayer games, and ensure that all content is appropriate for the classroom setting.

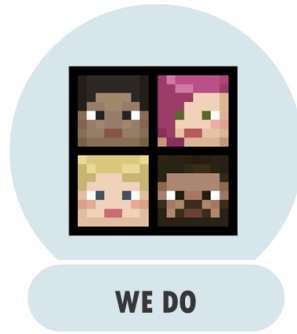
Minecraft's open-ended nature fosters creativity and innovation. Students can design and build intricate structures, create their own adventures, and solve complex challenges in unique ways. This freedom to experiment and create helps to develop critical thinking and inventive problem-solving skills.

There is a learning model below, which for practical, skills based learning through technology is ideal. Educators can foster collaboration through this approach:



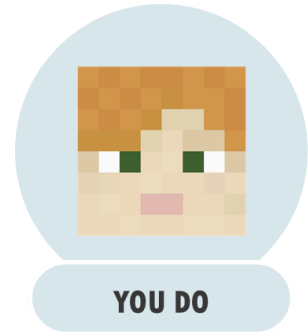
I DO

Walking through
steps and
you'll watch



WE DO

Walking through
steps and you'll
follow along



YOU DO

you recreate the
steps we learned
to do it yourself

Assessment Rubrics

Examples of rubrics for build tasks

For a simple build a house challenge

| ELEMENT | SCORE |
|---|----------|
| Four walls & a roof | 3 points |
| Use at least 2 different building materials | 1 point |
| Submit screenshot for assessment | 1 point |

For the monthly build competition:

BUILD CHALLENGE RUBRIC

| | LEVEL 1 0-6 points | LEVEL 2 7-13 points | LEVEL 3 14-19 points | LEVEL 4 20-25 points |
|---------------------------------------|--|--|---|--|
| USE OF THEME | Minimal or unclear connection to the theme. | Basic interpretation of the theme, but lacks depth or creativity. | Good alignment with the theme, showing some creative interpretation. | Excellent and innovative interpretation of the theme, clearly and creatively articulated. |
| COMPLEXITY | Very basic, with minimal detail or technical elements. | Moderate complexity, showing some use of advanced techniques. | High complexity with detailed structures and proficient use of advanced techniques. | Exceptionally complex, showcasing expert craftsmanship and technical skill. |
| ORIGINALITY AND CREATIVITY | Common, predictable ideas with little creative effort. | Some original ideas, but overall fairly standard. | Notably original and creative, with unique elements and thoughtful design. | Highly original and exceptionally creative, demonstrating a unique perspective and innovative approach. |
| PRESENTATION & EXPLANATION | Unclear or incomplete presentation, with minimal explanation of the build. | Basic presentation, with some effort to explain the build, but lacking detail. | Good presentation, with a clear explanation that enhances understanding of the build. | Excellent presentation, with a detailed and engaging explanation that adds significant depth to the build. |

Total: ____/100 points

How to support my child's learning through Minecraft?

Minecraft: Education Edition is a powerful tool that can significantly enhance your child's learning experience at home. As a parent, you can play an essential role in guiding and supporting your child's educational journey with Minecraft. Here are some strategies to help you get started:

- 1. Understand the Educational Value:** Take the time to familiarize yourself with Minecraft: Education Edition and its educational potential. Recognize that the game can teach a wide range of subjects, including math, science, history, and language arts, as well as essential skills like critical thinking, creativity, and collaboration.
- 2. Set Up a Learning-Friendly Environment:** Create a dedicated space at home where your child can play Minecraft without distractions. Ensure the area is comfortable and equipped with the necessary technology, such as a computer, tablet, or gaming console with a reliable internet connection.
- 3. Choose Appropriate Educational Content:** Work with your child to select games and activities within Minecraft: Education Edition that align with their educational needs and interests. Utilize available lesson plans and resources that target specific learning objectives. The official Minecraft: Education Edition website offers a wealth of educational content and ideas.

4. Establish Clear Goals and Objectives: Set specific learning goals and objectives with your child to provide direction and purpose. Discuss what they hope to achieve with each Minecraft session, whether it's mastering a new math concept, understanding a scientific principle, or completing a collaborative project.

5. Monitor and Discuss Progress: Regularly check in with your child to monitor their progress and discuss what they have learned. Ask them to explain their projects, the challenges they faced, and how they solved problems. This helps reinforce their learning and allows you to provide guidance and encouragement.

6. Encourage Creative and Critical Thinking: Encourage your child to think creatively and critically while playing Minecraft. Challenge them to come up with innovative solutions to in-game problems, design complex structures, or create their own educational scenarios. This fosters a deeper understanding and application of knowledge.

7. Foster Collaboration and Teamwork: If possible, encourage your child to participate in multiplayer sessions with classmates, friends, or family members. Collaborative projects can help develop social skills, teamwork, and communication. Discuss the importance of working together and sharing ideas to achieve common goals.

8. Balance Screen Time: While Minecraft: Education Edition is a valuable learning tool, it's important to balance screen time with other educational activities and physical play. Set reasonable limits on gameplay and ensure your child engages in a variety of learning experiences.

9. Support Skill Development: Identify specific skills your child can develop through Minecraft, such as coding, problem-solving, and project management. Encourage them to explore these areas within the game and provide additional resources or activities that complement their learning.

10. Celebrate Achievements: Celebrate your child's achievements and milestones within the game. Recognize their efforts and progress, whether it's completing a challenging project, mastering a new concept, or demonstrating creativity. Positive reinforcement boosts their confidence and motivation.

11. Stay Informed and Involved: Stay informed about updates and new features in Minecraft: Education Edition. Join online communities, forums, or parent groups to share experiences and tips with other parents. Being involved in your child's learning journey helps you provide better support and encouragement.

Installing Minecraft education

It's necessary to have an Office 365 Education with Minecraft licensing in order to teach with Minecraft. Students and educators at eligible institutions can sign up for Office 365 Education for free, including Word, Excel, PowerPoint, OneNote, and now Microsoft Teams, plus additional classroom tools.

You can check eligibility and look at options: microsoft.com/en-us/education/products/office.

Installing Minecraft: Education Edition is a straightforward process, but it varies slightly depending on the platform you are using. Below are the step-by-step instructions for installing Minecraft: Education Edition.

Installing on Windows, Mac, Chromebook

1. Check System Requirements:

- Ensure your PC meets the minimum system requirements for Minecraft: Education Edition. You can find the system requirements [here](#).

2. Download the Installer:

- Go to the official Minecraft: Education Edition download page: [Minecraft: Education Edition Download](#).

3. Download for Windows:

- Click on the "Download" button under the Windows section. This will download a .msi installer file.

4. Run the Installer:

- Locate the downloaded file (usually in the "Downloads" folder).
- Double-click the file to start the installation process.

5. Follow Installation Prompts:

- Follow the on-screen instructions to install the software. You may need to allow the installer to make changes to your device by clicking "Yes" when prompted.

6. Launch the Application:

- Once the installation is complete, open Minecraft: Education Edition from the Start menu.

7. Sign In:

- Sign in with your Office 365 Education account to access the full features of the game.

Installing on iPad

1. Open the App Store:

- Open the App Store on your iPad.

2. Search for Minecraft: Education Edition:

- Use the search bar to find "Minecraft: Education Edition."

3. Download the App:

- Tap the "Get" button to download and install the app.

4. **Launch the Application:**

- Once installed, open Minecraft: Education Edition from your home screen.

5. **Sign In:**

- Sign in with your Office 365 Education account to access the full features of the game.

If your computer runs in Microsoft Windows S mode, you need to deactivate the S mode to be able to download the Minecraft Education Edition.

How to deactivate Microsoft S mode.

Using the Microsoft S mode, the user can only access apps downloaded from the Microsoft App Store. To deactivate the S mode, you need:

- To create a new Microsoft account that is not licensed as a work or school
- Connect this Microsoft account to the laptop
- Then on your PC running Windows 10 in S mode, open Settings > Update & Security > Activation.
- Find the Switch to Windows 10 Home or Switch to Windows 10 Pro section, then select the Go to the Store link.

Note: Don't select the link under Upgrade your edition of Windows. That is a different process that will keep you in S mode.

On the page that appears in the Microsoft Store (Switch out of S mode or a similar page), select the Get button. After you confirm this action, you will be able to install apps from outside the Microsoft Store. You can also find here more information: <https://answers.microsoft.com/en-us/windows/forum/all/s-mode-how-to-turn-off-windows-10/53ce25ce-734b-48b8-8d1e-baa5adb5d88b>.

To start using the game you need to acquire a Minecraft Education License. There are 2 types of licences to be acquired, academic and commercial. Visit the following link to check the license you are eligible for: <https://educommunity.minecraft.net/hc/en-us/articles/360061371532-Purchasing-Options-for-Minecraft-Education-Edition-Licenses>

Tips for Installation:

- **Office 365 Education Account:** Ensure you have an active Office 365 Education account. If you don't have one, check with your school or educational institution.
- **Network Requirements:** Ensure your internet connection is stable and meets the network requirements for Minecraft: Education Edition.
- **Updates:** Keep the application updated to access new features and improvements.

For more detailed instructions and visual aids, you can visit the official Minecraft: Education Edition help pages: [Minecraft: Education Edition Support](#).

Additional information can be found on Minecraft's game environment, demo, how to navigate, setting up the game, and other aspects in the AI-Cosmic Handbook: A

practitioner's approach to AI and Coding in Minecraft, developed within the scope of the Erasmus+ project AI-Cosmic.

AI-COSMIC educational worlds

Within the scope of the Erasmus+ project AI-Cosmic, five Minecraft Education worlds were developed to support the use of Minecraft in the classroom and to teach AI and coding principles using game-based learning methods. These worlds are designed for pupils aged approximately 9 to 12 years old, with each world taking about 30 minutes to play and complete. After finishing each world, pupils can obtain a certificate of completion.

To achieve these objectives using the developed Minecraft Education worlds, essential equipment and tools include a reliable computer or laptop with sufficient processing power and graphics capabilities to run Minecraft Education Edition smoothly, an internet connection for downloading the software, and an account with access to Minecraft Education Edition, which may require licenses or subscriptions managed by the school or individuals. Additionally, a projector and screen can be helpful for demonstrations and collaborative discussions. The guides and manuals produced by the AI-Cosmic project may be necessary for teachers in either digital or printed versions, as well as the game files available on the project's website.

AI-COSMIC Lesson plan

To facilitate the use of Minecraft Education in teaching, the AI-COSMIC project has prepared a ready-to-use lesson plan for the introductory class. For each world played during the class, the lesson objectives, tools, and equipment needed remain the same.

The objectives of using the developed Minecraft Education worlds as learning materials are to significantly enhance student engagement and motivation through interactive and gamified learning experiences. By having students collaborate on coding projects and AI challenges within the Minecraft world, educators can foster teamwork and communication skills. Presenting students with coding challenges and AI puzzles within this immersive environment also enhances their problem-solving and critical thinking abilities. Integrating coding principles and AI concepts into Minecraft provides a contextual and applied learning experience, making abstract concepts more tangible. Moreover, allowing students to design their own coding projects and AI simulations stimulates creativity and innovation. The platform supports personalized learning experiences tailored to individual needs and paces, improving digital literacy and technical skills as students write and debug code. Cross-curricular learning is enabled by incorporating elements from various subjects such as math, science, and technology into the activities. Additionally, Minecraft helps develop computational thinking skills, including algorithmic thinking, pattern recognition, and abstraction. Finally, it serves as an effective platform for formative assessments, allowing

educators to monitor student progress and understanding in a dynamic and interactive way. In the same way, 2 activities for beginners have been prepared as inspiration for teachers to modify and adapt the lesson plan and implement various activities in their teaching using Minecraft Education.

The following lesson plan and beginner activities are ready to use but can be adapted and modified as needed.



Lesson Plan - AI-COSMIC European project

| | |
|---|--|
| <p>Purpose of the lesson</p> | <p><i>What will participants learn from this activity/session?</i> Participants will become familiar with the educational version of the Minecraft game, learning coding as well as artificial intelligence content.</p> |
| <p>Step-by-step description:</p> | <p><i>How long will the activity/session be?</i></p> <ul style="list-style-type: none"> - Introduction (10 min) - Explanation time (15 min) - Running the game (30 min) - Final discussion (5 min) |
| <p>Materials needed:</p> | <p><i>Which materials will the trainer need to implement this activity/session?</i></p> <ul style="list-style-type: none"> - Computers for the participants and the teacher - Projector - Internet access |
| <p>Duration:</p> | <p><i>How long will be the activity/session?</i></p> <p>1 hour</p> |
| <p>Preparation:</p> | <p><i>What will the trainer need to prepare to implement this activity/session?</i></p> <p>Before starting the session, it would be convenient for the teacher to have read the didactic guide specifically designed to apply this version of Minecraft in class. This is because it is necessary for the teacher to know in advance what kind of challenges the students will encounter in each of the scenarios contained in the game and how to solve them.</p> |
| <p>Learning Outcomes:</p> | <p><i>Here goes a detailed description of the activity/session. Instructions should be clear and written as if who is going to implement the session/activity has no previous knowledge on the topic.</i></p> <p>Introduction (10minutes)</p> <ul style="list-style-type: none"> - Briefly introduction to Minecraft for those who have never heard about the game or played it. |

- Explanation about the concept of coding and artificial intelligence with examples.
- Brief activity in which the teacher must give several examples and the students have to choose which ones are examples of artificial intelligence. This is useful for the teacher to know that they have understood the concept.

Explanation (15 minutes)

- Teach students how to create and use basic functions in Minecraft.
- Provide examples of coding tasks in the game.
- Introduce conditional statements (if-statements) and their role in coding.
- Show how to use if-statements in Minecraft commands for decision-making.
- Demonstrate how to create and use loops in Minecraft commands and explain the importance of loops and efficiency in coding.

