

Dandelion Model for COVID-19

A way to explain COVID-19 control measures to kids while teaching science

I am sure that there are many anxious kids (and parents) out there who do not understand what scientists are doing to control the spread of the virus that causes COVID-19. There are many terms like “flattening the curve” that may not be very relatable. As a retired educator (college chemistry professor for 26 years) who did many outreach activities to teach kids as young as 4 years old about science, I was struck by an idea that might help. I got this idea because I decided to control my dandelions in my front lawn by hand weeding, since I have time now that I am retired. Dr. Diane Marsh, Ph.D Chemistry

If we take a dandelion plant to be a person who has the virus that causes COVID-19 in their body, but is not showing any symptoms.

Then a person with COVID-19 symptoms (fever, coughing, shortness of breath) is represented by a yellow dandelion flower.

And a white, seed distributing dandelion represents a person spreading the virus to others by lack of proper precautions. Keep in mind that not every seed the dandelion puts out results in a new plant. It may hit an area where it can not grow. Each seed is a virus that can infect if a person does not take precautions and/or have a strong immune system.

So “flattening the curve” means controlling the spread of the disease over time so that there are fewer cases that require medical care. This means that we will have enough health care professionals to care for

sick and injured people, even those that do not have COVID-19. What is the dandelion model for “flattening the curve”?

First understand that a scientific model is an example of a similar situation to something that is difficult to visualize and understand. People can not see viruses because they are so very small. Dandelions are large enough to see and most people have them where they live. If you do not have them where you live you could use a different weed as your model.

A weed is a plant growing where humans do not want it to grow. Humans do not want the number of people with the virus that causes COVID-19 to grow. Both the virus and the dandelion can replicate themselves. Search virus replication worksheet and plant reproduction worksheet on the internet to find learning materials for this, just be sure they were produced by reliable sources. Scientists that study viruses are called virologists. Dandelions, like most plants, produce seeds to replicate. Scientists that study plants are called botanists. Learning the background science will help you better understand the model.

Viruses can be controlled by chemicals called antiviral drugs (Tamiflu, Relenza, Rapivab, and Xufluza). These have been developed by Pharmaceutical companies and tested by the FDA to stop the viral disease without harming the human. All drugs do have side affects, so they are prescribed by Doctors who can decide whether the benefits outweigh the risk for an individual patient. The drugs already developed work on specific types of viruses and probably will not work on the virus that causes COVID-19. Developing and testing for effective drugs will take time because this is a new disease. See <https://www.scientificamerican.com/article/a-promising-antiviral-is-being-tested-for-the-coronavirus-but-results-are-not-yet-out/>

Dandelions can be controlled by chemicals called weed killers. These have been developed by Chemical companies to stop the weeds without harming the grass in the lawn or crops or decorative plants. One weed killer, glyphosate, has a concerning side effect that it is toxic to fish at a low level. Since it is soluble in water and can persist in water and soil for weeks this means it can damage pond and lake ecosystems. I decided based on this information to control the number of dandelions by hand.

This is a neighbors lawn where weed killers are used to control dandelions. We can not do this with the new virus yet but scientists are working on it for the future.



This is my lawn after one day after I had carefully removed all white, seeding dandelions, then dug up dandelions until I got tired (about 20 minutes), then quickly picked every yellow dandelion I could see.



What I am doing is keeping the seeding dandelions from spreading their seeds (yes, I know it is fun to blow them around) and keeping the yellow dandelions from developing into seeding dandelions and spreading it around. This is like isolating people with virus symptoms from the healthy people. Stay home if you are sick and keep sick people in your home as separate as possible using hygiene measures.

As a retired person who does not have to go to work, I have decided to limit my social contacts in a way to limit my exposure to the virus. I do not entertain in my home, my friends and I visit taking walks around the neighborhood. I have stopped going to my Bridge (card game) Club. I only eat to go meals from restaurants I trust and cook most my meals myself. I do everything that I can to stay healthy and use good hygiene. This is like digging up the dandelion that does not have a flower yet. I am unlikely to get the virus, but if I do I am unlikely to spread it to anyone before I know I have it.

Quarantine is like digging up the dandelion too. If someone is known to have interacted with a known COVID-19 patient or has had a positive test, they need to isolate for 14 days as recommended.

So what happens if we do not take measures to flatten the curve? Look at the lawn where nothing is done about dandelions!



More cases of the disease in a given area, meaning more chances of spread and more serious cases needing medical assistance and supplies and facilities. Too many all at once means we can not take excellent care of everyone who needs it.

Let's all do our part to flatten that curve and while we are spending extra time at home, we can do some experiments on weed control! Remember that no kid should do experiments without parent permission and supervision for young kids. Some ideas...

Take one area of the yard and only remove the white, seeding dandelions each day being careful to not knock off any seeds and compare it to another area where all yellow and white dandelions are removed and compare it to digging the dandelions out with a weeding tool compared to doing nothing. Collect data (a count of each type of dandelion in an equal area square). Make a table of your data and plot it on a graph (bar charts?). Repeat over many days to determine if there is a cumulative effect over time.

Or...Test different mulches in jars to see which works best. This is like using gloves and protective equipment to prevent spread of the virus. Clean out some old jars. Label them. Place equal amounts of soil and water in the jars. Cover all but one with a layer of mulch (wood chips, leaves, pine needles, rock, etc.) of equal thickness. Put a white seedy dandelion in each jar. Leave the lid off or poke holes in it, plants need carbon dioxide in the air to grow. Which mulch works best? How thick does it have to be to stop dandelions from growing?

There are great teaching resources on the internet on the scientific method, so enjoy some science in your own yard or in pots on you patio or balcony! I also recommend SciShow and SciShow Kids on YouTube.