

ENHANCING COMMUNITIES WITH MINECRAFT

Levels 5-6



This unit of work has been created in collaboration with the STEM specialist teacher at Pakenham Springs Primary School, Pakenham, Victoria

Unit Overview

This unit of work has been created to demonstrate how a global non-profit organisation has utilised the features of Minecraft to help under privileged communities. Students will use the ethos of the organisation as a catalyst to design and virtually build a community that will benefit the needs of an identified group of people. The chosen community can be one for local friends and family or reach another community on a global scale.

Other Curriculum Targeted Areas

Other curriculum areas can be targeted and assessed within this unit.

Other areas of interest may include:

- Design and Technology
- Mathematics (Data)

Further investigation into these areas is required to ensure they align with the following activities. Activities may need to be modified to ensure content descriptions and achievement standards are met.

Australian Curriculum Alignment

The following sessions have been created using the Australian Curriculum: Digital Technologies Curriculum. Tasks may need to be modified to ensure state Digital Technologies Curriculum content descriptions and achievement standards are met. ACS has support and documents to help align this unit to other Digital Technology Curricular.

Session

'Session' has been used to define the order of tasks to complete the unit. It does not define a set time required to complete the task. Time allocated to complete a session is the teacher's discretion. This allows for flexibility for the teacher to drive the duration of the task and make modifications if necessary. Sessions can be merged into one set period or sessions may run over multiple periods.

ENHANCING COMMUNITIES WITH MINECRAFT

Levels 5-6



Key Preparation

Minecraft is the chosen platform to complete this unit of work. The right platform will depend on the school's resources and access to digital technology. Investigation into other platforms may be required if Minecraft is not suitable.

It is encouraged to explore and understand basic functions within the chosen digital platform. Full knowledge and upskilling is not required. By providing skill development for the students (see Session 3) students will familiarise themselves with the capabilities and functions within the platform.

ACS Resources

Resources have been created to help teachers and students unpack and understand topics found within the Digital Technologies Curriculum. These give brief explanations of the topic and the expectations to teach the topic at the curriculum year level. It is intended the information is presented in a way that will set the foundation for further research. ACS has resources to support the teaching of the Digital Technologies Curriculum from Foundation to Year 10. Access the resources via: <https://www.acs.org.au/ict-educators.html>

Key Understandings

- Describe how digital technology has been used to help communities.
- Use Minecraft to design a solution to a problem in a community.
- Use Minecraft to explore how coding can be integrated into their design to further enhance functions within Minecraft.

Key Questions

- How is Minecraft used to help real life communities around the world?
- How can you use Minecraft to redesign an area in our local community to benefit our members?
- How can you incorporate code into your design to enhance any features to automatically move/change?

Key Vocabulary

Collaborative projects, online protocols, design thinking, Minecraft, computational thinking, algorithms, flowcharts, programming, iteration, branching, user input, flowchart, digital solutions.

ENHANCING COMMUNITIES WITH MINECRAFT

Levels 5-6



Session Number	Session Topic Focus	Learning Intention and Success Criteria	Introduction/Teacher Instruction	Whole Class Activity
1.	Online Collaboration	<p>Learning Intention Students will identify a set of protocols to follow when working in online spaces.</p> <p>Success Criteria I can generate a list of dos and don'ts and explain why they are important protocols to follow. When working in online spaces, I am an active member of my team and the workload is shared evenly between us.</p>	Discuss the similarities and differences of working in the classroom and online and the importance of continually abiding by these protocols (rules).	Students work in small groups and connect with each other in an online document that allows them to collaborate. They create a list of 'dos and don'ts' to successfully work online. They explain why it is important that the protocols are upheld.
	<p>Student Resources</p> <ul style="list-style-type: none"> ACS Student Resource: Online Collaboration 		<p>Teacher Resources</p> <ul style="list-style-type: none"> ACS Teacher Resource: Collaboration Chosen digital platform to allow users to collaborate online 	
2.	Digital technology used to help communities	<p>Learning Intention Students will explain how the non-profit company, Block By Block, uses Minecraft to redesign underprivileged communities.</p> <p>Success Criteria I can explain how Minecraft is used to help design and create communities.</p>	Students brainstorm all the different uses of Minecraft and any functions of Minecraft they know.	<p>Introduce students to the non-profit organisation Block By Block, Together watch the introduction video (found on the home page of the Block By Block website).</p> <p>In groups student choose and investigate different projects that have been created through Block By Block. They complete a profile card, explain the project, the design and a personal reflection.</p> <p>Students share their findings with their class.</p>
Session Resources	<p>Student Resources</p> <ul style="list-style-type: none"> Block By Block 		<p>Teacher Resources</p> <ul style="list-style-type: none"> Block By Block Project Profile (located at the end of the unit session) 	