Running the game (30 minutes)

- The teacher will provide the Minecraft scenarios and challenges that combine all the theory preciously explained.
- He/she will provide the individual guidance needed while the students are playing.

Final discussion (5 minutes)

- The teacher will ask the students to present their solutions to the coding challenge and they will discuss about what they have learnt after this Minecraft session.
- The teacher may also provide additional resources and references for further learning and encourage the students to explore coding in Minecraft on their own.

| | |
|---|--|
| <p>Evaluation/ Learn Check:</p> | <p><i>How will the trainer check the learning achievements of the participants?</i></p> <p>The teacher will make sure about the learning achievements through the questionnaires included in the Minecraft game as well as visually, checking that the students are able to overcome each scenario presented in the game.</p> |
| <p>Tools:</p> | <p><i>Does the activity/session require any particular tool? What is it? How is it used?</i></p> <p>Minecraft education edition with license.</p> |
| <p>Benefits of this lesson plan:</p> | <p><i>What are the main benefits of applying this lesson to a group of students?</i></p> <p>The lesson plan outlined above offers numerous benefits for students. Firstly, it introduces them to the exciting world of coding through a familiar and engaging platform, Minecraft. This approach sparks their interest and makes learning coding concepts more enjoyable.</p> <p>Students not only learn coding basics but also develop problem-solving and critical thinking skills. They gain a deeper understanding of functions, conditional statements (if-statements), and loops, which are foundational concepts in programming. These skills are not only valuable in the context of Minecraft but also in other areas of STEM and computer science. This fosters creativity and empowers them to express their unique ideas in the Minecraft world, boosting their confidence and innovation.</p> <p>Collaboration is another key benefit as students can work together on coding challenges and showcase their projects to peers, promoting teamwork and communication skills.</p> <p>Overall, the lesson plan equips students with practical coding skills that are transferable to various digital environments. It introduces them to problem-solving and computational thinking, encourages creativity and innovation, and provides a foundation for further exploration of coding and computer science. Additionally, it makes learning coding enjoyable and accessible, inspiring students to pursue STEM-related interests.</p> |

| | |
|--|--|
| <p>Assessment:</p> | <p><i>How will the teacher evaluate the work done by the students?</i></p> <p>The evaluation will be carried out with the use of a rubric that the teacher will follow to determine the level that the student has reached during the completion of the activity.</p> <p>The use of another rubric meant for the auto-evaluation of the students is also appropriate in the sense that they will realize by themselves about their own achievements and this will create a willingness to continue improving by themselves.</p> |
| <p>Aims /Objectives of this lesson:</p> | <p><i>What is the main purpose of putting into practice this lesson plan?</i></p> <p>The central aim of this lesson plan is to facilitate the familiarization the students with the foundational principles of artificial intelligence and essential coding skills. The children will achieve the objectives described in the rubrics used by the teacher by immersing themselves in engaging and interactive learning experiences within the realm of Minecraft.</p> <p>The challenges in Minecraft will require students to employ basic coding techniques in order to find solutions, effectively blending the original scenarios created for the project with the essential concepts of artificial intelligence.</p> |
| <p>Background/reference s/ Sources:</p> | <p><i>Further readings on the activity/session and/or references to other activities/sessions that inspired the present one.</i></p> <p>https://education.minecraft.net/en-us/get-started</p> |

Give Code

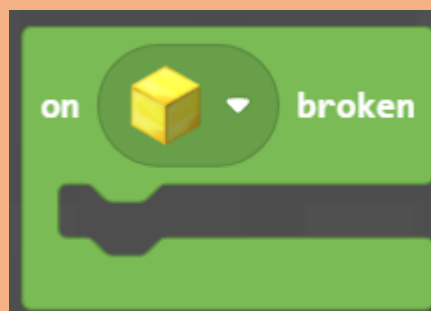
A give command will place an item or block into the inventory of the desired target. When coding, we must consider the event which will cause the give command to run.

[Using MakeCode for Game Design - Minecraft Education Edition](#)

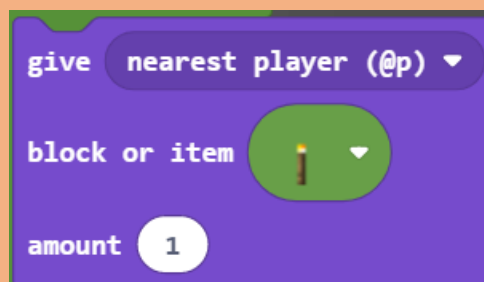


Let's consider the following example:

IF/ON the player breaks a Gold Block



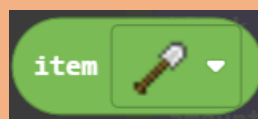
THEN give the player one torch.



Results - IF/ON the player breaks a gold block THEN the nearest player will receive one torch.



To give the player a different item use the additional item token.



Result - IF/ON the player breaks a gold block THEN the nearest player will receive one shovel.



Increase the amount



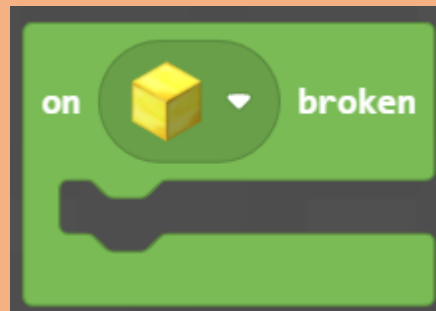
Result - IF/ON the player breaks a gold block THEN nearest player will receive three shovels.



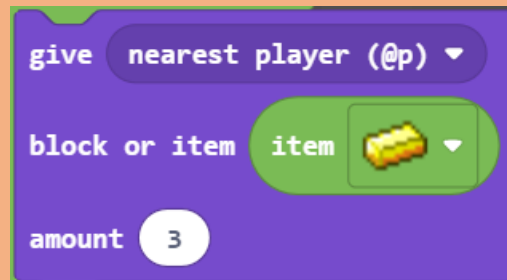
Your Turn

Change this scenario so the player is given three gold ingots if a gold block is broken. Place an image of your final code in the green box.

IF/ON a gold block is broken.



THEN give the nearest player three gold ingots.



Results -

Detect Code

A detect command has the ability to check for a block in a location within your world.

[Using MakeCode for Game Design - Minecraft Education Edition](#)



Example

Let's imagine how we might use this in a game. Our game might have two pathways. If the player takes the wrong path, this will be informed via the chat.

To do this, we will need the following:

Event Handler

forever

Detect Block

detect block



at

~ 0 ~ 0 ~ 0

if found, run command "say Hi!"

For this example, we will code our game to detect a Block of Gold two blocks below the player. If this condition is met, the player will receive the message "WRONG WAY GO BACK".

FOREVER whilst the game is being played

forever

THEN detect for a Block of Gold two blocks below the player

detect block



at

~ 0 ~ -2 ~ 0

if found, run command "say Hi!"

Results - FOREVER check IF a Block of Gold is -2 blocks below the player, THEN run a chat command saying WRONG WAY GO BACK.

forever

detect block



at

~ 0 ~ -2 ~ 0

if found, run command "say WRONG WAY GO BACK"

Your Turn

Using Blocks of Emeralds, can you add to your game a message that will appear when your player finds the correct door?

FOREVER whilst the game is being played

forever

A Scratch 'forever' loop block, which is a green rectangle with a dark grey loop icon on the right side. The word 'forever' is written in white text at the top left of the block.

THEN detect for a Block of Emerald -2 blocks below the player.

Results -






Effect Code

An effect command can apply one of the 29 possible effects possible in Minecraft Education.






[Using MakeCode for Game Design - Minecraft Education Edition](#)



These include:

| Icon | Status Effect | Minecraft ID Name | Description |
|---|-------------------------------|----------------------|---|
|  | Absorption | <i>absorption</i> | Adds yellow Absorption health hearts |
|  | Bad Omen | <i>bad_omen</i> | Causes a group of hostile mobs to attack when a player with Bad Omen enters a village |
|  | Blindness | <i>blindness</i> | Creates a thick black fog |
|  | Conduit Power | <i>conduit_power</i> | Improves visibility and mining speed underwater, and adds ability to breathe underwater |
|  | Fatal Poison | <i>fatal_poison</i> | Does damage every 1.25 seconds (can kill player) |

| | | | |
|---|-------------------------------------|------------------------|---|
|  | Fire Resistance | <i>fire_resistance</i> | Immunity to fire, lava, and direct hits from fire balls |
|  | Haste | <i>haste</i> | Speeds up how fast you break blocks |
|  | Health Boost | <i>health_boost</i> | Adds additional hearts to your base health |
|  | Hero of the Village | <i>village_hero</i> | Receive discounted trades from villagers after completing a Raid |
|  | Hunger | <i>hunger</i> | Depletes food meter |
|  | Instant Damage | <i>instant_damage</i> | Damages instantly |
|  | Instant Health | <i>instant_health</i> | Heals instantly |
|  | Invisibility | <i>invisibility</i> | Invisible to others |
|  | Jump Boost | <i>jump_boost</i> | Jump higher |
|  | Levitation | <i>levitation</i> | Player will involuntarily float upwards into the sky and continue to rise |
|  | Mining Fatigue | <i>mining_fatigue</i> | Slows down how fast you break blocks |
|  | Nausea | <i>nausea</i> | Wobbles and warps what you see in the game |
|  | Night Vision | <i>night_vision</i> | Increases brightness level to 15 (see better in dark) |
|  | Poison | <i>poison</i> | Does damage every 1.25 seconds (can not kill player) |
|  | Regeneration | <i>regeneration</i> | Restores half heart every 2.5 seconds |
|  | Resistance | <i>resistance</i> | Reduces all damage |

| | | | |
|--|---------------------------------|------------------------|---|
|  | Saturation | <i>saturation</i> | Replenishes food meter |
|  | Slow Falling | <i>slow_falling</i> | Slows down how fast you fall and eliminates fall damage |
|  | Slowness | <i>slowness</i> | Decreases speed |
|  | Speed | <i>speed</i> | Increases speed |
|  | Strength | <i>strength</i> | Increases attack damage (melee attacks) |
|  | Water Breathing | <i>water_breathing</i> | Breathe underwater without using up oxygen bar |
|  | Weakness | <i>weakness</i> | Decreases attack damage (melee attacks) |
|  | Wither | <i>wither</i> | Does damage every 2 seconds (can kill player) |

Example


Let's imagine our player needs to use an effect to get past the next part of our game. The player needs to make their way through a dark maze. Without the Night Vision effect, it will be very difficult to achieve. To reach the maze, they must first climb a ladder.

To do this, we will need the following:

Event Handler

on player walk

Effect Block

apply  to nearest player (@p) duration 10 amplifier 1

For this example, we will code our game to apply Night Vision for 10 seconds at an amplifier of 1 when the player climbs the ladder.

| | |
|--|---|
| <p>IF/ON a player climbs</p> |  |
| <p>THEN apply the Night Vision effect to the nearest player for 10 seconds at an amplifier of 1</p> |  |
| <p>Results - IF/ON the player climbs the ladder, THEN they can see in the dark for 10 seconds.</p> |  |

Your Turn

Change the environment of the path to the end so it requires a different effect triggered by a different event handler. For example, you can remove the ladder down, and the player will only receive the effect of slow falling when they break a particular block.

| | |
|-------------------------|--|
| <p>IF/ON -</p> | |
| <p>THEN -</p> | |
| <p>Results -</p> | |

Give Commands

A give command will place an item or block into the inventory of the desired target. It is typically made up of three elements.

| Command | 1 | 2 | 3 |
|---------|----------|------------|----------|
| /give | <player> | <itemName> | [amount] |

- 1 **player** is the name of the player (or a target selector) to give the item to.
- 2 **itemName** is the name of the item to give (See [Minecraft Item Names](#)).
- 3 The **amount** is optional. It is the amount of the item that you want to give. If you don't specify an amount, the player will be given 1 of the item.

[Command Blocks - Give, Teleport and Effect Commands](#)



Example

In most circumstances you will only need the first three elements of the command.

Let's imagine a few examples.

You want to give your player an apple so they don't get hungry. To do so, they press a button to provide them with their apple.

| | |
|----------------|--|
| IF/ON | A player presses the button |
| THEN | <code>/give @p apple</code> |
| Results | IF/ON the player presses the button THEN give the player an apple |

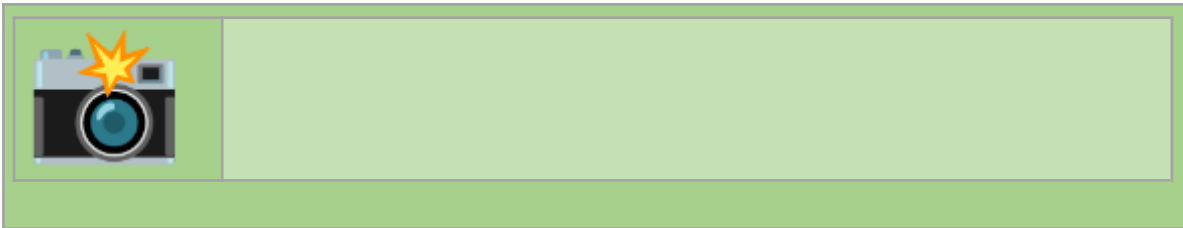
If we wanted to give the player ten apples, we would change our scenario and command to the following.

| | |
|---------------|--|
| IF/ON | A player presses the button |
| THEN | <code>/give @p apple 10</code> |
| Result | IF/ON the player presses the button THEN give the player 10 apples. |

Your Turn

Using your coding cards, upload an image of the following algorithm.

