

Disease Education

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Overview and Introduction

In the world we live in, nothing is definite. The COVID-19 pandemic has created growing feelings of uncertainty in science due to misinformation. Many people are unsure on how to combat this deadly disease and are uneducated when it comes to prevention. This project aimed to educate high school aged homeschool students on the COVID-19 disease, as well as provide useful information that they can utilize in the future. We administered a 4 part program to the students which gave accurate information on viruses/diseases and prevention methods.

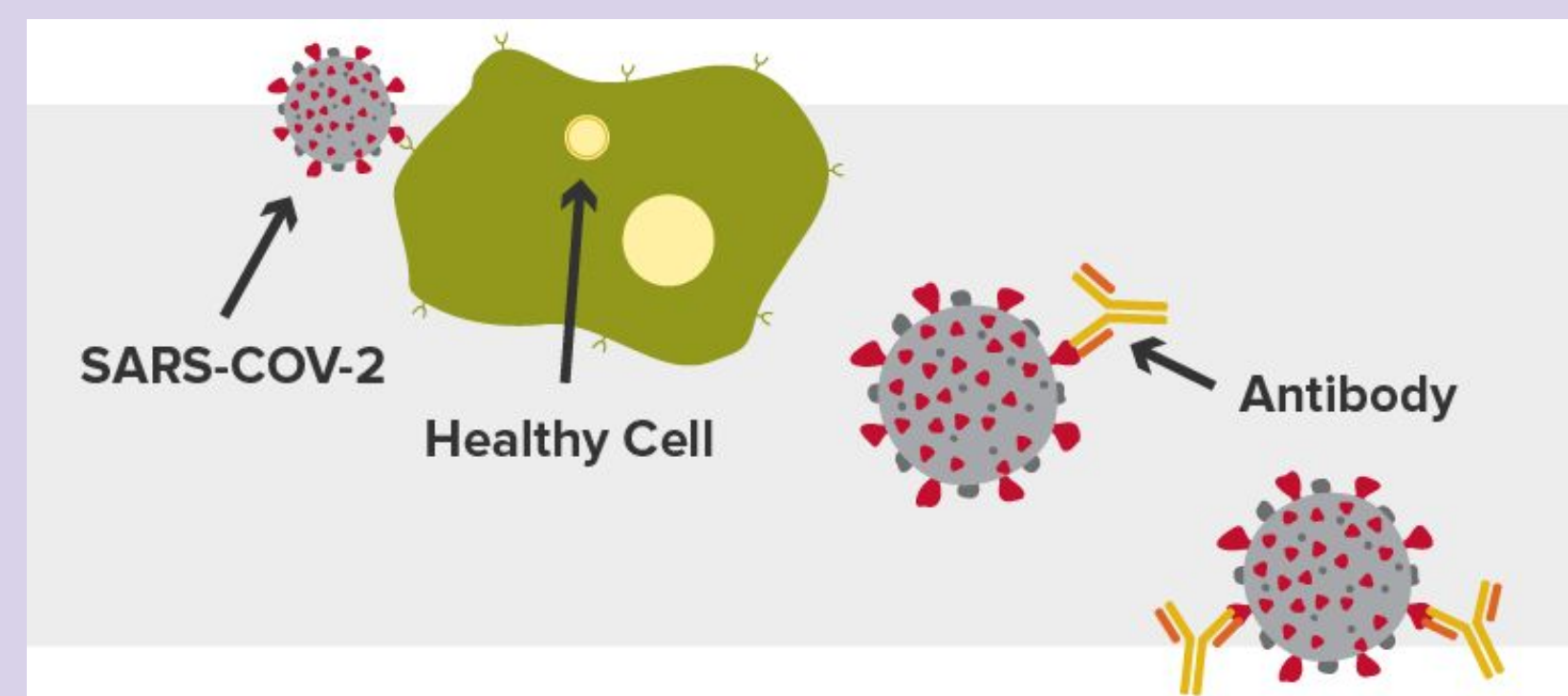


Figure 1 shows a basic representation of how antibodies can fight viruses as discussed in the week 1 video to give students an understanding of how viruses work (The Ohio State University Wexner Medical Center 2022).

