Imaginality Create Activity:
Gravity with Allen the Alien

Aim

Learn about gravity with your squishy friend – Allen the Alien. You will create a module where each of the planets and Allen are on their own paddles – when Allen gets close to any planet, the gravity of the planet squishes him (complete with sound effects) – the more gravity, the more he squishes.

Loading the Module and Models

1. Download **'Gravity with Allen the Alien.module'** from here and save it to **'My Documents/Imaginality/_Activities/ Gravity with Allen the Alien'.**

2. Double Click on the module file. This will open Imaginality Create and load the module. The module should contain **Allen.mesh.**

3. Load the 3D models of the planets:

    a. Under **3D Models,** click on the **+**, then select **'Add 3D Model from File'.** *See* **3a**

    b. Go to the **'_Sample 3D Models'** folder, then go to the **'Discover the Planets'** folder and select all files in the folder (left-click and drag your mouse over all of the files, or type Ctrl+a for Select All). Click **Open.**

4. Now all the planet models will be added into your Create module. Click **Run in Webcam Mode** and explore Paddles 1-11 . Notice they are not in the correct order and do not interact. Close the Webcam Mode window. *See* **4**

Placing models on Paddles

Models are placed on paddles by default, but not in the order we want. We want each planet to be placed on the correct paddle in order of distance from the sun.

5. Under **3D Models**, click on **Sun.mesh**. Under **Model Setup**, for **Place on Paddle**, select **2.xpat**. This will place the Sun on Paddle 2 . *See* **5**

6. Click on each planet mesh in turn and ensure that each is placed on the correct paddle in order of distance from the sun. So **Mercury** should be assigned to Paddle 3 , **Venus** to Paddle 4 , etc. You can see which planets should go on which paddles in the table below.
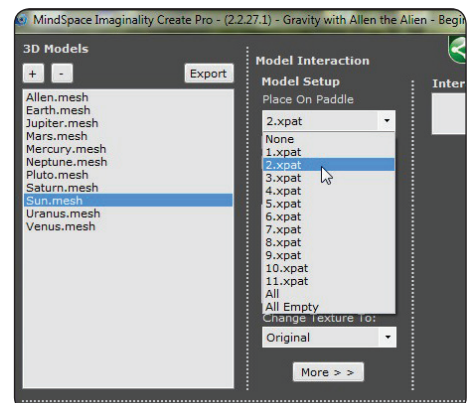
7. Repeat step 6 for every planet.
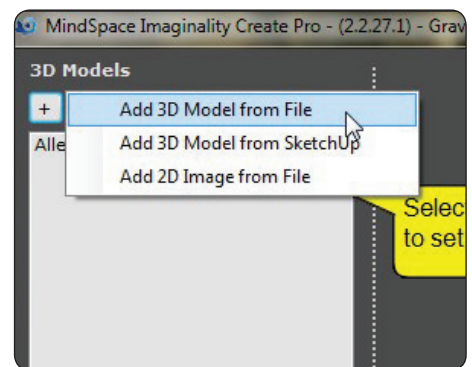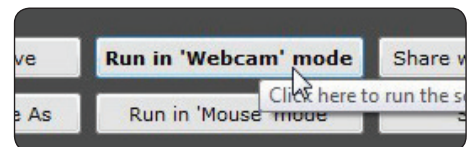
Setting the Scale Interactions

Let's make Allen squish according to the gravity of each planet he gets close to.

8. First, we need to do some maths. To work out how much Allen should squish next to each planet, we need to work out how much stronger or weaker the gravity is on each planet. **Fill out the table below** – be sure to show your workings.

Paddle	Planet	Gravity (ms²)	As a fraction of Earth's gravity	As a percentage
1	(Allen)	-	-	-
2	Sun	274.4	**9.8**/274 = 0.03	0.03 x 100 = 3%
3	Mercury	3.7	**9.8**/3.7 = 2.65	2.65 x 100 = 265%
4	Venus	8.9		
5	Earth	**9.8**		
6	Mars	3.7		
7	Jupiter	23.1		
8	Saturn	9.0		
9	Uranus	8.7		
10	Neptune	11.0		
11	Pluto	0.6		

9. Under **3D Models** select **'Sun.mesh'**.

10. Under **Interaction**, click on the **+** button to add an interaction. This will bring up the **Interaction Trigger** box, where you can select which trigger will cause which result.