`/give @p apple 10`



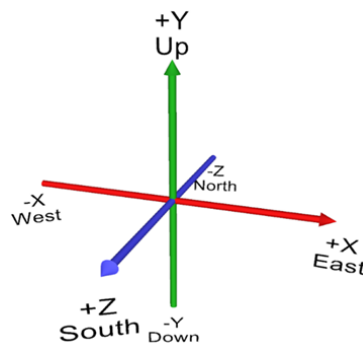
Change the item the player receives and it's trigger.

| | |
|----------------|--|
| IF/ON | |
| THEN | |
| Results | |

Teleport Command

A teleport command will move a player to a specific location within the world. To run a teleport command, we must know where the player wants to go. We refer to this as coordinates.

Three numbers make up any position in Minecraft. We refer to these as the x, y and z coordinates.



To see your player's coordinates. Select the setting, then toggle on "Show Coordinates".



Your coordinates (position) are then located at the top left of your screen.



The following is a basic teleport command.

| | | | |
|----------------|----------|----------|----------|
| Command | 1 | 2 | 3 |
|----------------|----------|----------|----------|

```
/tp <player> [position <facing >
```

- 1 **player** is the name of the player (or a target selector) to teleport.
- 2 **x y z** is the coordinate to teleport to.
- 3 **facing** is optional and is a set of x y z coordinates that the player will face after being teleported.

[Command Blocks - Give, Teleport and Effect Commands](#)



Example

Let's imagine how we might use this in a game.

You want to give your player two options. One option will help them progress, and the other will teleport them to a different location. We refer to this type of gameplay as branching. We will explore this concept later in the course.

| | |
|-------|------------------------------|
| IF/ON | A player pulls the lever |
| THEN | <pre>/tp @p 494 31 116</pre> |




| | |
|---------------|--|
| Result | IF/ON a player pulls the lever THEN teleport the player to world position 494 31 116. |
|---------------|--|

If we wanted the player to face in a particular direction, we would add a second set of coordinates. To determine how you want the player to face, move to the destination and observe the coordinate that changes as you move forward in the direction you want the player to move. Make this change to your second set of coordinates.

| | | | | | |
|-----------------|---|------------|--------------------|------------|--------------------|
| IF/ON | A player presses the button | | | | |
| THEN | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #add8e6; width: 15%;">/tp</td> <td style="background-color: #90ee90; width: 15%;">@p</td> <td style="background-color: #9370db; width: 25%;">494 31 116</td> <td style="background-color: #fff2cc; width: 45%;">facing 494 321 117</td> </tr> </table> | /tp | @p | 494 31 116 | facing 494 321 117 |
| /tp | @p | 494 31 116 | facing 494 321 117 | | |
| Result - | | | | | |

Your Turn

Using your coding cards, upload an image of the following algorithm.

| | | | | |
|---|---|------------|--------------------|--------------------|
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #add8e6; width: 15%;">/tp</td> <td style="background-color: #90ee90; width: 15%;">@p</td> <td style="background-color: #9370db; width: 25%;">494 31 116</td> <td style="background-color: #fff2cc; width: 45%;">facing 494 321 117</td> </tr> </table> | /tp | @p | 494 31 116 | facing 494 321 117 |
| /tp | @p | 494 31 116 | facing 494 321 117 | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; text-align: center;">  </td> <td style="width: 80%;"></td> </tr> </table> |  | | | |
|  | | | | |





Change the coordinates so the player faces the next Non Player Character.














| | |
|----------------|--|
| IF/ON | |
| THEN | |
| Results | |


Effect Command

An effect command can apply one of the 29 possible [effects](#) possible in Minecraft Education Edition.

These include:

| Icon | Status Effect | Minecraft ID Name | Description |
|---|-------------------------------|----------------------|---|
|  | Absorption | <i>absorption</i> | Adds yellow Absorption health hearts |
|  | Bad Omen | <i>bad_omen</i> | Causes a group of hostile mobs to attack when a player with Bad Omen enters a village |
|  | Blindness | <i>blindness</i> | Creates a thick black fog |
|  | Conduit Power | <i>conduit_power</i> | Improves visibility and mining speed underwater, and adds ability to breathe underwater |

| | | | |
|---|-------------------------------------|------------------------|---|
|  | Fatal Poison | <i>fatal_poison</i> | Does damage every 1.25 seconds (can kill player) |
|  | Fire Resistance | <i>fire_resistance</i> | Immunity to fire, lava, and direct hits from fire balls |
|  | Haste | <i>haste</i> | Speeds up how fast you break blocks |
|  | Health Boost | <i>health_boost</i> | Adds additional hearts to your base health |
|  | Hero of the Village | <i>village_hero</i> | Receive discounted trades from villagers after completing a Raid |
|  | Hunger | <i>hunger</i> | Depletes food meter |
|  | Instant Damage | <i>instant_damage</i> | Damages instantly |
|  | Instant Health | <i>instant_health</i> | Heals instantly |
|  | Invisibility | <i>invisibility</i> | Invisible to others |
|  | Jump Boost | <i>jump_boost</i> | Jump higher |
|  | Levitation | <i>levitation</i> | Player will involuntarily float upwards into the sky and continue to rise |
|  | Mining Fatigue | <i>mining_fatigue</i> | Slows down how fast you break blocks |
|  | Nausea | <i>nausea</i> | Wobbles and warps what you see in the game |
|  | Night Vision | <i>night_vision</i> | Increases brightness level to 15 (see better in dark) |
|  | Poison | <i>poison</i> | Does damage every 1.25 seconds (can not kill player) |
|  | Regeneration | <i>regeneration</i> | Restores half heart every 2.5 seconds |

| | | | |
|---|---------------------------------|------------------------|---|
|  | Resistance | <i>resistance</i> | Reduces all damage |
|  | Saturation | <i>saturation</i> | Replenishes food meter |
|  | Slow Falling | <i>slow_falling</i> | Slows down how fast you fall and eliminates fall damage |
|  | Slowness | <i>slowness</i> | Decreases speed |
|  | Speed | <i>speed</i> | Increases speed |
|  | Strength | <i>strength</i> | Increases attack damage (melee attacks) |
|  | Water Breathing | <i>water_breathing</i> | Breathe underwater without using up oxygen bar |
|  | Weakness | <i>weakness</i> | Decreases attack damage (melee attacks) |
|  | Wither | <i>wither</i> | Does damage every 2 seconds (can kill player) |

The following is how to execute an effect command.

| Command | 1 | 2 | 3 | 4 |
|---------|----------|-------------|--------|-------------|
| /effect | <player> | [effect ID] | <time> | <amplifier> |

- 1** **player** is the name of the player (or a target selector) who the effect will apply to.
- 2** **Effect Minecraft ID** refer to list.
- 3** **time** will determine how long the effect will last for. (Max time = 99999 seconds)

4 **amplifier** applies the strength of the effect (Max amplifier = 255)

[Command Blocks - Give, Teleport and Effect Commands](#)



Example


Let's imagine our player needs to use an effect to get past the next part of our game. We want the player to swim through a cave that has no air. It is too long to make it without drowning, so we give the player water breathing so they can make it to the other side. Let's also imagine that the player found or made a Redstone torch in the process.

| | | | | | |
|-------|----------------------------------|----|-----------------|----|----|
| IF/ON | A player places a Redstone torch | | | | |
| THEN | /effect | @p | water_breathing | 10 | 15 |

| | |
|---------------|---|
| Result | IF/ON a player places a Redstone torch THEN give the player the effect of water breathing for 19 seconds, amplified to 15. |
|---------------|---|

Your Turn

Using your coding cards, upload an image of the following algorithm.

| | | | | |
|--|----|-----------------|----|----|
| /effect | @p | water_breathing | 10 | 15 |
|  | | | | |

Change the environment of the path to the end so it requires a different effect, executed by a different trigger.

| | |
|----------------|--|
| IF/ON | |
| THEN | |
| Results | |

AI-COSMIC's Minecraft Education worlds

Each of the developed worlds enables students to learn and discover various Minecraft features such as building and coding. The worlds include a small AI and coding quiz, as well as different quests that need to be resolved to move forward. When students finish the game, they can download a certificate. Each world was developed using the cultural background of AI-COSMIC partners and offers different settings, all beautifully constructed. The worlds also provide a tutorial to show students how to navigate through the game and complete the quests. The worlds can be played separately and are not related to each other.

The world "Krk Island" uses the cultural and environmental background of the Croatian island Krk in the Adriatic Sea. In this world, the student has to do various activities. The first one is related to collecting artifacts around the island; the second one is focused on building a model of St Mark's Cathedral; the third one consists of coding a radio communication tower to enable a sailing race around the island.

The world "Secret of Alhambra" uses the cultural background of the Alhambra palace in Spain. The first activity for the student is to open the gate and enter the castle, and then to save the castle from a dragon. To do so, the player has to fix the mosaic and activate the waterfalls.

The world "Robolympics" uses the cultural background of Greece, known for the Olympic Games. The player can try three different sports: high jump, long jump, and archery. The player has to try them all and succeed.

The world "Circus Maximus" uses the cultural background of Italy, back in ancient Rome. The player's main activity in this world is to fix the water levels by allowing the water to fall from the wall. It also focuses on data collection. The player's mission in this world is to collect data as a data analyst to predict the winner of the horse race. After the race, the player has to find a way to access the golden podium.

The world "Inside the Lab" uses the cultural background of Latvia, especially Riga Technical University in Riga. On the campus, the player has to find a way to access the building and then help the university's personnel to fix the intercom and the elevator. Another activity consists of creating a radio for the university's boat. The player also has various opportunities to code more and help different people at the university.

The worlds, how to find them, and their resolutions can be found in the next section.

Instructional Guide

INSTRUCTIONAL GUIDE

1. Introduction to Minecraft: Education Edition

The following document is a handbook directed to teachers, educators and IT specialists to guide their trainees in achieving the challenges of the game. This document is strictly for teachers and people you will internally pilot the game. Students do not need access to this information.

This guide gives information on the initial steps to download and run the game as well as to navigate through the created worlds. The document also includes detailed scenarios with the scope of each activity so that teachers can organise their lesson plan before introducing this activity. Each activity includes hacks to let teachers check if their students accurately performed the activities.

1.1 Game specs, account setup and download

Before you start, you need to download the Minecraft Education Edition Package according to the requirements of your device. You can find the edition at the following Link:

<https://education.minecraft.net/en-us/get-started/download>

If your computer runs in Microsoft Windows S mode, you need to deactivate the S mode to be able to download the Minecraft Education Edition.

How to deactivate Microsoft S mode.

Using the Microsoft S mode, the user can only access apps downloaded from the Microsoft App Store. To deactivate the S mode, you need:

- To create a new Microsoft account that is not licensed as a work or school
- Connect this Microsoft account to the laptop
- Then on your PC running Windows 10 in S mode, open Settings > Update & Security > Activation.
- Find the Switch to Windows 10 Home or Switch to Windows 10 Pro section, then select the Go to the Store link.

Note: Don't select the link under Upgrade your edition of Windows. That is a different process that will keep you in S mode.

- On the page that appears in the Microsoft Store (Switch out of S mode or a similar page), select the Get button. After you confirm this action, you will be able to install apps from outside the Microsoft Store.

<https://answers.microsoft.com/en-us/windows/forum/all/s-mode-how-to-turn-off-windows-10/53ce25ce-734b-48b8-8d1e-baa5adb5d88b>

To start using the game you need to acquire a Minecraft Education License. There are 2 types of licences to be acquired, academic and commercial. Visit the following link to check the license you are eligible for: <https://educommunity.minecraft.net/hc/en-us/articles/360061371532-Purchasing-Options-for-Minecraft-Education-Edition-Licenses>

1.2 Run the worlds

Once you download the Minecraft Education Edition, you need to have the worlds named “McWorld” files. Once you double-click these files, they will automatically open the Minecraft Education system. It will request you log in with the account for which you acquired a license from Microsoft for Minecraft Education. The worlds require the latest Minecraft Education version to work properly.

Another option will be to import the world manually. When loading the game, after adding your credentials, press play and then you will see on the right bottom part the “Import” button.

Do you face any other problems when loading the world? See if any of these solutions might help.

PROBLEM: The world doesn't have any NPC in it.

SOLUTION: That means that the BEHAVIOR PACK didn't load appropriately with the world.

Exit the world (but not the Minecraft app). Find the world you are looking for and select SETTINGS. On the left side of your screen try to find the TAB that says BEHAVIOR PACKS. Then you will see two TABS on the main screen. ACTIVE PACKS and MY PACKS. Your behaviour pack should be in the tab MY PACKS, which you should click and select activate. If you are unsure what pack you need, look at the ACTIVE PACKS; one of those should say that "This pack is missing". Find the Pack with the same name on the MY PACKS tab and activate it.

PROBLEM: The world has boards that have weird text, say something like the board. Act.1. NPCs have weird dialogue. ETC

SOLUTION: That means that the RESOURCE PACK didn't load appropriately with the world. Exit the world (but not the Minecraft app). Find the world you are looking for and select SETTINGS. On the left side of your screen try to find the TAB that says RESOURCE PACKS. Then you will see two TABS on the main screen. ACTIVE PACKS and MY PACKS. Your behaviour pack should be in the tab MY PACKS, which you should click and select activate. If you are unsure what pack you need, look at the ACTIVE PACKS; one of those should say that "This pack is missing". Find the Pack with the same name on the MY PACKS tab and activate it.

Check if you are facing both of these problems, go to both of these solutions

PROBLEM: The world is in a different language.

