

Teacher and Student questions and answers

VR Lunar City Planning

One of my groups working on the VR walkthrough of the base is having a problem. I always have my students create a decision matrix to narrow down their ideas. The group said that they feel that there are not many avenues for this project since the base is already set and the programs they can use to create the VR environment are also limited (they are using Unity). I have my students come up with criteria as well but they (and I) are having difficulty coming up with both variations and criteria. Could you help?

If they are already proficient at Unity they should use it but I would suggest that they use the CAD program they are comfortable in first to draw up all of the many components. Once they have all the components of the base drawn in CAD to populate with, make a video that shows the lay out. Once that layout is good, then import those parts into Unity where they can make it interactive. Their first task is to make a big assembly of components and record a video of walking through all of them in your CAD system. I will post a video in a few days to show this.

I am not too worried about which project your students want to do. I like each of the projects for the difference in skills that are required to do each one. They should choose according to their interest and maybe explore what they see themselves doing in the future.

This is a civil engineering and a city planning project. These engineers decide the main components of a town or city not necessarily specifics about each component. This particular city is complicated because of its remoteness and the potential for how big it could become.

The city planner decides where the water tower goes and the surrounding equipment, not what the water tower looks like.

The city planner decides where stores go and how close they should be to the houses and apartments, not the type of houses or shops.

The city planner decides how close the manufacturing facilities are allowed to be the homes and schools, not what the facilities look like. Often a big safety concern.

The lunar city planner has the responsibility of planning out how the city will grow into the future not just how it will look in a moment of time. This is a much more complicated task because of the distance into the future that has to be considered.

The map I drew is not at all to scale. Shackleton Crater is 2 miles deep and 12 miles wide. That's pretty **big** and our equipment is pretty **tiny**!!! It may take an hour or more to drive down the inside of the crater.

Because the sun will always be low on the horizon, the shadows will always be long. Where can you place the solar panels so they don't shade each other? Is there a way to get solar exposure for more than 14 days?

Do you want all of the landing sites in the same general area or should they have some significant separation?

They are going to be scooping up lots of regolith from the bottom of the crater and figuring out how to separate the water out. That leaves a lot of regolith that gets moved and dumped. Is there a place we want to put it for constructing something else?

Placing the habitat and materials next to the crater will save travel time but it may also leave you exposed to more cosmic radiation and micrometeorites.