ExcellenceExcellence

NZQA Intended for teacher use only

For the DTO you are developing:

*What is the purpose?* The purpose of my petrol pump that I have designed and developed is to provide more texture to the game as the player traverses the map, finding these scattered across various locations. Its purpose is also to create a flexible and robust asset for my friend's associates' game that can be manipulated in different ways very easily.

*Who are the potential users?* Some of the potential users are the people who decide to download the game as they would be the ones seeing the petrol pump. However, before that happens, one of my friend's associates that are responsible for looking over assets will be deciding whether the petrol pump meets the requirements for the game. After this, another person, most likely in charge of asset placement, needs to place the petrol pump in gas stations scattered across the map, so they could also be defined as potential users.

*What are the requirements?* The requirements are that the petrol pump should be easily recognised as a petrol pump, the colour scheme needs to stay nice and simple, the petrol pump needs to look modern like one in real life and the petrol pump should have most of the components that a real petrol pump would have.

*What are the specifications?* The specifications will be that 90% of people will be able to recognise it as a petrol pump from a quick look at an image of it.
The simple block colour scheme will use 2 different main colours.
There will be 4 hoses on the pump, 2 on each side.

*What tools and techniques did you use in developing the DTO?* As I was using Blender, some of the tools and techniques I was using included bevelling, UV unwrapping, using curves, image textures, advanced textures, loop cuts and using images to find the colour of objects, and using images as references for my DTO.
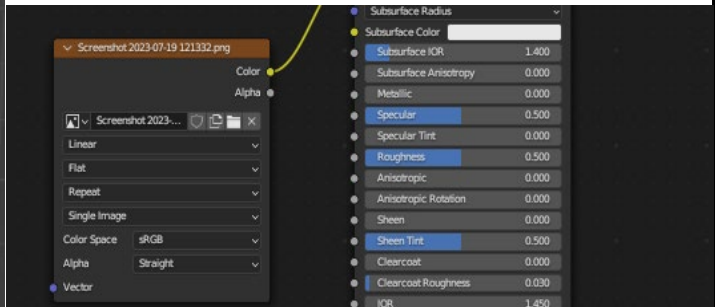

Example of bevelling
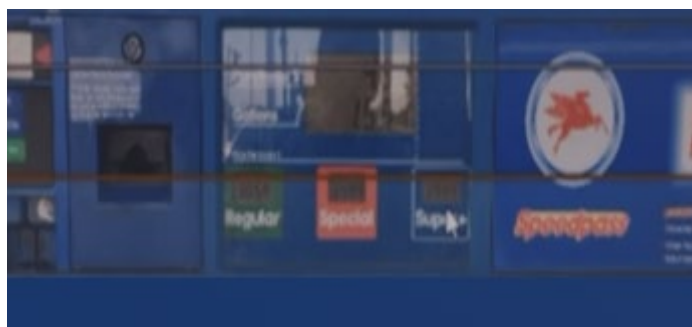

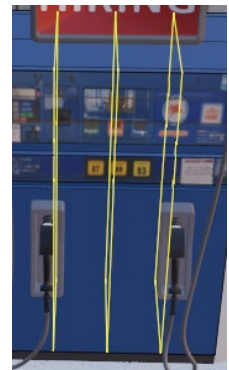Example of UV unwrapping

Example of curves


Example of image texturing


Example of advanced texturing


Example of loopcut

Example of reference imaging, this is my reference and an early development of my model

*What testing (you checking your DTO) did you do to make sure it met the basic functionality?*
Most of the testing I did as part of the basic functionality was just to do with things like the locations of components and what they looked like. I tested multiple designs for the way I was making the funnels/tubes that petrol was travelling through. In the end, I decided to use a NurbsPath curve because it's a really easy curve to use to change the curvature of the tubes. The thickness of the pipe could also be easily changed by altering the depth of the bevel in the geometry panel of the curve rather than having to remake the pipe if it needed to be thicker.
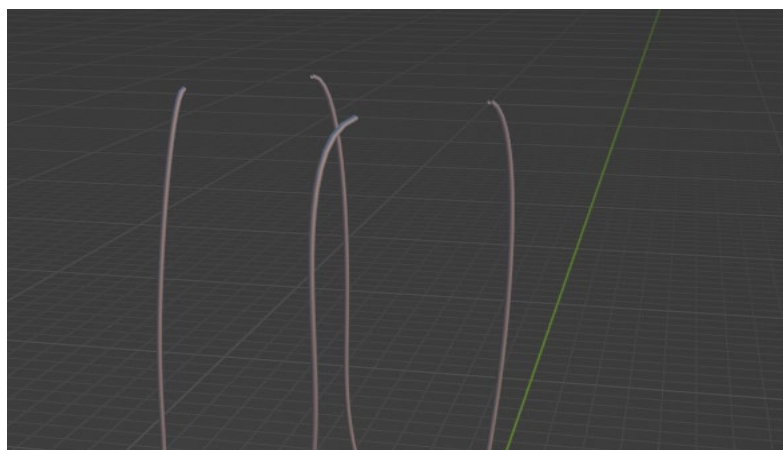
I spent a lot of time developing the petrol nozzle. In the end, out of the designs and my friend's colleagues had in mind, we decided on this one that used a collection of a bunch of different parts that were all put together to create the nozzles. This is a small detail on the pump but it was important to get it right.