SOLUTION: The AI-COSMIC worlds are translated into different languages. Maybe you have a world that is in a different language than yours. Find the appropriate language and start again. If this

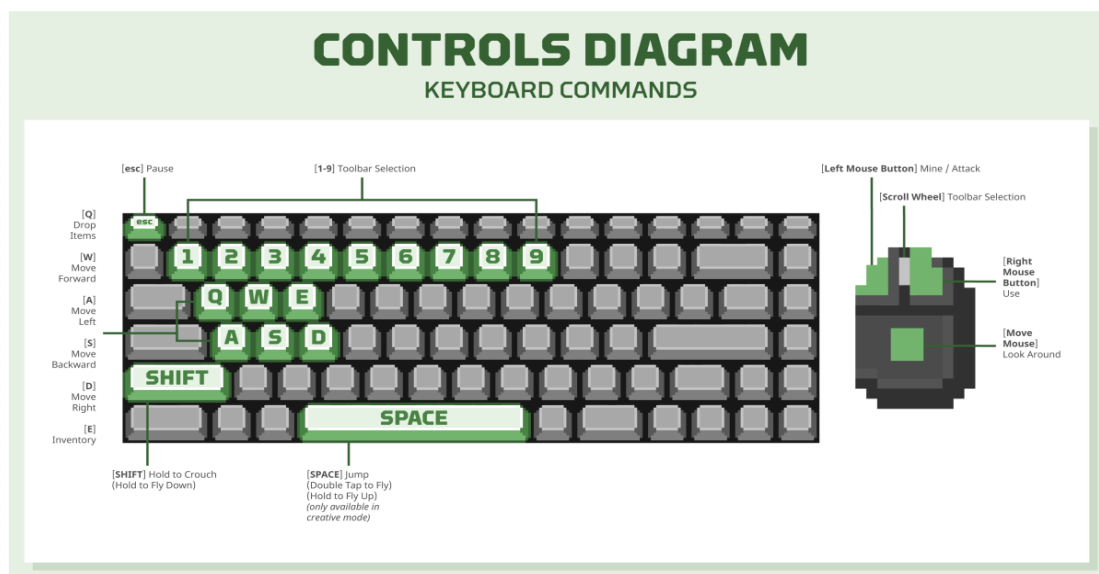
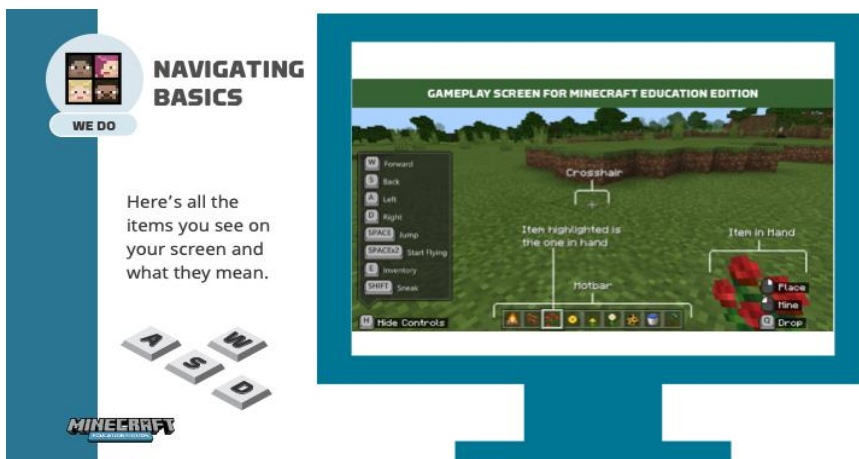
doesn't work, set the language of the Minecraft app according to your preference through the SETTINGS. In the English version select the English US option, not the UK.

1.3 Navigation

Once you open the world, you will need to navigate the game. Navigation is possible using your keyboard and mouse. The buttons of the keyboard to be used are:

- W – Move Forward
- A – Move Left
- S – Move backwards
- D – Move right
- SPACE - Jump (Double SPACE to fly when runs in the creative mode)
- E – Open Inventory
- Q – Throw the selected object
- T – Open the chat
- C - Open Code Builder
- / - Open chat and automatically add the first character as "/"

You can point the direction also by moving your mouse.



2. The COSMICON Minecraft Worlds

2.1 Krk island race

In this Minecraft World players can learn first hands how coding can be used to monitor movements and positions, while also learning about the concept of AI. At the beginning of the game there is a small tutorial section where the players can get familiar with Minecraft Coding Blocks, letting their agent solve a small maze. After that, the game starts with a building challenge, in which players have the freedom to create a transmission tower the way they prefer. Doing that, it will be time to position it on a proper spot on the island, so that the race can finally start. After positioning some antennas, the players will assist to the competition and cheer for their favourite racer. At the end of the race, players have to answer a small quiz on AI in order to complete the game and be free to explore the island.

Starting Point: Inside the house

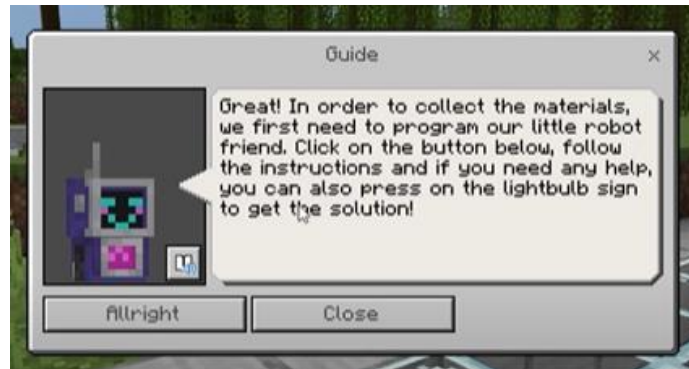
The very beginning of the game will have you start inside a tutorial room to understand how the control works. This should be very easy if you are experienced player, yet, it will be a quick and fun challenged to overcome and reinforce your knowledge on how to play the game. The moment the tutorial will be done you will start inside a house on a cliff on the island, where from the window you will be able to observe the beautiful sea of Krk island.



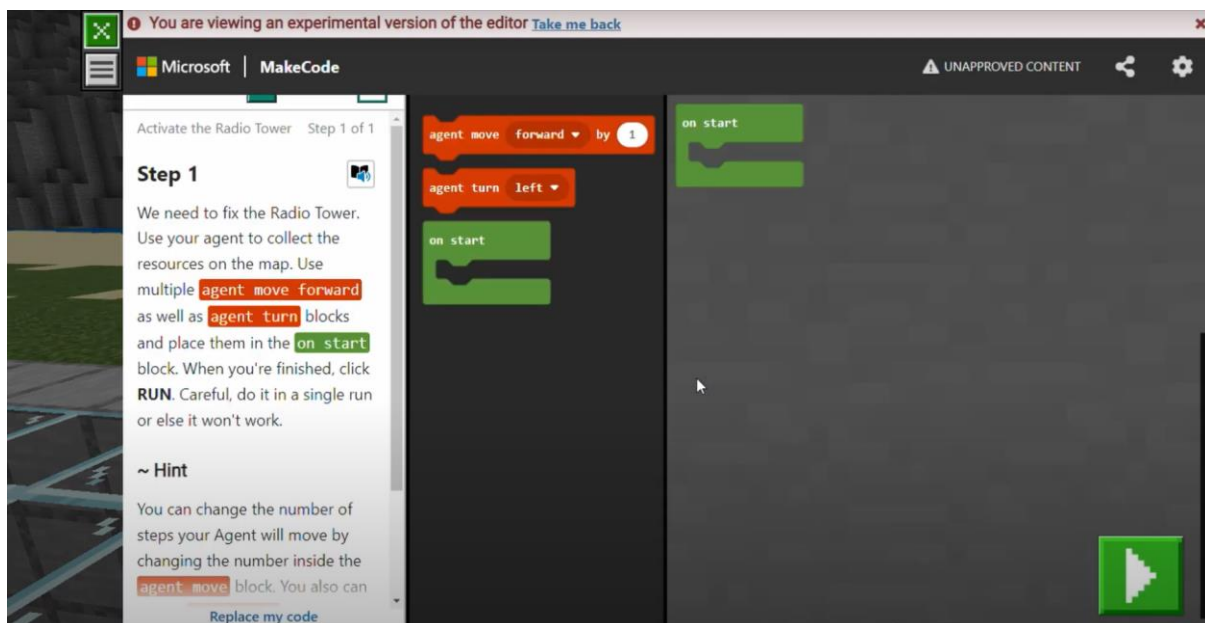
Behind you there will be your guide, ready to instruct you about your adventure. You can speak with it with the RIGHT CLICK of the mouse.



Upon reaching the grass fields, the guide will ask you to first test your coding skills in two simple puzzles.



By clicking "C" on your keyboard you will be able to access the Minecraft Code Builder and control the Minecraft Agent that is located under the glass maze.



This is how the Minecraft code builder looks like. You can create your code by clicking with the LEFT CLICK of the mouse on the red and green bars located at the center of the screen and assemble them on the right side of the screen by dragging them onto each others.

The puzzle can be solved in different ways. Below is the shortest one.

```
on start
agent move forward by 2
agent turn left
agent move forward by 1
agent turn right
agent move forward by 3
agent turn right
agent move forward by 5
agent turn right
agent move forward by 3
agent turn right
agent move forward by 2
agent turn right
agent move forward by 1
agent turn right
```

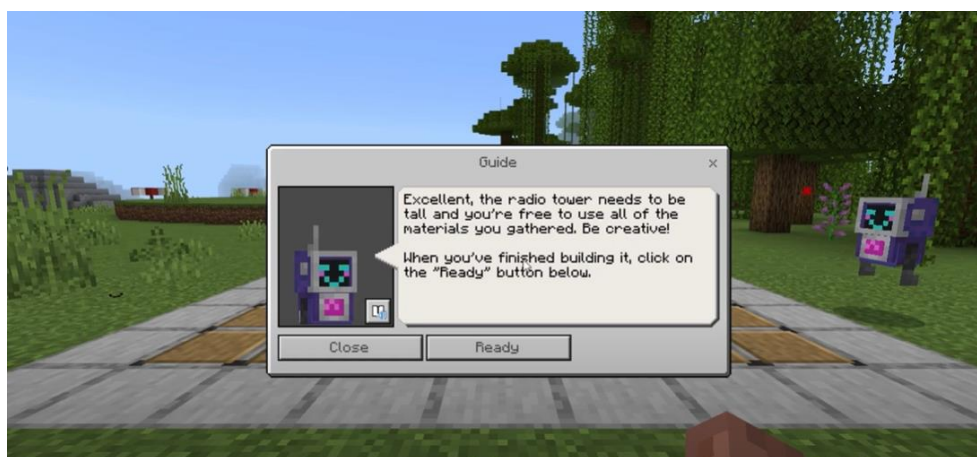
Upon completing the first challenge, a second one will be presented by the guide.



Below is one of the possible solutions.

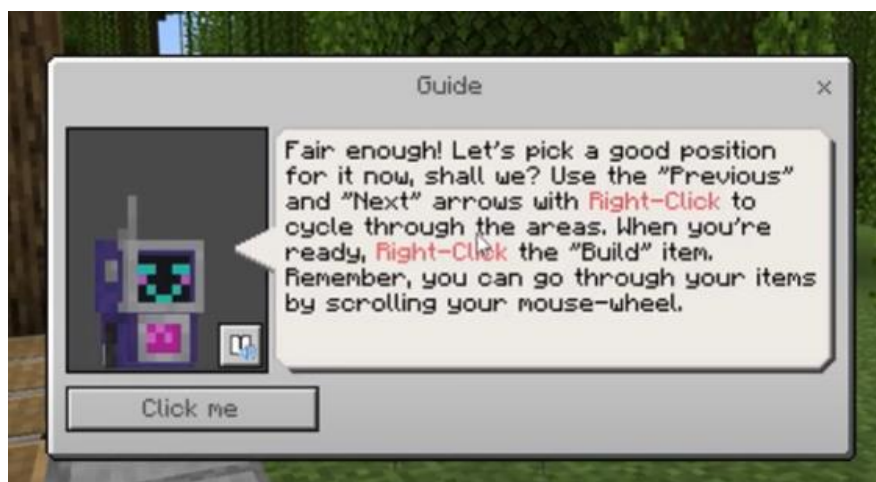
```
on start
  repeat 4 times
    do
      agent move forward by 6
      agent turn right
```

Finishing the challenge, all the materials required to build the radio tower are not collected!

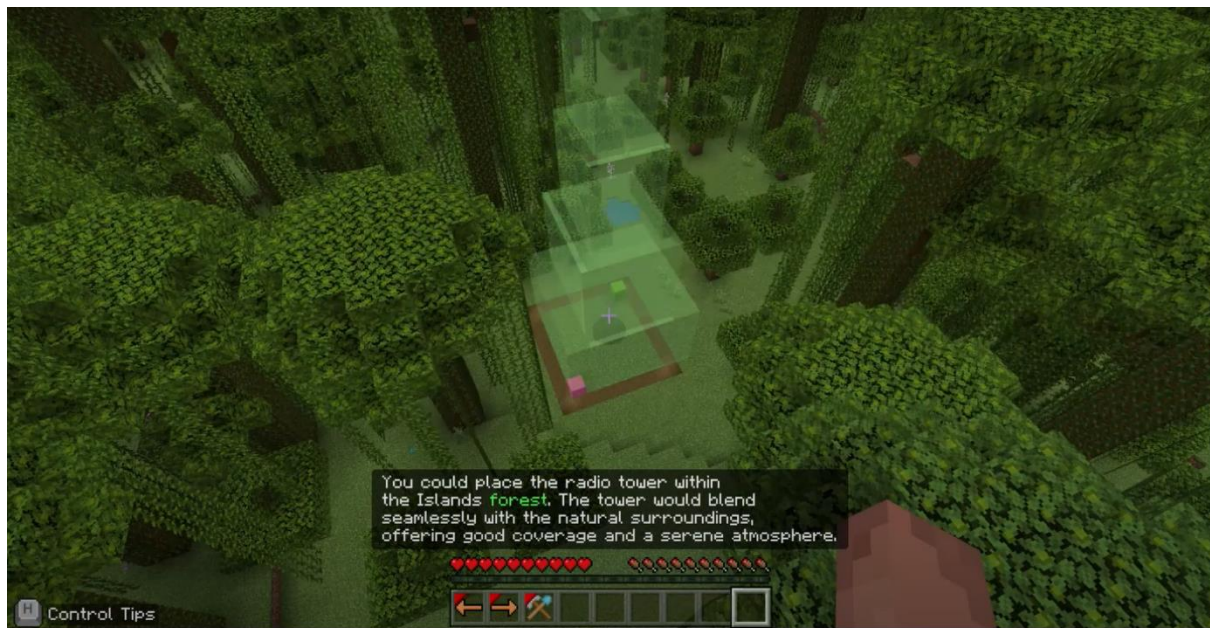


You now have the freedom to either create the radio tower on your own, using the material present in the chest near the base, or to let the Minecraft Agent automatically build it for you.

