# Beautiful biomes lesson

## Years 5 and 6

In this lesson, students learn the features of the five main biomes, and use ClassVR headsets and CoSpaces to design and create a virtual biome to explore.

Curriculum alignment

### Digital Technologies

[AC9TDI6P02](https://v9.australiancurriculum.edu.au/f-10-curriculum/learning-areas/science_english_design-and-technologies_mathematics_hass-f-6_digital-technologies/year-6/content-description?subject-identifier=TECTDIY56&content-description-code=AC9TDI6P02&detailed-content-descriptions=0&hide-ccp=0&hide-gc=0&side-by-side=0&strands-start-index=0&subjects-start-index=5&view=advanced)v – design algorithms involving multiple alternatives (branching) and iteration

[AC9TDI6P05](https://v9.australiancurriculum.edu.au/f-10-curriculum/learning-areas/science_english_design-and-technologies_mathematics_hass-f-6_digital-technologies/year-6/content-description?subject-identifier=TECTDIY56&content-description-code=AC9TDI6P05&detailed-content-descriptions=0&hide-ccp=0&hide-gc=0&side-by-side=0&strands-start-index=0&subjects-start-index=5&view=advanced) – implement algorithms as visual programs involving control structures, variables and input

[AC9TDI6P07](https://v9.australiancurriculum.edu.au/f-10-curriculum/learning-areas/science_english_design-and-technologies_mathematics_hass-f-6_digital-technologies/year-6/content-description?subject-identifier=TECTDIY56&content-description-code=AC9TDI6P07&detailed-content-descriptions=0&hide-ccp=0&hide-gc=0&side-by-side=0&strands-start-index=0&subjects-start-index=5&view=advanced) – select use appropriate digital tools effectively to create, locate and communicate content, applying common conventions

### Science

[AC9TDI6P07](https://v9.australiancurriculum.edu.au/f-10-curriculum/learning-areas/science_english_design-and-technologies_mathematics_hass-f-6_digital-technologies/year-6/content-description?subject-identifier=TECTDIY56&content-description-code=AC9TDI6P07&detailed-content-descriptions=0&hide-ccp=0&hide-gc=0&side-by-side=0&strands-start-index=0&subjects-start-index=5&view=advanced) – investigate the physical conditions of a habitat and analyse how the growth and survival of living things is affected by changing physical conditions

### HASS

[AC9HS6K04](https://v9.australiancurriculum.edu.au/f-10-curriculum/learning-areas/science_english_design-and-technologies_mathematics_hass-f-6/year-6/content-description?subject-identifier=HASHASY6&content-description-code=AC9HS6K04&detailed-content-descriptions=0&hide-ccp=0&hide-gc=0&side-by-side=0&strands-start-index=0&subjects-start-index=4&view=advanced) – the geographical diversity and location of places in the Asia region, and its location in relation to Australia

[AC9HS6S02](https://v9.australiancurriculum.edu.au/f-10-curriculum/learning-areas/science_english_design-and-technologies_mathematics_hass-f-6/year-6/content-description?subject-identifier=HASHASY6&content-description-code=AC9HS6S02&detailed-content-descriptions=0&hide-ccp=0&hide-gc=0&side-by-side=0&strands-start-index=0&subjects-start-index=4&view=advanced) – locate, collect and organise information and data from primary and secondary sources in a range of formats

## Learning hook

As a class, watch the [Introduction to biomes video](https://youtu.be/hIy0ZlyPPDg). Identify the five main biomes: aquatic, grassland, forest, desert and tundra. Discuss what students already know. Which biomes are they familiar with? Which biomes have they experienced?

Discuss with students what makes a biome, drawing attention to the key features of vegetation, soil, climate and wildlife. Ask students, why is biodiversity important within biomes?

As a class, watch the [Human impacts on biodiversity video](https://www.youtube.com/watch?v=wXJiHr8jWBs) to explore how humans affect biomes in both positive and negative ways. Students should then work in small groups to discuss different ways humans are impacting each biome. Then, as a class, compare issues raised in the discussions.