ENHANCING COMMUNITIES WITH MINECRAFT

Levels 5-6



Session Number	Session Topic Focus	Learning Intention and Success Criteria	Introduction/Teacher Instruction	Whole Class Activity
3.	Design a solution	<p>Learning Intention Students will plan their space through designing an area using sketching and drawing.</p> <p>Success Criteria I can plan and design an area to help a community.</p>	Find an area of the school that needs to be 'reenergised' or changed. This could be within the local community or boarder/global community.	Prior to their design, students need to collect and consider factors that could influence their community. This can include (but not limited to): weather conditions, buildings, the type of people they want to target. Students commence creating planning out their community. This activity will be completed through drawing and sketching.
Session Resources	<p>Student Resources</p> <ul style="list-style-type: none"> • Block by Block Sketch Fab • Metro Tunnel – Mini Melbourne 		<p>Teacher Resources</p>	
4.	Introduction to Minecraft	<p>Learning Intention Students will familiarise themselves with the Minecraft platform.</p> <p>Success Criteria I can complete a range of tasks so I am familiar with the functions within Minecraft.</p>	Brainstorm different projects and challenges that can be completed in Minecraft.	<p>Students will create a list of skills and mini projects to complete. They will familiarise themselves with Minecraft by completing a range of tasks.</p> <p>Students will share with each other the different functions and tasks they have completed. Create a 'Hot Minecraft Tip Poster' to be displayed in the classroom for future reference.</p>
Session Resources	<p>Student Resources</p> <ul style="list-style-type: none"> • Minecraft challenges (located at the end of the unit sessions) 		<p>Teacher Resources</p>	

ENHANCING COMMUNITIES WITH MINECRAFT

Levels 5-6



Session Number	Session Topic Focus	Learning Intention and Success Criteria	Introduction/Teacher Instruction	Whole Class Activity
5.	Creating a digital solution	<p>Learning Intention Students will use Minecraft to create their design of a digital community.</p> <p>Success Criteria I can use Minecraft to create a digital design of a space for my chosen community.</p>	Students will share their drawing and design with their peers.	Students will commence creating their design of their community. They will use their drawings and plans to guide their digital design.
Session Resources	Student Resources		Teacher Resources	
6.	Coding in Minecraft/ Creating a flowchart	<p>Learning Intention Students will create a flowchart to show how programming can be incorporated into their community design.</p> <p>Success Criteria I can create a flow chart to show how explicit instructions (algorithms) can be used in my community design.</p>	<p>Students share their designs (as a work in process) and showcase the different features they have created. In small groups, students look for ways to incorporate programming and code in their design.</p> <p>*The following lessons can be incorporated while the previous session is still in place.</p>	In groups students commence to identify different functions they could code to incorporate into their community. Students create a flowchart (or list of instructions) written in English to show how the functions would be carried out.
Session Resources	<p>Student Resources</p> <ul style="list-style-type: none"> • ACS Student Resource: Algorithms • ACS Student Resource: Flowcharts 		<p>Teacher Resources</p> <ul style="list-style-type: none"> • ACS Teacher Resource: Algorithms 	