You have no limit or specific in how to build the tower, just be sure to keep all the blocks inside the perimeter of the base.



After building the tower, you can tell the Guide about your work and proceed in picking a location to position the tower. You can move between location by using the MOVE item in your inventory and



position the tower by using the BUILD command in your inventory.

You can build the tower either on a cliff, on the beach or in the forest. This choice won't affect the rest of the game. After building the tower, you will move to the beach to watch the boat race. Before it will start, however, your task is to position four antennas on the small island in order to monitor the position of the boat.



As you can guess, it is time again to use your coding skills and let your Agent position the antennas for you. Similar to the first two challenges, there are multiple ways to solve this puzzle. Below is one of them.

```
on start
  agent turn left
  repeat 2 times
    do
      agent move forward by 4
      agent turn right
  agent move forward by 6
  agent turn right
  agent turn right
  agent move forward by 10
  agent turn right
  agent turn right
  agent move forward by 4
  agent turn left
  agent move forward by 6
```

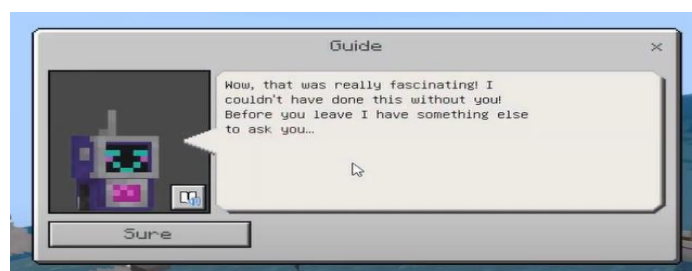
Remember, the challenge has to be solved with one single code!



The moment all the antennas are positioned, the race will start! You can guess who will be the winner and see if your idea turned out to be right!



The moment the race is over, the guide will ask you a final quiz about AI.



These are the questions, with the correct answers below:

Quiz Questions:

1. What does AI stand for?
 - a) Artificial Intelligence
 - b) Advanced Ideas
 - c) Amazing Inventions

2. What is the main purpose of AI?
 - a) To make robots look cool
 - b) To make computers smarter and perform tasks like humans
 - c) To create virtual reality games

3. Which of the following is an example of AI?
 - a) A calculator
 - b) A pencil
 - c) A self-driving car

4. What does it mean when we say AI "learns"?
 - a) It can read books and understand them
 - b) It can change its appearance
 - c) It can improve its performance over time by analyzing data

5. What is one benefit of using AI?
 - a) It can make people lazy
 - b) It can help solve complex problems quickly
 - c) It can replace all human jobs

6. Which of the following is NOT a big idea of AI?
 - a) Speech recognition
 - b) Machine learning
 - c) Magic spells

7. What does speech recognition technology do?
 - a) It allows computers to understand and respond to spoken language

- b) It helps computers play music
- c) It allows computers to read people's minds

8. What is machine learning?

- a) When machines learn how to clean the house
- b) When machines learn from experience and improve their performance
- c) When machines learn how to bake cookies

9. How can AI be used in healthcare?

- a) To make doctors obsolete
- b) To assist with diagnosis and treatment
- c) To create robot nurses

10. What are some potential risks or challenges of AI?

- a) It can take over the world
- b) It can make mistakes and have biases
- c) It can make people forget how to think

Answer Key:

- 1. a) Artificial Intelligence
- 2. b) To make computers smarter and perform tasks like humans
- 3. c) A self-driving car
- 4. c) It can improve its performance over time by analyzing data
- 5. b) It can help solve complex problems quickly
- 6. c) Magic spells
- 7. a) It allows computers to understand and respond to spoken language
- 8. b) When machines learn from experience and improve their performance
- 9. b) To assist with diagnosis and treatment
- 10. b) It can make mistakes and have biases



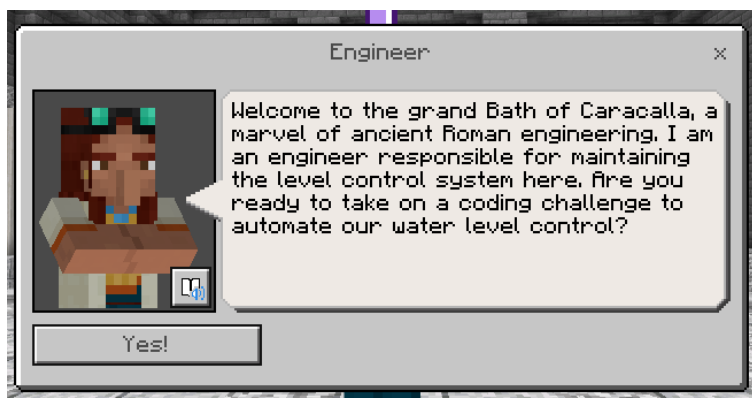
Upon completing the test, the game will be over, congratulations! You are now free to explore the island. There are rumors of a secret being hidden somewhere on it, do you think you can find it?

2.2 Ancient Rome

Starting Point: Inside the Caracalla's thermae



Inside the Roman hot springs, you will talk to the NPC in the room with the RIGHT CLICK of the mouse.



The Engineer will welcome you to the Bath and inform you about the problem she is facing with the water levels in the pool. Before taking care of the pools, however, a small tutorial will start in the form of easier coding challenges. In it, you will have to move the agent to the block pointed by the two arrows and make it destroy the stone.



There are multiple ways to solve this challenge, but here is the fastest one:

```
on start
  agent move right by 4
  agent destroy forward
```

Solving the challenge will result in a small greet from the game, allowing you to proceed.



Meeting the Engineer again, she will tell you that your task is to fill said pools with more water coming from the blocks now covered in stone found at the wall behind the NPC. To access the Code Builder you need to press the C button of your keyboard.


Control the water level Step 1 of 1

Step 1

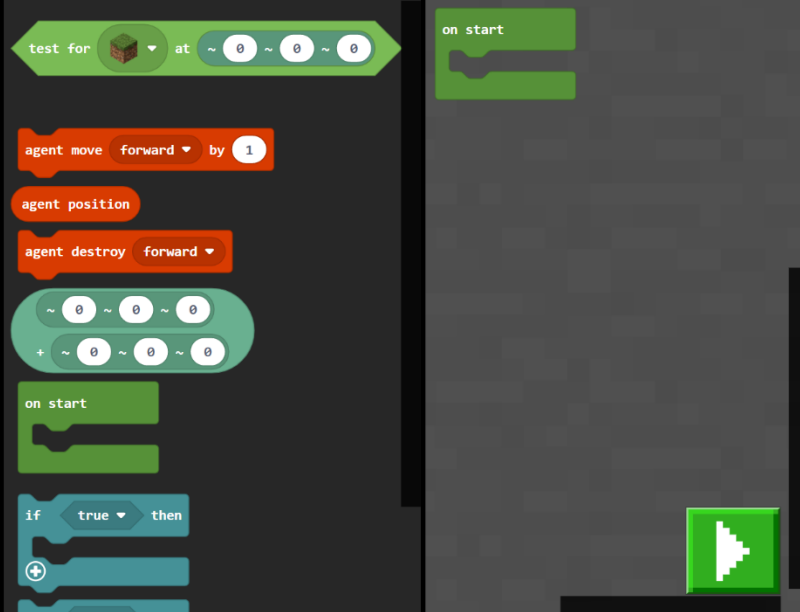
We need to automate the water level control system in the Bath of Caracalla. If the water is too low, the agent must open a hole allowing the water to flow out and raise the level.

~ Hint

To check the water level, check if there is air in a few blocks under the agent. Use **if** and **test for** for to do this.

 [Next](#)

[Replace my code](#)



By using the code builder, your task is to move the agent to all the stone blocks indicated by the black arrows and let it destroy them.



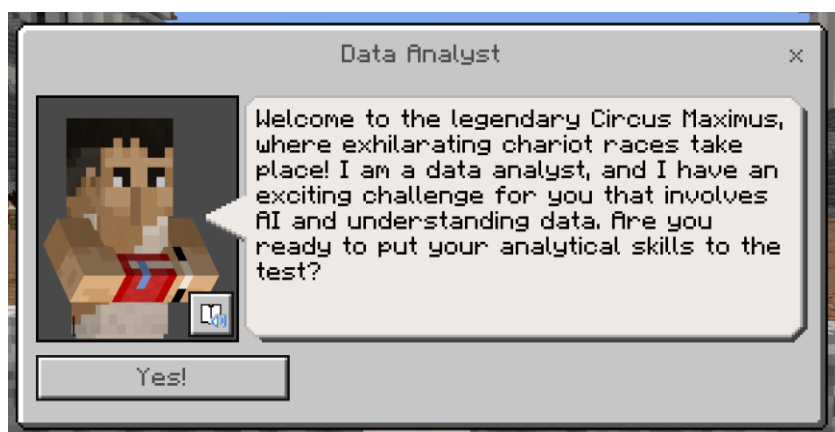
There are multiple ways to solve this task. The fastest code is the one below:

```
on start
  agent destroy forward
  agent move right by 2
  agent move up by 1
  agent destroy forward
  agent move right by 3
  agent move down by 2
  agent destroy forward
  agent move right by 2
  agent move up by 1
  agent destroy forward
```

If the code is correct, the agent will start destroy the bricks and let the water flow into the pools.



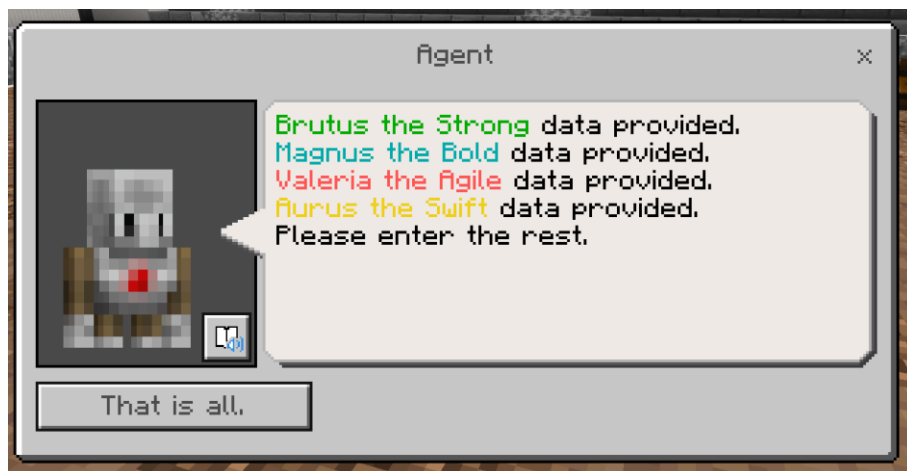
Having completed this coding challenge, it is time now to move away from the bath and reach the Circus Maximus where the chariot race take place. There you will meet another NPC who will test your knowledge of AI.



The data analyst will explain to you how AI can elaborate data to make analysis useful to us. In this case, you will have to first gather data about the 4 horses located at the circus. You can do that by talking with the NPCs located in front of the fences.



After having collected all of the data, you will speak to your Agent and feed it with all the relevant information. You can do that by interacting with it with the RIGHT CLICK of your mouse.



By elaborating all the data, the Agent will tell you which horse is the most likely to win the race. With that information, you will tell the Data Analyst and watch the actual race take place.



The race will start right after you will have selected the winning horse. You can give it a look from above on the seats of the Circus Maximus.



At the end of the race, the winner will be elected and seat on the golden podium. Congratulations, you have finished this game! You can claim your badge or test your parkour skills and climb on the golden podium!

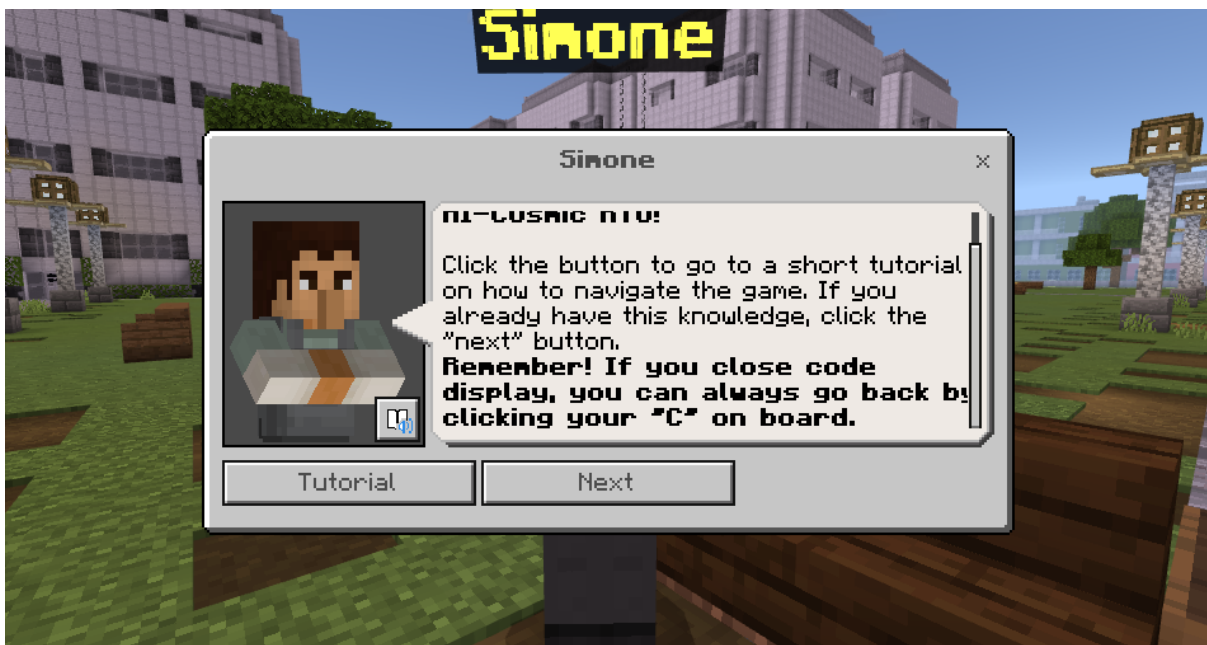


2.3 Inside the Lab

Starting Point: Outside the university's campus



You will start your adventure outside the university's campus. On your left you will see an NPC (Non-Playable-Character). You can talk to him by using the right-click of the mouse.