In small groups, students can find images of different biomes to make a collage using their favourite tool: Canva, Google Slides, Keynote or PicCollage.

Further resources to explore biomes are provided in the Resource section below.

Girls in focus: Some students are not confident contributing to classroom discussions, and for some students, the perception that only correct answers are valued can stifle contributions. Create an inclusive classroom environment by facilitating exploratory discussions, providing both written and verbal questions, allowing thinking time, using a think-pair-share approach and actively inviting less vocal students to share their ideas or questions.

## Learning input

Task students with researching one biome, identifying its key features and classifications. They should research the following questions.

* Where is the biome situated?
* What plants and animals live in the biome?
* What is the climate like?
* What landforms exist in the biome?
* What actions can we take to protect biodiversity in this biome?

Students can use the [HHMI biome viewer](https://media.hhmi.org/biointeractive/biomeviewer_web/index.html) to learn more about biome locations, climate and species (also available as an [iPad app](https://apps.apple.com/au/app/biomeviewer/id1138439750)).

Students can also use [ClassVR](https://www.classvr.com/au/" \t "_blank" \o "Opens ClassVR in a new window) headsets to view different biomes in VR. In ClassVR there is a Natural Environment playlist, with 20 tracks of different environments available to be viewed. Ask students:

* What plant life can be seen?
* What do you think the climate is like in each environment?
* What type of animals could live here?

Girls in focus: Girls are often motivated by activities that have a positive social impact, so providing an opportunity for them to consider actions we can take to protect biodiversity can be a strong way to display STEM careers. They may be interested in learning about Greta Thunberg and her actions to address threats to biodiversity.

Learning construction

Once students have researched their biome, they can build a virtual environment in CoSpaces. If students haven’t used CoSpaces before, they should watch tutorials available on the website, to learn how to create Virtual Reality environments, and explore different projects in the CoSpaces gallery. Students can then select, animate, build and code 3D objects to populate their environment.

Once students have designed their environment, they can share it with peers and teachers.

Students should be encouraged to give each other feedback to improve their projects.

An additional paid feature of CoSpaces is the [Merge Cube](https://youtu.be/GCJRH2dhkDY). With this feature, students can work in small groups to build five biomes on five sides of the cube, with one side for information about how we can protect Earth’s biomes. A short example can be viewed [here](https://youtu.be/H0snZ9tmU-g).

Alternatively, students can make a large cube (approximately 20cm x 20m x 20cm) from card. They can cover then each side with paper and create a 3D representation of the landscape, plants and animals of that biome.

Creations can be shared with other students in a ‘Celebration of Learning’ time.

Girls in focus: Girls may not realise that many of the leaders of creative VR experiences are women – for example, Jacki Morie, a pioneer of VR technologies, invented and patented a scent collar that solves the problem of bringing scents into VR.

## Resources

Video: [Biomes and ecosystems for kids](https://www.youtube.com/watch?v=gT5pGA2H-x8)

Quiz: [Biome quiz](https://create.kahoot.it/details/89afedef-9c32-4311-9fbe-3dc2701449f3)

Website: [Biome viewer](https://media.hhmi.org/biointeractive/biomeviewer_web/index.html)

[ClassVR](https://www.classvr.com/au/)

Website: [National Geographic kids club](https://www.natgeokids.com/au/kids-club/cool-kids/general-kids-club/greta-thunberg-facts/)

Quiz: [Biomes and Ecosystems quiz](https://quizizz.com/admin/quiz/5644e05f4558b6ed089e319d/biomes-and-ecosystems)

Lesson plan: [Biomes Elementary School Science lesson plan](https://www.elementaryschoolscience.com/_files/ugd/fe60fb_4f240414b40f40349a5e1dbf09cf77d0.pdf)

App: [Biomes viewed iPad App](https://apps.apple.com/au/app/biomeviewer/id1138439750)

Interactive: [CoSpaces AR & VR](https://cospaces.io/edu/)

Video: [Biome Merge Cube](https://www.youtube.com/watch?v=H0snZ9tmU-g)

[WikiPedia – Jacki Morie](https://en.wikipedia.org/wiki/Jacquelyn_Ford_Morie)