*What improvements did you make as a result of your testing?* At first, I had just used a cylinder to create a tube for the petrol pump, but because of the testing, I decided on a curve so I could change what it looked like instead of having one set shape. For the petrol nozzle, I started with a few different designs like ones with and without the coil, but in the end, I decided on this one with the coil as the coil added some nice extra detail and the shape of the end of the petrol nozzle lined up with the tube that transported the gasoline which is a nice touch.

*How did these changes improve the DTO's fitness for purpose?* These changes helped to make the DTO more flexible so when my friend's associates add it to the game, they are very easily able to change parts of it to make it suit the game better. Instead of having to manually make a transporter tube, they can easily manipulate it to change the look and to line it up with the nozzle.

*What conventions did you follow?* Once of the main conventions when modelling real things is to use reference images to make sure the dimensions of the model match the world objects rather than trying to model them from memory.
Another convention is to label the different meshes and materials with names that clearly identify then to make it easier to find the part or material you are looking for.
A design convention I followed was Big/Medium/Small where you get the big shapes done first then do finer and finer detail in stages. This stops you wasting time modelling a small part that might not fit in with the overall design

*What trialling (getting other people to use the outcome) did you do to develop the outcome?* I had a few of the people in my class check out the petrol pump and give me feedback on its overall look as I developed the model and materials. When it was closer to being finished I rendered an image of the pump and showed it to lots of people around school and at home to make sure it was recognisable as a petrol pump.

*What improvements did you make as a result of your trialling?* The only improvements I made were to with the petrol funnels and the Now Hiring sign. They noticed after having a good look at the petrol funnels that they didn't completely line up at the top of the petrol pump. This was easy to change due to using curves.
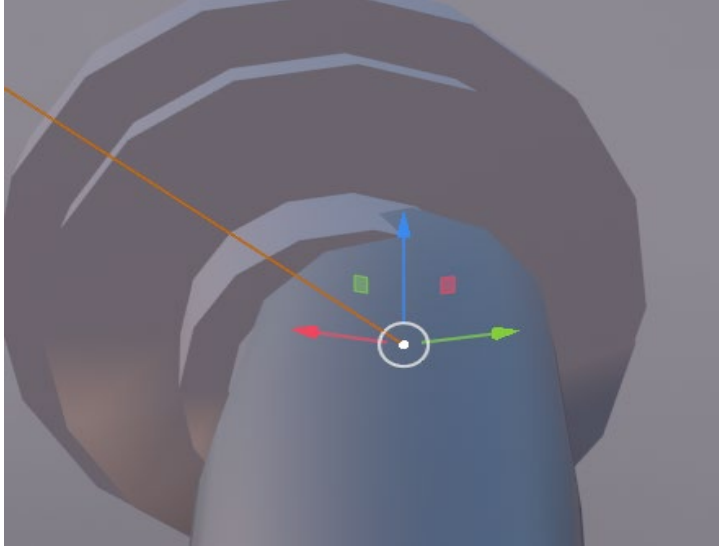


This is where it didn't line up, so I made sure to make it look as lined up as possible.

They also thought that the original Now Hiring text was a bit bland so changed it to an image and made it slightly too big, like it was a cheap paper sign that as being squashed into the frame on the pump.



Original sign and the improved one

*How did these changes improve fitness for purpose?*

I feel that the new sign gave the game a lot more texture than the other sign. Changing the funnel to be lined up at the top has also helped to keep the DTO looking realistic. These were small changes, but these details were picked up when I showed the model to the target audience. Making these changes will help the players immersion in the game and not have them wondering why the pipe doesn't quite connect to the top of the pump.

*How can you show the tools and techniques you applied were effective in producing a fit-for-purpose outcome?* The tools and techniques I used were effective in producing this outcome and can be shown by the detail and finished look they gave to my DTO. They make it look like a real-life petrol pump and they provide a lot of extra detail/texture to the model.



Image textures add realism
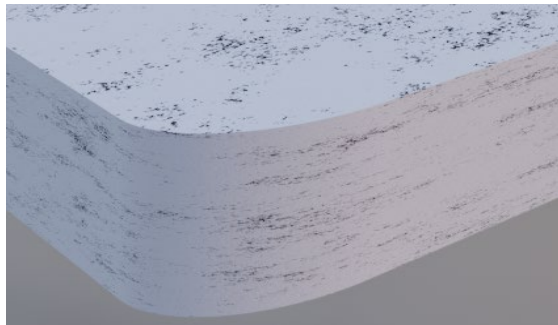


Procedural textures wrap around the model
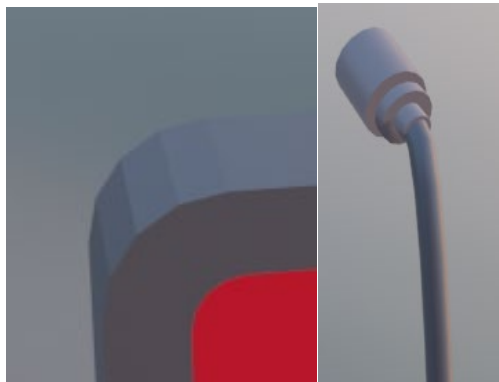


Detailed modelling adds to the high-quality feel of the model