Simone will welcome you to the world and give you the option to start the adventure immediately or to undergo a small tutorial to understand the controls of the game. If this is your first time playing Minecraft, we advise to click on the Tutorial section.

If you do click on the tutorial button, then the following will happen. If not, skip to the next part of the guide.



You will find yourself inside a small basketball field. Learn how to move your character in game and how to use your mouse as a camera.



Follow the white lights and learn how to navigate in the game world.



You can jump obstacles by using the [SPACEBAR] of your keyboard while moving forward with [W].

Talking with the NPC at the end of the small maze will conclude the tutorial.

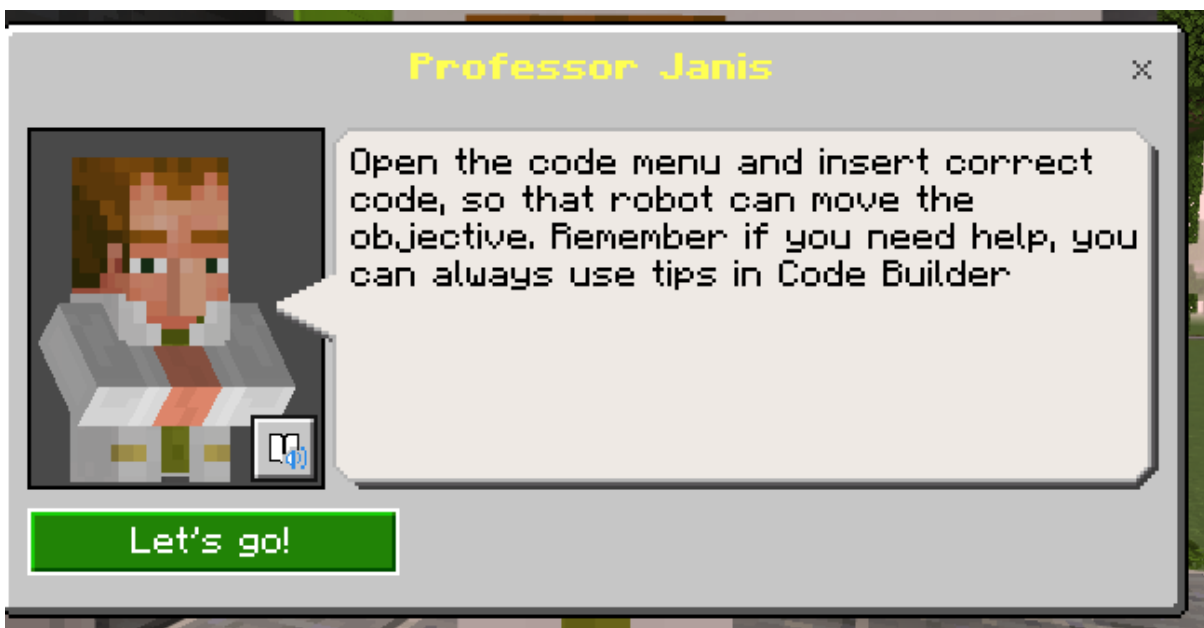
START OF THE GAME



Follow the white lights across the campus to reach the entrance of the university.



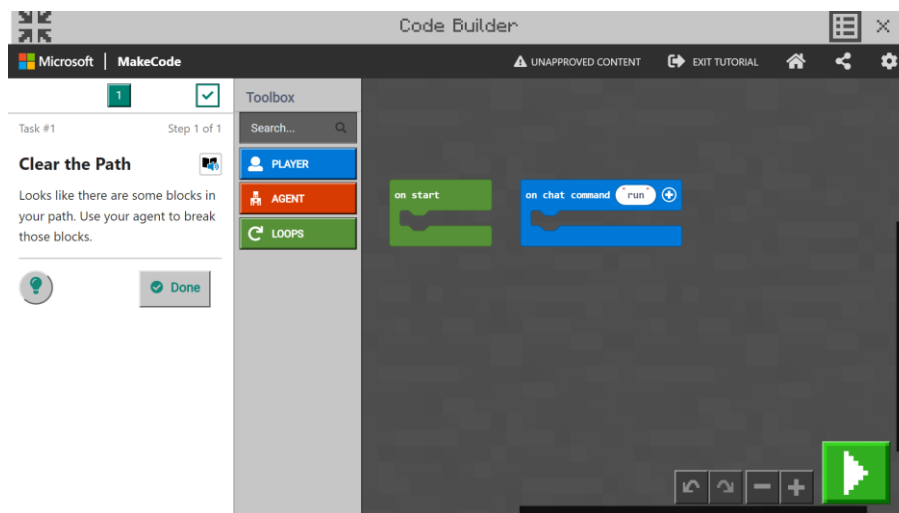
As the entrance is now blocked by some crates, you will have to first speak to Professor Janis, located at the right of the entrance.



After teaching you something about Latvia, the Professor will ask you to help him unblock the entrance by destroying the crates with a newly built robot. This task cannot be skipped. To activate and use the robot, you should use the Minecraft Code Builder by clicking [C] on your keyboard.



This robot will require your inputs to solve the task of the professor.



By clicking [C], the code builder panel will appear on screen, allowing you to create a code for the robot. You should click and drag the correct “code panels” on the right part of the builder to assemble the code. When you are satisfied with your code, click on the Play button on bottom right.

If you need guidance, press the lightbulb button in the Code Builder. There you will find a hint that will help you create the code. This is true throughout the map.

There are multiple ways to solve this puzzle. Below is the code for the quickest way, which uses loops to automate the process:

```
on start
  repeat 4 times
    do
      agent destroy forward
      agent move forward by 1
```

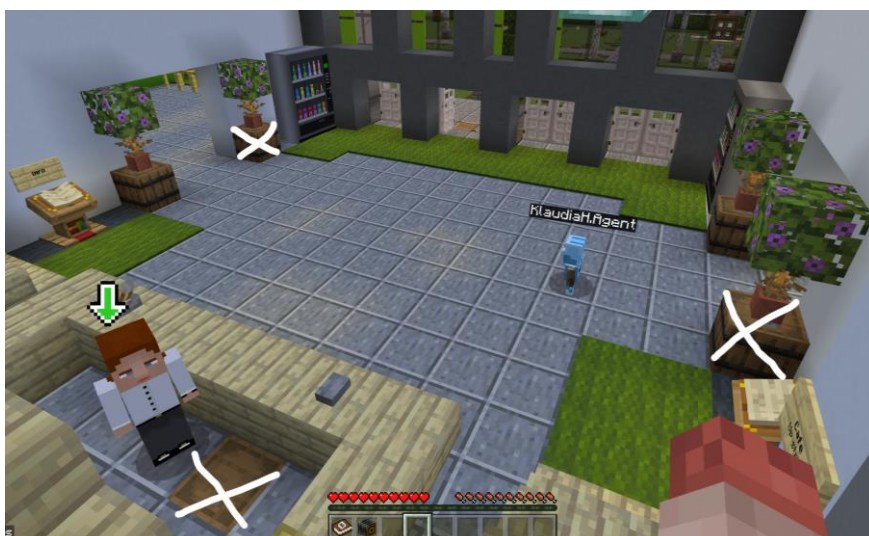
If your code is correct, the agent will start to destroy the crates in front of the entrance of the university.



Now that the entrance is no longer blocked, enter the university and speak to the NPC behind the counter. She will welcome you to Latvia and ask you to help her with another coding task. This task can be skipped, you can simply tell the Lady you do not want to help her and you will be able to continue with the game. The University is having trouble with the intercom and needs your help.



You will need to look around the room and find three gray blocks. They are hidden in three barrels. Their locations are shown on the screenshot below:



Once you collect all three blocks, come back to the Information Desk Lady and talk with her. After you've done that, you will be asked to give the blocks to your agent. You can do so by right-clicking on the Agent and moving the items from your inventory to the Agent's one. It is best to remember where you put the blocks as it will be helpful while creating the code later. For example put the blocks in your Agent's inventory in the following way:



After you've given your blocks to the agent, press a button on the Lady's desk to start the task.



The agent will teleport to a small labyrinth under the floor:



Your task will be to guide the Agent to all of the three blocks and make him place them in the correct spaces. You will create a code that will lead the Agent to the block and will make him place his own block in front of him. You will create a code similar to the following one:

```
on start
  agent move forward by 2
  agent turn left
  agent move forward by 2
  agent turn left
  agent move forward by 2
  agent turn right
  agent move forward by 3
  agent turn right
  agent move forward by 1
  agent turn left
  agent set active slot 3
  agent place forward
```

When you run your code, the Agent will go up to the place a block on the corresponding block in the labyrinth and go back to the starting position. You can then lead him to the rest of the blocks in the

labyrinth. Once you've done that and the Agent has placed all of the blocks, you can go on with your adventure. To do that, come up to the Lady's desk and use the lever presented below.



Once you do that, the Lady thanks you for fixing the intercom and gives you another task. A professor needs to build a radio. He is waiting for you on the second floor. You can go to the room on the right of reception but will soon learn that the elevator is not open. You will have to solve a puzzle to open the elevator doors. On the picture below you see the elevator doors to the left and the agent to the right. The agent needs to go up to the lever and press it but there are blocks on his way. You will have to find a way to move the blocks and then code the Agent accordingly.



Behind you in the room is the Puzzle Helper. He has hints that will help you solve the puzzle. There are three hints the Puzzle Helper can give you. Try to solve it yourself, if you have no luck, you will

find a full instruction below the following screenshot.



First come up to the levers near the Agent and use the **first**, the **third** and the **fifth** ones. This will hide three of the blocks. Then find the sword on the wall to the right of the Agent and right-click on it six times. After you do that, turn around and find buttons on the wall. Press the first one on the left in the second row. Last but not least, find one of the barrels in the room (under the decorative trees) and gather some snowballs. If you have them, come back to the wall on which you found the buttons and locate a white block with red circles on it. You need to throw snowballs at it. To do that, once you are holding a snowball, press right click while looking at the target block. This will hide the last block blocking the Agents way. Now what is left is to create the appropriate code. You can make it in many ways. Below you will find one of the options.

```
on start
  agent move forward by 6
  agent interact forward
```

Once the Agent uses the lever, the doors to the elevator will open and you can go in. Once you press the button in the elevator, you will go to the second floor. Follow the white particles into the classroom. Once inside, speak with the Professor. He will tell you why he needs to build the radio and give you a task. This task can be skipped, you can simply tell the Professor you do not want to help him and you will be able to continue with the game. When you accept his task, the Agent will spawn below the floor of the room. Your task is to lead him to each of the items on the floor of the labyrinth and make him pick them up.

HINT! If it takes you a long time the items might disappear. To make them come back you can speak with the Professor again.

Once the Agent collects all three items, go to the Professor and press the button behind him described as “Click to get Agent from task!”. Then you will be able to collect the three items from the agent. Do that and speak with the robot to the left of the Agent and give him all of the items.



In exchange for each of the items you will get another one. You will acquire a **CB Radio Base**, **CB Antenna** and **CB Microphone**. To craft the radio, look at the blackboard for instructions and use the Crafting Table below it. You will receive the “Radio Item”.



Once you have it, speak with the Professor. He will guide you to the next task. You will have to go back to the Information Desk Lady. She will ask you to help the Lunch Lady. This task can be skipped, you can simply tell the Lady you do not want to help her and you will be able to continue with the game. Go to the cafeteria located right above the Information Desk.



The Lunch Lady will ask for your help with her AI powered robot that helps her in her work. Once you accept the task, you will have to go behind her counter and down the stairs. There you will meet the Chef AI Robot. You can start coding right away. The instruction for the task can be found in the Code Builder. Collect the food hidden in the labyrinth and give it to the Chef AI Robot. By doing that you will advance to the next level. Collect all of the food and give it to the Robot to finish the task.



HINT! If it takes you a long time the items might disappear. To make them come back you can press the corresponding button shown on the screenshot above.