11. Under **Interaction Trigger**, select **Distance Closer Than**.

12. Under **Trigger Settings**, select **Close to Model** to be **Allen. mesh**, and under **Trigger when within**, confirm it is 200. This means, that the result will be activated when Allen is closer than 200mm to the Sun model.
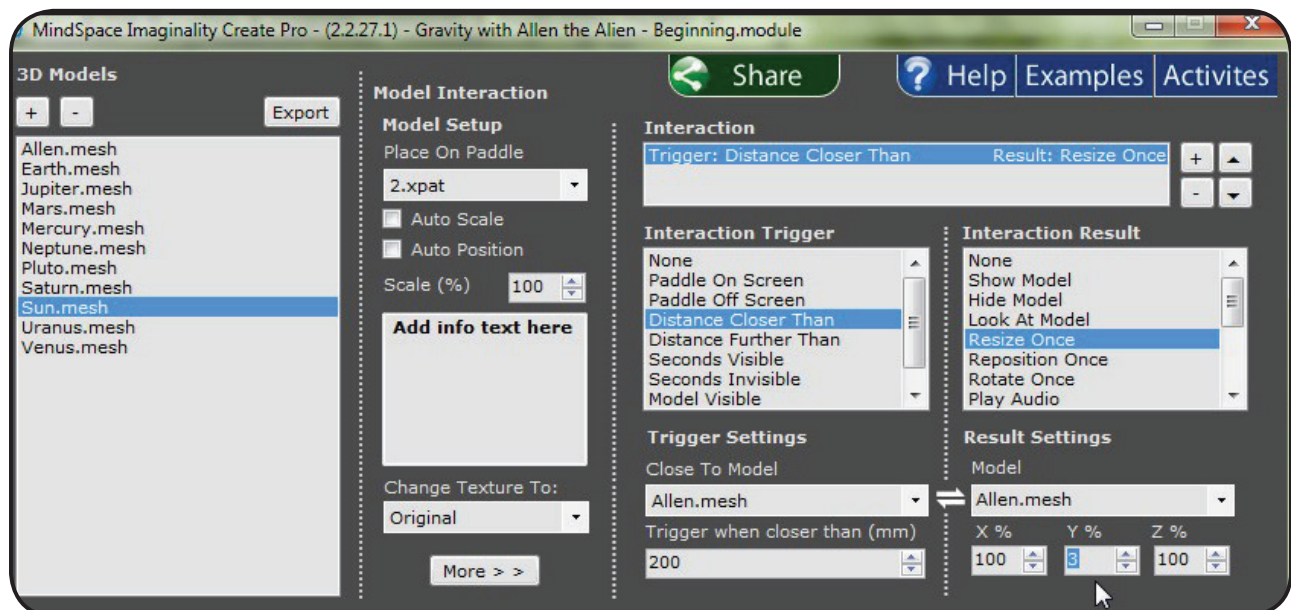
13. Under **Interaction Result**, select **Resize Once**. Under **Result Settings** for **Model** select **Allen.mesh**. Set the value of the **Y%** field to the **percent** result for the given planet in the table you filled out. Note: Allen will automatically resume his normal size when he is no longer close to the planet. This is because the **Vice Versa** mode is on. ⊟ *See* (9) - (13)

14. Repeat steps 10 – 13 for each of the members of the solar system.

**Setting the Audio Interactions**

We also want to make Allen make a squishing noise when he comes close to a planet.

15. Under **3D Models** select **'Sun.mesh'**.

16. Create a new interaction with the same **Trigger Settings** as when Allen resizes. Try doing this from memory (you can refer to steps 10-12 if you need help).

17. Now we need to set the result to play a sound. Can you find an **Interaction Result** that could do this?

18. The **Interaction Result** you were looking for was **Play Audio**. Select **Play Audio**, click on the **Audio File** drop down box, then **<browse>** to the **'_Sample Audio'** folder, select the **'WindPipe Short - Down.ogg'** audio file, and click **Open**.

