

# Creating a 'climate change' awareness project in VR

This lesson is recommended for age 13 and higher

**Year Level:** Years 9-10



## Summary

In this lesson, students explore how to design and develop a Virtual Reality (VR) 360 experience for Lenovo Mirage Solo Daydream VR headset. In this example we use the Insta 360 camera to capture images, videos, upload into headset for immersive VR experience but students could use other 360 camera devices.

We provide a suggested lesson sequence, focusing on developing a project to raise awareness of climate change. We hear the issue of climate change crisis daily through media, social networks, and other sources but for some, this may feel like a distant problem until they experience it in real-life. One solution to climate change could be increasing public awareness. Through immersive VR technology, students can create innovative content to demonstrate the problem, consequences or solutions. This project can be undertaken by students in teams.

## Required resources

1. Lenovo Mirage Daydream VR headset
2. Insta 360-degree camera
3. Insta 360 one X app (Apple or Android) - installed on a Tablet device
4. (optional) Insta360 studio desktop application - This software is required if you want to edit images or videos taken by Insta360 camera. Download the Windows or Mac version of **Insta360 Studio 2019 (360 editing software)** using the link (<https://www.insta360.com/download/insta360-onex>) and follow the instructions to install it. Alternatively, simple editing (e.g. enable 'VR' model of 360 resources can be done with Insta360 app on mobile device)
5. (optional) 'Google photos' app.

## Suggested steps

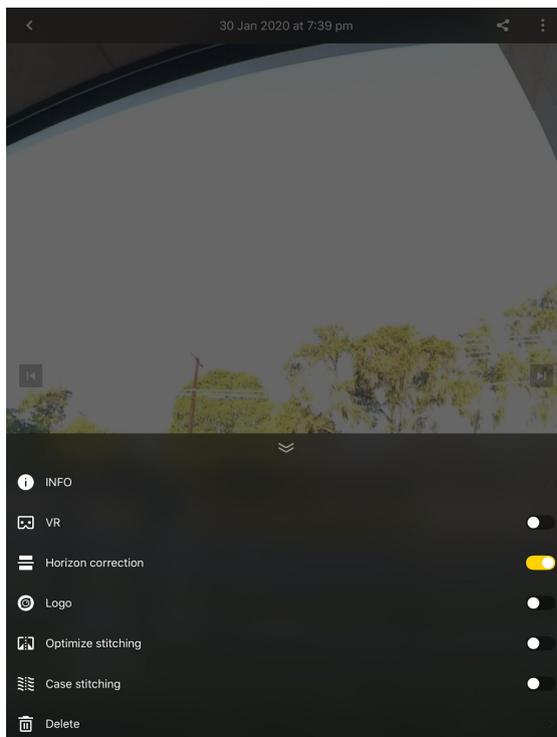
We outline a lesson sequence for the classroom that can be adjusted based on the skills and experience of students to create their own content.

1. Students, working in groups, start by selecting a topic related to climate change they would like to showcase in their VR 360 experience. For example, this could be an issue related to their local community (e.g. air pollution), globally (e.g. droughts) or a proposed solution to climate change (e.g. solar energy).
2. Students, using pen and paper, brainstorm how they could showcase their selected topic using VR. As a guide, students can think about their project as before and after effect of climate change to provide experience for a person who does not aware what does climate change look like. For example, a topic can be 'droughts' and experience can be dry lands, destroyed crops, bushfires etc.

3. Students can present their sketch to the teacher and class by emphasising the benefits of their selection to experience VR, how they plan to record 360 images/videos and what are their aims.
4. Students use the 360 camera included in the kit to capture pictures and/or videos (e.g. 2-3 min long) that demonstrate their theme.
5. Students use guidelines below to process the 360-degree resources and transfer them to VR headset for viewing.
6. Peers can view others' projects using VR headset to evaluate the design and experience and provide constructive feedback.
7. After the VR experience, students share their thoughts on experiencing the climate change crisis for real (virtually), their emotions, etc.
8. Students revisit their previous brainstorming of climate crisis and compare it with immersive VR experience
9. Students write a report or record a video presentation that describes their design motivation, as well as an explanation of their design process, justifying the selection of digital technologies (as well as other media) and how it is appropriate for communicating information to achieve their goal.