After all of the food is collected and given to the Chef AI Robot, speak with the Lunch Lady. She has a quiz for you! These are the questions, with the correct answers below:

1. What does AI stand for?
 - a) Artificial Intelligence

- b) Amazing Ideas
 - c) Awesome Inventions
2. What does AI help computers do?
- a) Talk to animals
 - b) Think and learn like humans
 - c) Make tasty snacks
3. What is one cool thing that AI can do?
- a) Play games
 - b) Fly in the sky
 - c) Swim in the ocean
4. Can AI drive cars?
- a) No, only humans can drive cars
 - b) AI can only drive toy cars
 - c) Yes, AI can drive cars
5. How does AI learn new things?
- a) By watching cartoons
 - b) By receiving information and making decisions
 - c) By eating lots of candy
6. How is coding used in Minecraft?
- a) Interacting with the NPC robot
 - b) Chat commands
 - c) Using items like food

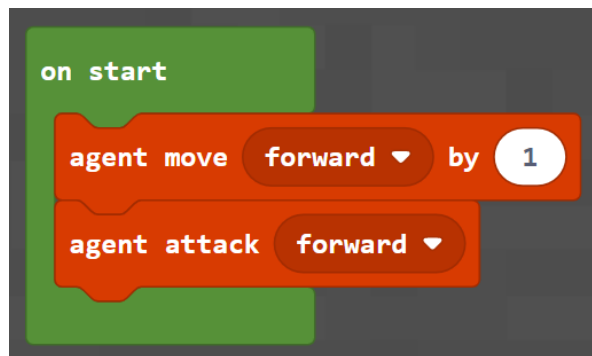
Answer key:

- 1. a) Artificial Intelligence
- 2. b) Think and learn like humans
- 3. c) Play games
- 4. c) Yes, AI can drive cars
- 5. b) By receiving information and making decisions
- 6. b) Chat commands

After the quiz is done, you can come back to the entrance of the University. There you will find Professor Michelle who will ask you for help. This task can be skipped, you can simply tell the Professor you do not want to help her and you will be able to continue with the game. She needs our Agent to move the vending machine and show the WIFI password that is written on the wall behind it.



You should make the Agent move forward by one and attack forward as follows:



The WIFI password is written on the wall but it is coded! You need to solve the equation and choose the correct option from the buttons that appeared in the room.



The Professor thanks you and tells you how to find the boat. You can follow the white particles on the floor and leave the building. The particles will lead you to the Robot pictured below.



He will inform you that you need to build a bridge to get to the boat. Your Agent will appear and you will receive a variety of blocks. Pick the ones you want to use for the bridge and code the Agent accordingly. You can let your creativity flow. Below you can find the basic code below.

```
on start
  agent move forward ▾ by 2
  repeat 7 times
    do
      agent move forward ▾ by 1
      agent place down ▾
```

Once you get to the other side, speak with Captain Anna. She has a special certificate for you!
Congratulations, you have finished this game!

2.4 The secrets of Alhambra

The very beginning of the game will have you start inside a tutorial room to understand how the control works. This should be very easy if you are experienced player, yet, it will be a quick and fun challenged to overcome and reinforce your knowledge on how to play the game. When done, you will be teleported to the beginning of the new world.

The world starts at the entrance of the Alhambra, the historical site located in Granada, Spain.



In front of the entrance of the Alhambra, you will see an NPC (Non-Playable Character). Go talk to him with the [RIGHT] click of your mouse.



The Agent will tell you that entrance is closed, but that, with some proper directions, he could get to the lever that opens the gate. You should go to the code builder, by pressing the button [C] on your keyboard, and move the agent all the way to the lever.



When clicking on [C] the code builder will appear on screen. Select and drag the blocks you wish to use for making the code and, when you are done, click on the *Play* button on bottom right. If you are struggling, click the hint button for advices!

To speed up the process, you may use loops. Below is the fastest code to solve this riddle.

```
on start
  repeat 2 times
    do
      agent move forward by 5
      agent turn left
      agent turn left
      agent move up by 2
```



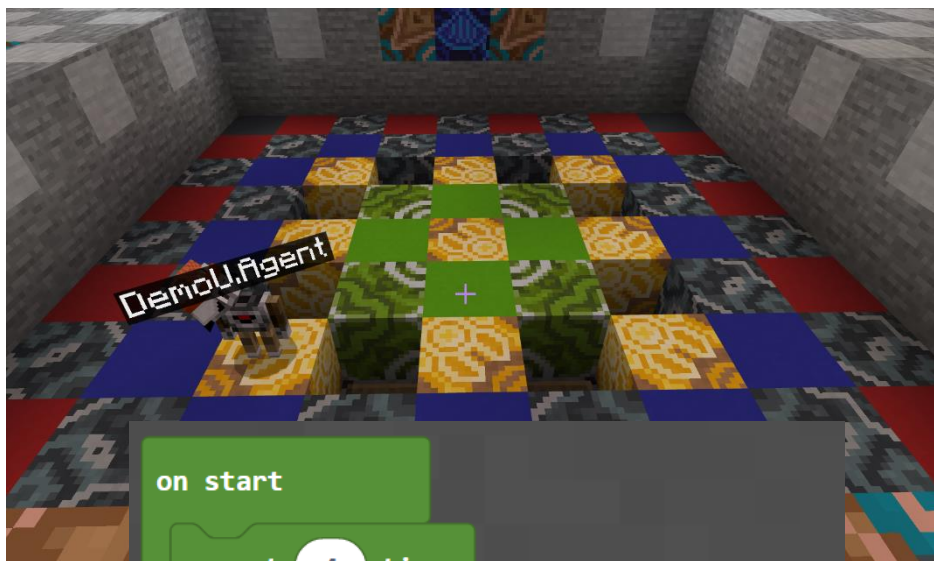
Solving the riddle will make you able to enter inside the Alhambra. Inside, you will meet Fatma, who will welcome you and tell you some facts about the site.



Then, Fatma will ask you to go and look for a special flower that can only be found at night on summer nights like the one in-game. To search for the flower, you should explore the place and look for the NPC called Aisha. By crossing the bridge on the pond, you will see an NPC wearing red next to the right. Talk to her with the [RIGHT] click of your mouse.



She will tell you that a dragon has destroyed the beautiful mosaic that was decorating the pavement of the Alhambra. By using your coding agent, you can fix the mosaic and save the beauty of the site. Click [C] to use the code builder to fix the pavement.



This is how the beginning, being dragon. To fix it, code below:

```
on start
  repeat 4 times
    do
      agent move forward by 1
      agent place down
      agent move forward by 2
      agent place down
      agent move forward by 1
      agent turn right
```

floor looks at the destroyed by the you can use the

When you are done, the final mosaic should look like this:



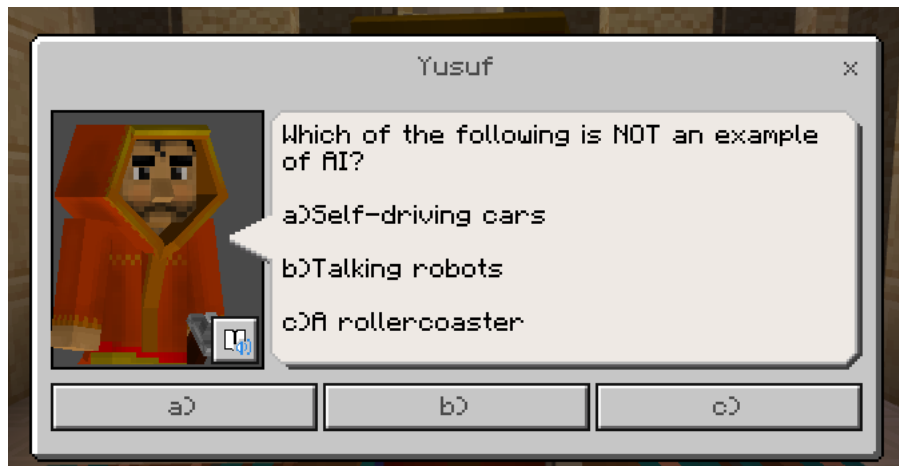
With the mosaic fixed, Aisha will tell you about the flower hidden in the Alhambra. She will open for you the left door. Head there and collect the flower, which is surrounded by a mystical aura, with the [RIGHT] click of the mouse. Once you have the flower, go back to Fatma and give it to her.



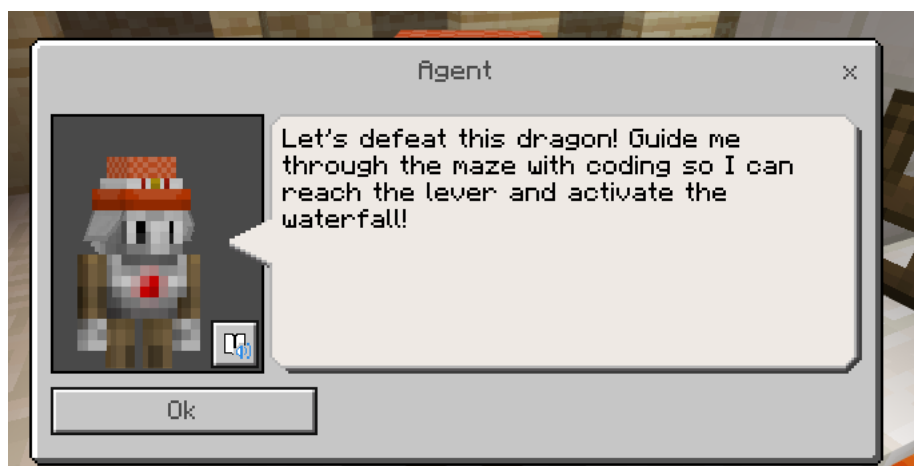
Once you have given the flower to Fatma, she will handle you a key to the right door. You can now open it using the key in your inventory.



Inside the room you will meet Yusuf, the Librarian, who will first test your knowledge about AI. After answering correctly to his question, he will inform you that the dragon which destroyed the mosaic is still in the Alhambra and that he is planning to eat the sheep of the Emir.



Trepassing the gate you will see the dragon flying over. Be careful to avoid his flames and not get hurt. Follow the purple arrows on the floor to find the Agent, who will help you in the battle against the dragon.



With the power of coding you can again guide the agent to the lever and activate the waterfall which will defeat the dragon. This below is the maze that the Agent has to cross.



This is the code that you should use to solve the maze:

```
on start
  repeat 3 times
  do
    agent move forward by 2
    agent turn right
  agent turn left
  repeat 3 times
  do
    agent move forward by 2
    agent turn left
  agent turn left
  agent turn left
  repeat 2 times
  do
    agent move forward by 2
    agent turn right
```

By solving the maze, you will release a waterfall on the dragon, which will make him fly away.



When the dragon is gone, talk to Yusuf to reach the end of the world. Congratulations!

2.5 Robolympics

You start the game inside an ancient hall, where you can familiarize with the controllers following the main path of the area. You will be asked if you want to engage in a tutorial session to learn about the basic controls of the games or if you prefer to start the game already.



With the game starting, you will find the hovering robot Lykourgos. You can talk to it with the [RIGHT] click of your mouse.

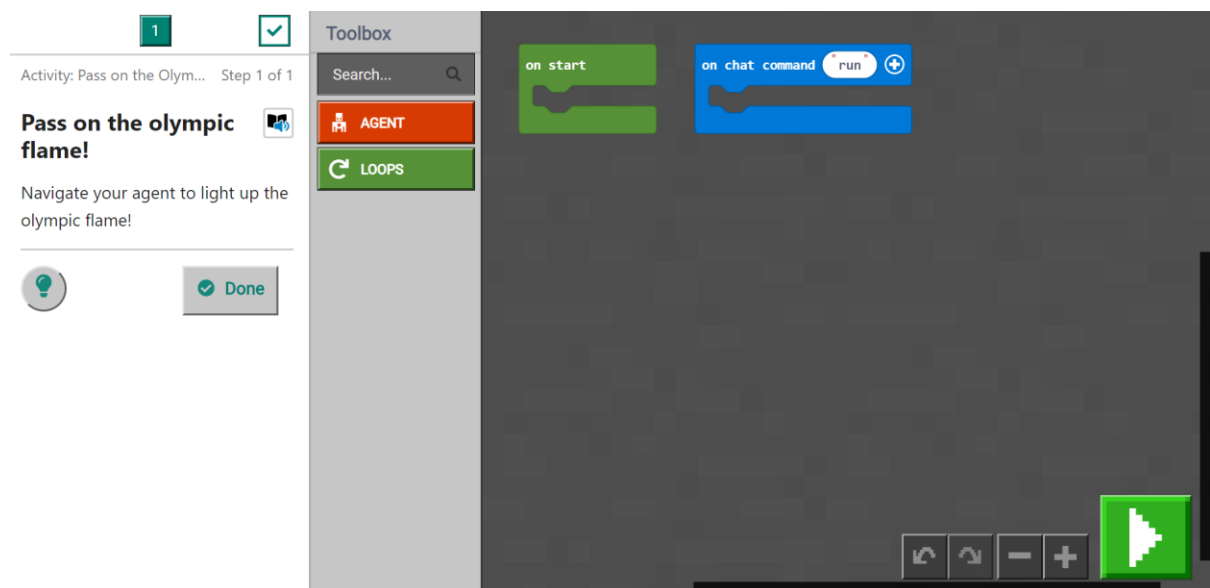


Your goal is to walk your coding agent all the way to the Olympic Altar in order to start with the games. The path that the agent has to walk is showcased by the glass inside the walls surrounding

you.



By clicking on [C] on your keyboard, you will get access to the Minecraft Code Builder in which you can create a code for your agent. This is how the code builder looks:



By clicking and dragging on the code bars presented in the code builder, you can create a code for your agent and let it walk towards the Altar. This one below is the solution to the maze:

```
on start
  agent move forward by 11
  agent turn right
  agent move forward by 23
  agent turn right
  agent move forward by 22
  agent turn right
  agent move forward by 12
  agent move down by 2
```

With the fire on, the Olympic games can finally start!



Walking outside the hall, you will find yourself in Athens, specifically in front of the Kalimarmaron, where a hovering robot is waiting for you. You can talk to it with the [RIGHT] click of your mouse.