19. Repeat steps 16 -18 for each of the members of the solar system. *See* (15) - (19)
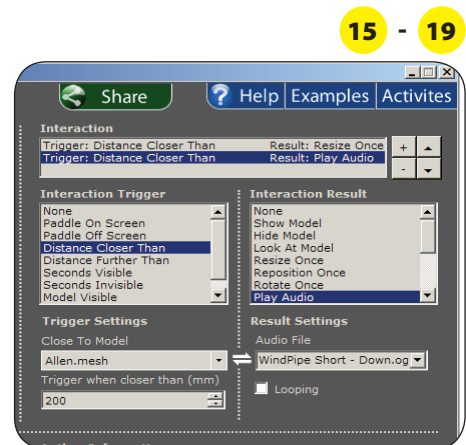
Test it out!

20. You can test this module out by pressing the **Run in Webcam Mode** button near the bottom of the screen.

21. If you are happy with the result, you can arrange Paddles 1-5 on your desk as a scene and **take a screenshot** by clicking the little **camera icon** in the top right corner. This will ask you to save your photo which, you can save to the same place as the module file. *See* (21)

22. If you are happy with the result, you can **Share with internet** so that anyone you choose can view it for free. You will need to create a free author account and provide a short description of the module. You will then be able to either share it publically, or share it privately via email, twitter, Facebook, or other social networks.

23. If you want to save your module, click on **Save As**, and then type the name you want to give the module and where you want to save it. Then press **Save**. Later, you can **Load** the module again.
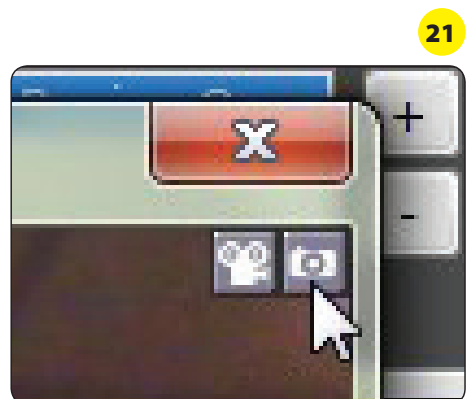
Other things to try

24. Do some research on: the Sun (a star), Venus (a terrestrial planet), Jupiter (a gas giant) and Pluto (a dwarf planet). You could also research the other planets. Summarise your findings in a few sentences and enter them into Create so that they will appear on the info paddle. Select the appropriate mesh, and replace **Add info text here** with your text. Now, when the info paddle comes close to the relevant paddle, the info paddle will contain your text – you can enlarge it by pressing spacebar. Or, simply show the relevant paddle and press spacebar to reveal your text. *See* **24**
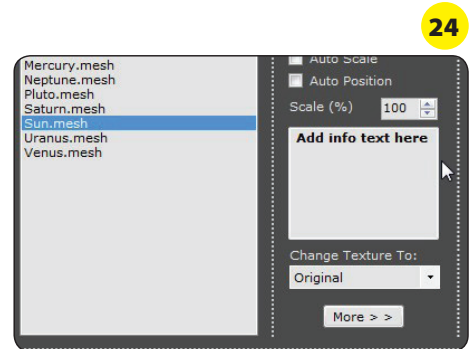
25. Try changing the sound effects. E.g. for the planets where Allen gets bigger, you could use an expanding sound.

26. Add another rule so that Allen makes the **'WindPipe Short - Up.ogg'** sound when he returns to normal size (Trigger of **Distance Further Than**). *See* **26**

27. For each of the Sun (a star), Venus (a terrestrial planet), Jupiter (a gas giant) and Pluto (a dwarf planet), write down what it would be like to visit there. Explain why you think that. Discuss your list in a group: present your ideas; listen to comments from other students; respond to these comments; listen to other people's ideas and comment on them. As a group, can you agree? Apply the same process to the following lists:

    a. For each of the 4 objects, write down what you would need to survive a visit there.

    b. For each of the 4 objects, write down what place on Earth would be the most similar to the environment on that object.

Activities - *Imaginality Create : 'Gravity with Allen the Alien'*