### Capturing and editing 360-degree resources

1. To learn about the basic functionalities of Insta 360 camera, refer to the 'user guide' included in the kit or tutorials on how to use guide here - <https://www.insta360.com/support/supportdetail?name=onex&locale=en-us>
2. A mobile device with Insta 360 app installed can be paired with the camera to preview while taking pictures or recording. Both of these devices needed to connect to the same wifi network
3. To transfer images/videos to computer, connect camera's USB cable or insert SD card reader (if available) to computer and save images to the computer's hard disk. Alternatively, we can use Insta 360 app to access photos in the 'Album'. To enable 'VR' mode in these resources, click 'three dots' in the top right hand corner and 'enable' VR.



4. Upload these resources to a cloud storage (e.g. Google photos app or via web using the link - <https://photos.google.com/>)
5. (Optional) To edit images or videos to create a story, you can use Insta360 Studio 2019 (360 editing software). Drag and drop the images or videos required for this lesson and edit. To

learn more information about editing, use the instructions here -

[https://faq.insta360.com/documents/Guide\\_to\\_Play\\_and\\_Edit\\_Spherical\\_Videos/](https://faq.insta360.com/documents/Guide_to_Play_and_Edit_Spherical_Videos/).

6. For easy transfer to VR headset, export edited videos as 'mp4' or images as 'jpg' and upload the edited resources into the cloud using <https://photos.google.com/>
7. The types of images that can be viewable using Daydream headset are listed below:
  1. 360-degree photos (spherical) taken from 360 camera
  2. Panoramas - a feature included in smart phones/tabs where photos taken by moving the device around with following specifications:
    - a. aspect ratio (ratio between image's width to height) wider than 2:1
    - b. any photos that meet aspect ratio (in addition to panoramas)
  3. 360 resources taken using apps such as 'Cardboard camera'

## Experience using VR headset

1. Switch 'on' Daydream headset, wear it and open 'Google photos' app. To view the resources, you will need to log into the same Google app account where you uploaded content
2. Tap 'Google photos'
3. Using your controllers, click the touchpad to open Google photos
4. Select 'VR photos'
5. Click to open photos and swipe left or right on your touchpad controller to see the story

## Discussion

The following are some suggested discussion points to help with content creation.

- What are the major effects of climate change?
- What direct human activities cause climate change?
- What indirect human activities cause climate change?
- What impact of the climate crisis we experience today?
- What plans do you have to overcome the climate crisis?

## Why is this relevant?

Virtual Reality can enhance learning by placing students in an immersive experience they would otherwise never experience. In this activity, students are engaged in *creating* digital technology contents and are also thinking about how technology can be designed to inspire action on a critical issue (e.g. climate change crisis) with high societal impact.

The Year 10 Science Curriculum includes the topics of investigating how human activity affects global systems including the effect of climate change on sea levels and biodiversity, considering the long-term effects of loss of biodiversity. The creation of VR contents to demonstrate an issue of climate change provides an opportunity for students to experience through their own eyes (virtually) what does climate change look like.

## Assessment

We have suggested Assessments, however, you may choose to use your own or for further advice, examples and support around assessment please visit the Digital Technologies Hub at [digitaltechnologieshub.edu.au/teachers/assessment](http://digitaltechnologieshub.edu.au/teachers/assessment)

The following is a sample checklist of skills and knowledge that students could be asked to demonstrate through their digital project based on content descriptors.

Checklist	Yes / No / Partially	Comments
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Students describe applied techniques and processes when making their VR story on climate change crisis.		
Students demonstrate project planning processes (in the form of sketches and documents) for the design and development of their project.		
Students explain how the design of their lesson, particularly with the use of VR, enhances meaning for an audience.		
Students explain their intention behind the motivation of their lesson and use of materials to support their intention.		
Students demonstrate effective collaboration skills, including teamwork and co-management of the project.		

## Curriculum links

### Links with the Digital Technologies curriculum area

Year band	Strand	Content description
<b>Years 9-10</b>	<b>Knowledge and Understanding</b>	<p>Create interactive solutions for sharing ideas and information online, taking into account safety, social contexts and legal responsibilities (ACTDIP043)</p> <p>Plan and manage projects using an iterative and collaborative approach, identifying risks and considering safety and sustainability (ACTDIP044)</p>

### ADD Links with other curriculum areas

Year band	Learning area	Content description
<b>Years 10</b>	<b>Science - Earth and space sciences (Science understanding)</b>	Global systems, including the carbon cycle, rely on interactions involving the biosphere, lithosphere, hydrosphere and atmosphere (ACSSU189)
<b>Years 10</b>	<b>Humanities and Social Sciences - Geography (Geographical knowledge and understanding)</b>	<p>Human-induced environmental changes that challenge sustainability (ACHGK070)</p> <p>The application of systems thinking to understanding the causes and likely consequences of the environmental change being investigated (ACHGK073)</p>

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