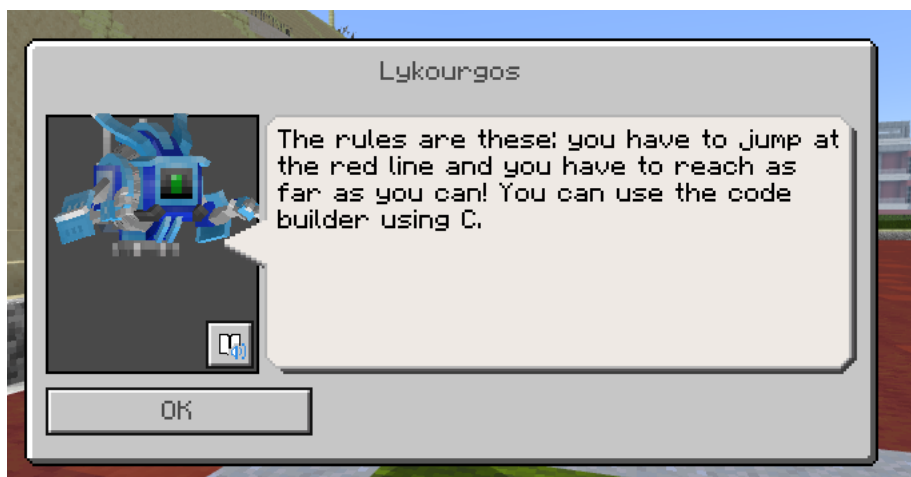
Lykourgos will ask you to pick one from 4 different challenges to start with. You can select one simply by clicking on one of the buttons below the dialogue.



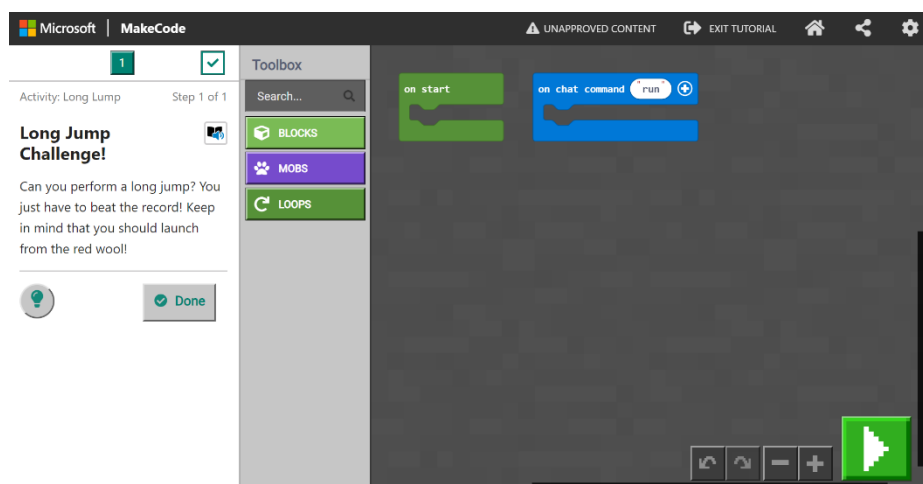
Below is the solution on how to complete each challenge.

A. Long Jump

In the field, you will be greeted by Lykourgos and instructed on how to solve this challenge.



By clicking on [C] on your keyboard, you will get access to the Minecraft Code Builder in which you can create a code for your agent. This is how the code builder looks:



To win this challenge, you should use the code builder to give you, the player, a jumping effect when stepping on the red wool. Below is the code you can use:

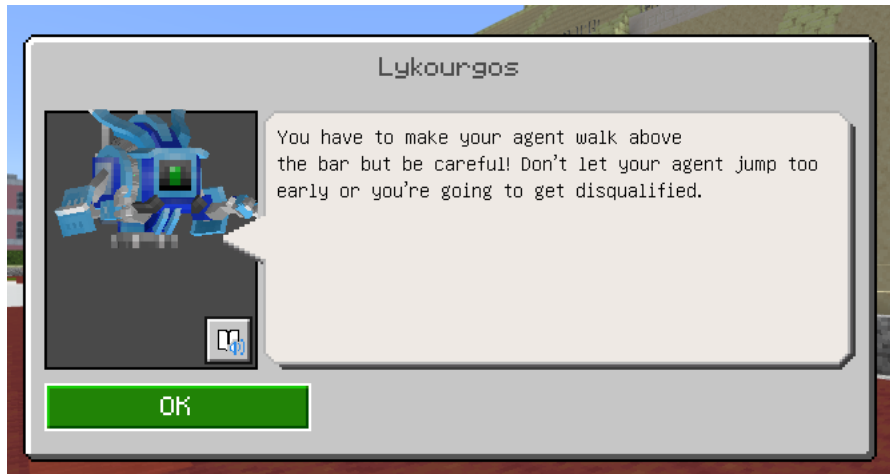


```
on start
  while true
    do
      apply Strength to nearest player (@p) duration 10 amplifier 5
      apply Jump Boost to nearest player (@p) duration 10 amplifier 200
```

B. High Jump



In this challenge, you will make the agent do the job of jumping higher than the bar.

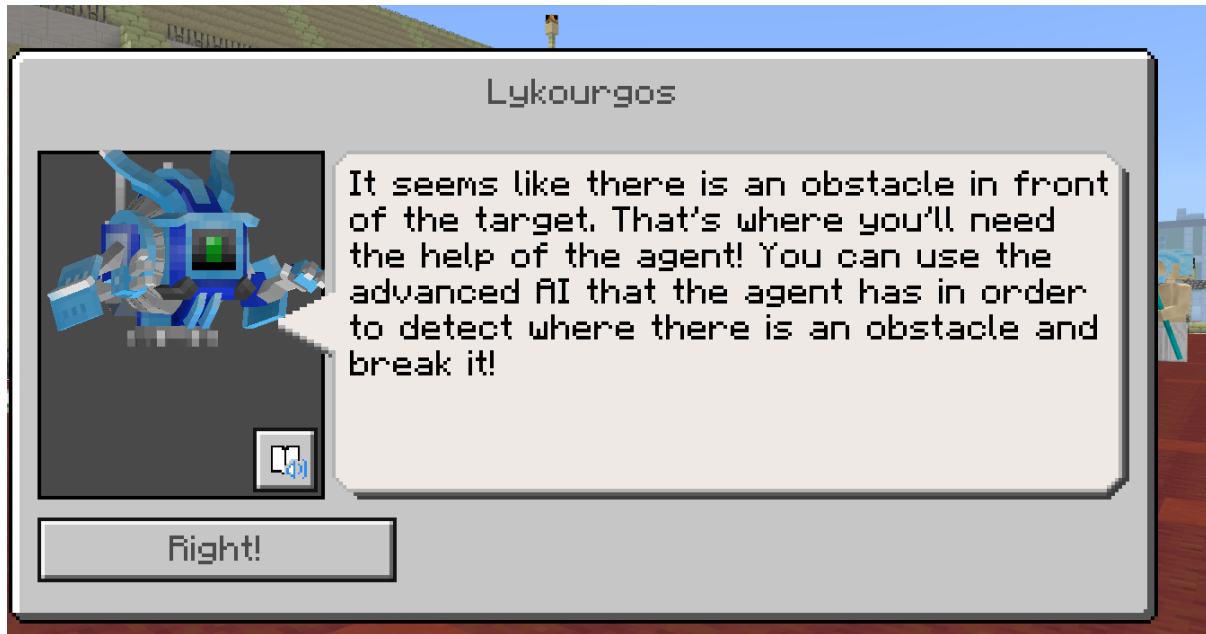


You can easily solve this challenge by making the agent walk the green path and then past the bar. Below is the quickest code to solve this:

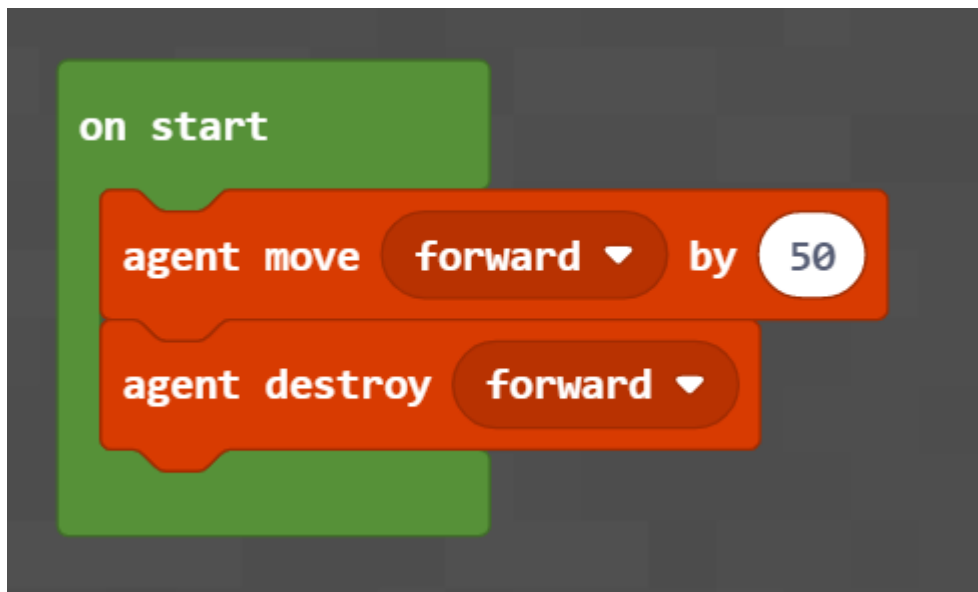
```
on start
  agent move forward by 11
  agent move left by 3
  agent move up by 4
  agent move forward by 2
```

C. Archery

For this challenge as well, Lykourgous will be there to help you. Speak to it and create a code for your agent.



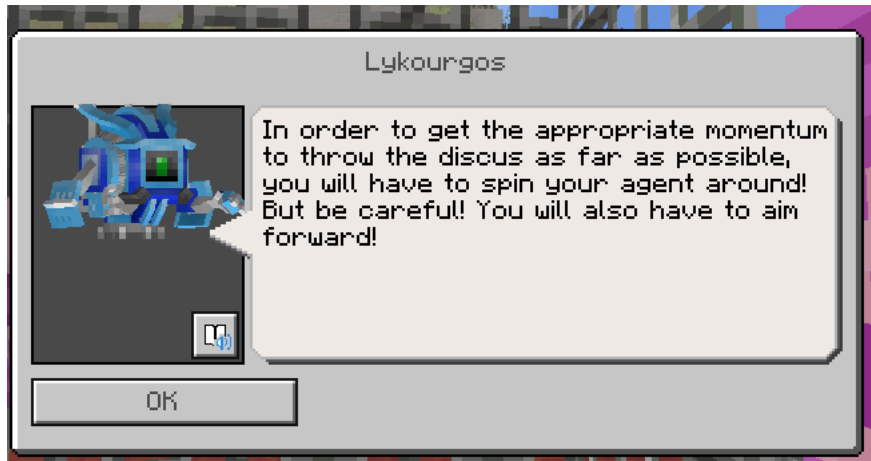
You should use your agent to go on the white surface of the field and detect the obstacles that are covering the target. You can use this code below to solve the challenge:



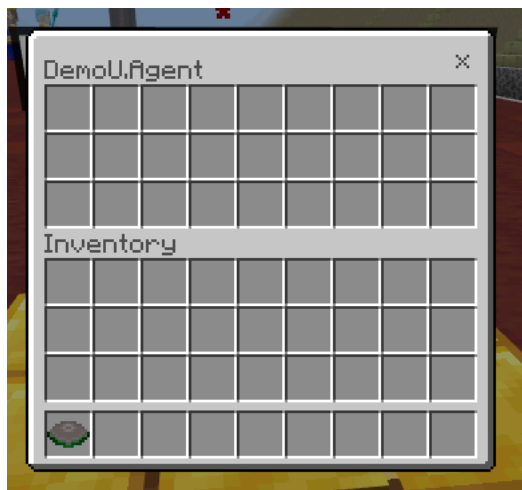
Once the target is visible, hold your arrow while using the bow with the [RIGHT] click of the mouse and, aiming at the target, shoot by releasing the right click!

D. Discus throw

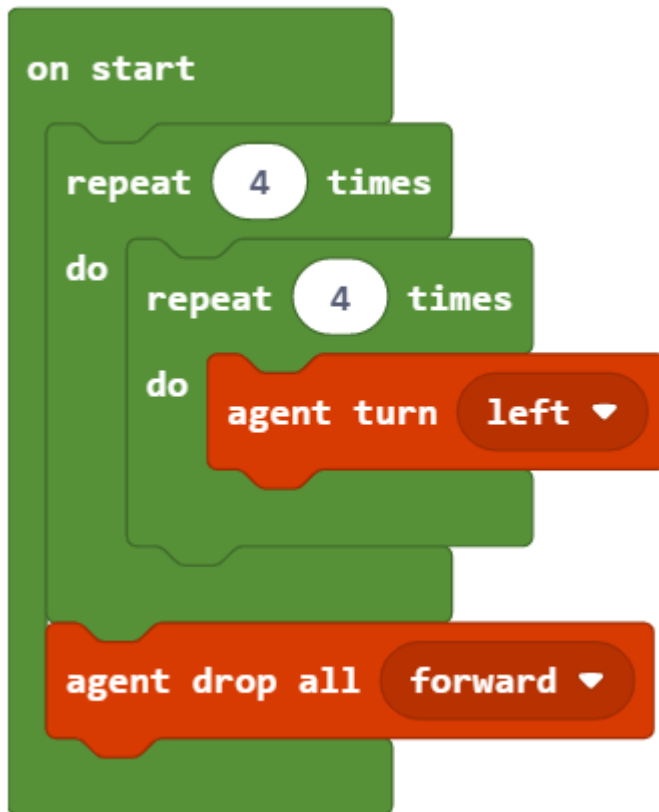
In this challenge, you will have to make your code agent spin before throwing the discus as far as possible.



First of all, give the agent the discus in your inventory. You can do that by using the [RIGHT] click of your mouse on the Agent and then by clicking the discus and moving it on the Agent's inventory.



Your task is to code the agent so that he would make a perfect spin around itself and then drop the discus facing the field. You can use this code to solve the challenge.



When you are done, you will be greeted by Lykourgos.



After completing all the challenges, you will be back at the entrance of the stadium. Speak to Lykourgos and finish the game. Congratulations!