ENHANCING COMMUNITIES WITH MINECRAFT

Levels 5-6



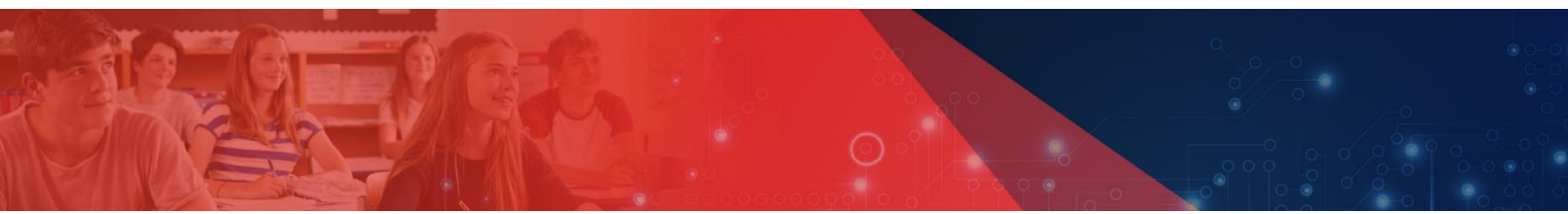
Session Number	Session Topic Focus	Learning Intention and Success Criteria	Introduction/Teacher Instruction	Whole Class Activity
7.	Coding in Minecraft	<p>Learning Intention Students transfer their flowchart and create code in Minecraft.</p> <p>Success Criteria I can use the flowchart of instructions I created to help me program functions in my community design.</p>	Students share the flowchart/instructions they have created to incorporate into their community.	Students transfer their flowcharts/instructions into code in the Minecraft platform into their community.
Session Resources	<p>Student Resources</p> <ul style="list-style-type: none"> Minecraft Education Class Resources 		<p>Teacher Resources</p> <ul style="list-style-type: none"> ACS Teacher Resource: Algorithms 	
8.	Showcasing their digital solution	<p>Learning Intention Students will reflect on how their design and project can meet the needs of a local community.</p> <p>Success Criteria I can reflect on how my design can meet the needs of a local community.</p>	Students complete the Minecraft Community Reflection. Within the reflection they evaluate how their digital solution can help a community.	Students use the reflection to present their community to their peers.
Session Resources	<p>Student Resources</p> <ul style="list-style-type: none"> Minecraft Community Design Questions (located at the end of the unit sessions) 		<p>Teacher Resources</p> <ul style="list-style-type: none"> ACS Teacher Resource: Evaluating Digital Solutions 	

Block By Block Project Profile	
What is the name of the project? Where was the project located?	
What was the purpose of the project?	
What other organisations were involved in the project?	
How has the project empowered the local people?	
What benefits will this project have to local people?	
What do you think about using Minecraft for a project like this?	
How could you use Minecraft to help our community or a community in need?	
What features of the Minecraft stood out for you? What parts did you like?	
Minecraft Challenges	
Learning Reflection: What did you learn and how could this activity be incorporated into your community design?	
Build a house	
Build a garden	
Build a tree house	
Create an underwater scene	
Build a river/lake/damn	
Build a bridge to go over the river/lake/damn	
Build a store that has contains shelves	
Build a sand castle	
Build a giant statue of yourself	
Build another house with different material	
Create sunsets and sunrises	
Community Design Questions	
Question	
What is the name of your project?	
What was the purpose of your design?	
Rate your digital design out of 10 and explain your rating.	
How could your digital solution empower the local people?	
How does a project like this help with sustainability in a community?	
How does a project like this meet the needs of a local community?	
How could your project meet the futures needs of a local community?	
What did you think about using Minecraft for a project like this?	



FLOWCHART OF A COMMAND IN MINECRAFT

START



ENHANCING COMMUNITIES WITH MINECRAFT

Levels 5-6



Assessment – Australian Digital Technologies Curriculum			
Content Description	Session Number	Assessment Piece	Assessment Statement
Examine the main components of common digital systems and how they may connect together to form networks to transmit data (ACTDIK014)	N/A		
Examine how whole numbers are used to represent all data in digital systems (ACTDIK015)	N/A		
Acquire, store and validate different types of data, and use a range of software to interpret and visualise data to create information (ACTDIP016)	N/A		
Define problems in terms of data and functional requirements drawing on previously solved problems (ACTDIP017)	2	Design of their community	Students identified the needs of the people in the community by gathering data about the people and the environment. They used this data to influence the design of a new space.
Design a user interface for a digital system (ACTDIP018)	2 & 3	Design of their community	Students used the digital platform Mine Craft to design and create a community.
Design, modify and follow simple algorithms involving sequences of steps, branching, and iteration (repetition) (ACTDIP019)	4	Flowchart/written instructions	Students identified different tasks they could add to their community design in Minecraft. They created a flowchart/set of instructions to show the sequence of steps to complete their tasks. The sets incorporated branching and iteration.
Implement digital solutions as simple visual programs involving branching, iteration (repetition), and user input (ACTDIP020)	5	Code written	Students converted their flowchart/written set of instructions to code in Minecraft. The code they created used branching, iteration and user input.
Explain how student solutions and existing information systems are sustainable and meet current and future local community needs (ACTDIP021)	1 & 6	Community design reflection	Students explained how Block By Block (an organisation that uses Minecraft to help design communities) meets the needs of local and global communities.
Plan, create and communicate ideas and information, including collaboratively online, applying agreed ethical, social (ACTDIP022)	1	Working collaboratively to design and create space	Working in the collaborative environment (Minecraft) students worked together to design and create a community. They followed protocols (identified within their group) and followed these to ensure all teams members contributed to the project.

