

# Minecraft in science classes

Otago-based Chemistry teacher **Rachel Chisnall** outlines some of the ways in which Minecraft EDU can illustrate a range of science principles, while enabling students to demonstrate their learning in a visual way.

## What is Minecraft EDU?

Minecraft EDU is a game-based learning platform with special features for classroom use; it is derived from the Minecraft game, which builds worlds with blocks. Minecraft EDU is available free to any New Zealand school through an agreement with the Ministry of Education, and can be used on a variety of devices, including PCs, Macs and iPads.

## Why use Minecraft EDU?

The New Zealand curriculum states: 'Our vision is for young people who will be creative, energetic and enterprising'. Minecraft EDU offers a vehicle for all three possibilities, as well as collaborative and tuakana-teina learning relationships. There is usually going to be a keen Minecraft player in any class; allowing them to be the expert tuakana can often give enormous confidence, or allows a more reserved student an alternative opportunity to shine.

## Applications for science classes

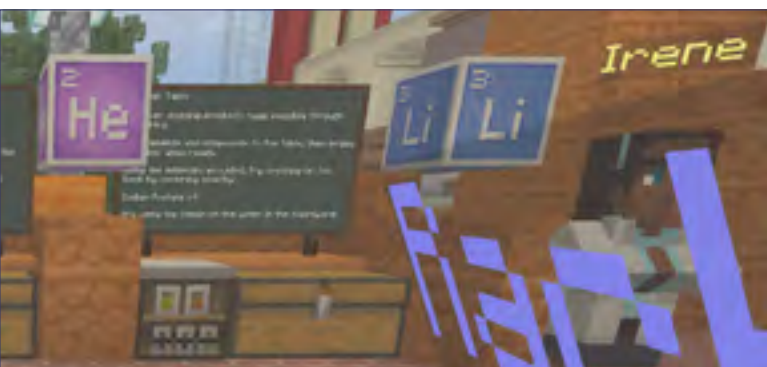
There are two broad ways teachers can use Minecraft EDU.

### 1 Build or download a world, and have students follow instructions through it

In a Science class, a good place to start might be the Chemistry lab tutorial (11-18-y-o), which is a pre built world (left). Students can make various different elements and learn about their atomic structure, make different compounds, and then use those compounds to make coloured flaming torches, or helium balloons that cause animals to rise into the air. A wide variety of elements, compounds and 'objects' that can be made. Teachers can download this world's extensive lab manual.



Pre-built lesson plans available on the Minecraft EDU webpage are searchable by the age of students and keywords. The screenshot above is from a pre-built lesson by Leticia Ahumada about eukaryotic cells (11-13-y-o), which enables students to compare and contrast plant and animal cells. Teachers of this age-group can also build an ant colony, and introduce forces such as gravity and friction.



## 2 Allow students to use Minecraft EDU as a blank canvas to display their learning

So often teachers and students alike can fall into the trap of thinking if you haven't written something down, you haven't learned about it. But if students are given space to demonstrate their learning in other ways, they can often rise to the occasion. Examples from my class have been showing sound waves, and how different wave lengths represent different pitches of sound (below). Students have also built our local wetland after a field trip and used signposts within the game to share what they learned on the trip. The use of redstone gives a good approximation of electrical circuits, and trampolines are an excellent way to show energy transformations.



### Links

- [Register your school for Minecraft EDU](#) (and other Microsoft programmes) here.
- [Using Minecraft](#) on the Enabling e-learning web-site.
- [Online lessons](#) in using Minecraft.
- [Education Aotearoa article](#) on teachers using Minecraft.

### Other Minecraft EDU uses

Minecraft EDU has an excellent built-in code creator, which allows teachers to incorporate the digital technologies curriculum easily into their classes. A wide variety of historical and natural sites have also been replicated with Minecraft EDU. Add-ins allow for models built in Minecraft EDU to be printed in 3D.

A specific Te Reo Māori world now exists, providing an excellent way to introduce Māori language and tikanga. My absolute favourite is the fantail, complete with birdsong.

### Ngā Kupu

**Tuakana-teina** Traditional Maori learning relationship; in classrooms, between an older or more expert student who guides a younger or less expert one.

**Tākaro ataata** Video game

**Pereki** Brick

**Pūmanawa rorohiko** Computer software

**Pūnaha rorohiko** Digital platform

**Rārangi tonu** Computer menu

*From Te Aka Maori Dictionary*

*Below and top of previous page: Screenshots from Ngā Motu: The islands, Whetu Paitai's world of Māori language and culture for all ages in Minecraft EDU.*



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