ENHANCING COMMUNITIES WITH MINECRAFT

Levels 5-6



Assessment – Victorian Digital Technologies Curriculum			
Content Description	Session Number	Assessment Piece	Assessment Statement
Examine the main components of common digital systems, and how such digital systems may connect together to form networks to transmit data (VCDTDS026)	N/A		
Examine how whole numbers are used as the basis for representing all types of data in digital systems (VCDTDI027)	N/A		
Acquire, store and validate different types of data and use a range of software to interpret and visualise data to create information (VCDTDI028)	N/A		
Plan, create and communicate ideas, information and online collaborative projects, applying agreed ethical, social and technical protocols (VCDTDI029)	1	Working collaboratively to design and create space	Working in the collaborative environment (Minecraft) students worked together to design and create a community. They followed protocols (identified within their group) and followed these to ensure all teams members contributed to the project.
Define problems in terms of data and functional requirements, drawing on previously solved problems to identify similarities (VCDTCD030)	2	Design of their community	Students identified the needs of the community people by gathering data about the people and the environment. They used this data to influence their design.
Design a user interface for a digital system, generating and considering alternative design ideas (VCDTCD031)	2 & 3	Design of their community	Students used the digital platform Mine Craft to design and create a community. The community is aimed
Design, modify and follow simple algorithms represented diagrammatically and in English, involving sequences of steps, branching, and iteration (VCDTCD032)	4	Flowchart/written instructions	Students identified different tasks they could add to their community design in Minecraft. They created a flowchart/set of instructions to show the sequence of steps to complete their tasks. The sets incorporated branching and iteration.
Develop digital solutions as simple visual programs (VCDTCD033)	5	Code written	Students converted their flowchart/written set of instructions to code in Minecraft. The code they created used branching, iteration and user input.
Explain how student-developed solutions and existing information systems meet current and future community and sustainability needs (VCDTC034)	1 & 6	Community Design Reflection	Students explained how Block By Block (an organisation that uses Minecraft to help design communities) meets the needs of local and global communities.

ENHANCING COMMUNITIES WITH MINECRAFT

Levels 5-6



Assessment – New South Wales Science and Technology Syllabus (Stage 3)

Outcomes and Objectives	Session Number	Assessment Piece	Assessment Statement
Explains how digital systems represent data, connect together to form networks and transmit data (ST3-11DI-T)	N/A		
Acquire, store, access and validate different types of data, and use a range of software to present, interpret and visualise data (ACTDIP016)	N/A		
Examine and critique needs, opportunities or modification using a range of criteria to define a project define a need or opportunity according to functional and aesthetic criteria Consider availability and sustainability of resources when defining design needs and opportunities Examine and determine functional requirements to define a problem	2	Design of their community	Students identified the needs of the people in the community by gathering data about the people and the environment. They used this data to influence the design of a new space.
Identify data required to formulate algorithms to improve a process (ACTDIP017)	N/A		
Defines problems, and designs, modifies and follows algorithms to develop solutions (ST3-3DP-T) Design, modify and follow simple algorithms extend sequences of steps to provide a series of possibilities through branching Develop solutions through trialling and refining using iterations (ACTDIP019)	4	Flowchart/written instructions	Students identified different tasks they could add to their community design in Minecraft. They created a flowchart/set of instructions to show the sequence of steps to complete their tasks. The sets incorporated branching and iteration.
Implement digital solutions as visual programs involving branching, iteration and user input (ACTDIP020)	5	Code written	Students converted their flowchart/written set of instructions to code in Minecraft. The code they created used branching, iteration and user input.
Plans and uses materials, tools and equipment to develop solutions for a need or opportunity (ST3-2DP-T) negotiate criteria for success, based on defined needs, sustainability and aesthetics Develop appropriate and fair processes to test a designed solution according to criteria	1 & 6	Community design reflection	Students explained how Block By Block (an organisation that uses Minecraft to help design communities) meets the needs of local and global communities.
Explain how students' solutions and existing information systems meet current and future local community needs (ACTDIP021)	1 & 6	Community design reflection	Students explained how Block By Block (an organisation that uses Minecraft to help design communities) meets the needs of local and global communities.
Work collaboratively to share, appraise and improve ideas to achieve design purposes Identify, organise and perform strategic roles within a group to solve a problem	1	Working collaboratively to design and create space	Working in the collaborative environment (Minecraft) students worked together to design and create a community. They followed protocols (identified within their group) and followed these to ensure all teams members contributed to the project.

ENHANCING COMMUNITIES WITH MINECRAFT

Levels 5-6



Assessment – Western Australian Digital Technologies Syllabus

5			
Content Description	Session Number	Assessment Piece	Assessment Statement
Digital systems have components with basic functions that may connect together to form networks which transmit data (ACTDIK014)	N/A		
Data is represented using codes (ACTDIK015)	N/A		
Collect, store and present different types of data for a specific purpose using software (ACTDIP016)	N/A		
Design solutions to a user interface for a digital system (ACTDIP018)	N/A		
Design, follow and represent diagrammatically, a simple sequence of steps (algorithm), involving branching (decisions) and iteration (repetition) (ACTDIP019)	4	chart/written instructions	Students identified different tasks they could add to their community design in Minecraft. They created a flowchart/set of instructions to show the sequence of steps to complete their tasks. The sets incorporated branching and iteration.
Implement and use simple programming environments that include branching (decisions) and iteration (repetition) (ACTDIP020)	5		Students converted their flowchart/written set of instructions to code in Minecraft. The code they created used branching, iteration and user input.
Create and communicate information, including online collaborative projects, using agreed social, ethical and technical protocols (codes of conduct) (ACTDIP022)	1	Working collaboratively to design and create space	Working in the collaborative environment (Minecraft) students worked together to design and create a community. They followed protocols (identified within their group).
Define a problem, and set of sequenced steps, with users making a decision to create a solution for a given task (WATPPS27)	4	chart/written instructions	Students identified different tasks they could add to their community design in Minecraft.
Identify available resources (WATPPS28)	N/A		
Develop and communicate alternative solutions and follow design ideas, using annotated diagrams, storyboards and appropriate technical terms (WATPPS29)	4	chart/written instructions	Students created a design of their community and created a flowchart to help them when they included code.
Select, and apply safe, procedures when using components and equipment to make solutions (WATPPS30)	N/A		
Develop negotiated criteria to evaluate and justify design processes and solutions (WATPPS31)	1 & 6	community design reflection	Students explained how Block By Block meets the needs of local and global communities.
Work independently, or collaboratively when required, to plan, develop and communicate ideas and information for solutions (WATPPS32)	1	Working collaboratively to design and create space	Working in the collaborative environment (Minecraft) students worked together to design and create a community. They followed protocols (identified within their group).

ENHANCING COMMUNITIES WITH MINECRAFT

Levels 5-6



Assessment – Western Australian Digital Technologies Syllabus

Year 6

Content Description	Session Number	Assessment Piece	Assessment Statement
Digital systems have components with basic functions and interactions that may be connected together to form networks which transmit different types of data (ACTDIK014)	N/A		
Whole numbers are used to represent data in a digital system (ACTDIK015)	N/A		
Design, modify, follow and represent both diagrammatically, and in written text, simple algorithms (sequence of steps) involving branching (decisions) and iteration (repetition) (ACTDIP019)	4	Flowchart/written instructions	Students identified different tasks they could add to their community design in Minecraft. They created a flowchart/set of instructions to show the sequence of steps to complete their tasks. The sets incorporated branching and iteration.
Implement and use simple visual programming environments that include branching (decisions), iteration (repetition) and user input (ACTDIP020)	5	Code	Students converted their flowchart/written set of instructions to code in Minecraft. The code they created used branching, iteration and user input.
Manage the creation and communication of information, including online collaborative projects, using agreed social, ethical and technical protocols (ACTDIP022)	1	Working collaboratively to design and create space	Working in the collaborative environment (Minecraft) students worked together to design and create a community. They followed protocols (identified within their group).
Define a problem, and a set of sequenced steps, with users making decisions to create a solution for a given task (WATPPS33)	4	Flowchart/written instructions	Students identified different tasks they could add to their community design in Minecraft.
Identify available resources (WATPPS34)	N/A		
Design, modify, follow and represent both diagrammatically, and in written text, alternative solutions using a range of techniques, appropriate technical terms and technology (WATPPS35)	4	Flowchart/written instructions	Students created a design of their community and created a flowchart to help them when they included code.
Select, and apply safe, procedures when using a variety of components and equipment to make solutions (WATPPS36)	N/A		
Develop collaborative criteria to evaluate and justify design processes and solutions (WATPPS37)	1 & 6	Community design reflection	Students explained how Block By Block meets the needs of local and global communities.
Work independently, or collaboratively when required, considering resources, to plan, develop and communicate ideas and information for solutions (WATPPS38)	1	Working collaboratively to design and create space	Working in the collaborative environment (Minecraft) students worked together to design and create a community. They followed protocols (identified within their group).