- Growing mistrust in science due to false information
- Increasing homeschool student population due to COVID-19 pandemic (46% above pre-pandemic levels) (Thompson 2022)
- Solution: Education Program based on prevention and virology in hopes to make a difference in how they live their lives
- Google forms quiz to help retain information presented in program

Backwards Design Learning:

- To set a goal for your curriculum and determining the form of learning afterward (McTighe and Thomas 2003)
- In our backwards design, we chose to focus on disease control and prevention and chose our teaching technique (weekly videos and quizzes) afterwards

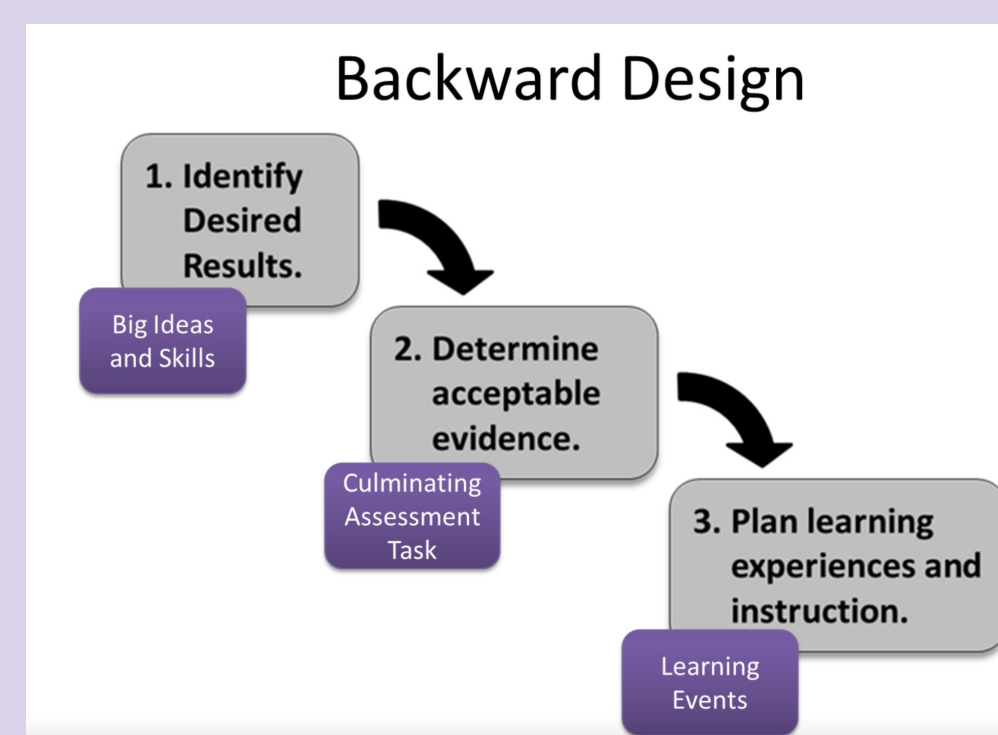


Figure 2 shows the method used in making the overall structure for our curriculum

Video Objectives

- Week 1: General Disease Information and how viruses work once in the body
- Week 2: Disease safety guidelines and what a quarantine is, why it is important
- Week 3: What a vaccine is, how it works, herd immunity and why it is important (Nature Video 2020)
- Week 4: Mistakes made during Covid-19 pandemic, how to prevent these mistakes in the future, how the pandemic affected people mentally, resources for mental health help

Research and Process

- Step 1: Decide to create 4 videos to educate high school aged kids on viruses and diseases
- Step 2: Create a well-rounded template to cover all aspects necessary to understand and retain the concepts taught
- Step 3: Determine topic of each video and do extensive research on each topic using peer reviewed sources

Topic	Learning Objectives	Introduction	Body	Conclusion	Video examples	References	
What is a disease, how does it work in your body, why is it important to understand it, how can you prevent it, how can you treat it?	• Understand the basic structure of a virus and how it enters the body. • Identify the symptoms of a disease and how they are caused. • Explain the role of the immune system in fighting off a disease. • Describe the different types of diseases and how they are spread.	Throughout the COVID-19 pandemic, we have seen a lot of information about diseases. Some of this information is accurate, but some is not. It is important to understand what a disease is and how it works in the body. This video will help you understand the basics of diseases and how they are spread.	A disease is the body's response to a harmful agent. The harmful agent is called a pathogen. The body's response is called an immune response. The immune system is made up of white blood cells and antibodies. Antibodies are proteins that bind to pathogens and help the body fight them off.	If the virus or bacteria enters the body again, the immune system remembers how to fight it and can fight off the disease again. This is called herd immunity. It is important to understand how herd immunity works and how it can be achieved.	Her hope that this week's lesson will give students a better understanding of diseases and how they are spread. The video will cover the basics of diseases and how they are spread. It will also cover the role of the immune system in fighting off a disease.	1. What is a disease? (Nature Video 2020) 2. How does a disease work? (Nature Video 2020) 3. How can you prevent a disease? (Nature Video 2020) 4. How can you treat a disease? (Nature Video 2020)	1. What is a disease? (Nature Video 2020) 2. How does a disease work? (Nature Video 2020) 3. How can you prevent a disease? (Nature Video 2020) 4. How can you treat a disease? (Nature Video 2020)

Figure 3 shows the week 3 template with multiple peer reviewed sources and extensive information regarding vaccines and herd immunity

- Step 4: Using Bloom's Taxonomy, research the best ways to ask students questions which will help them retain information and challenge them on the topics they have learned.

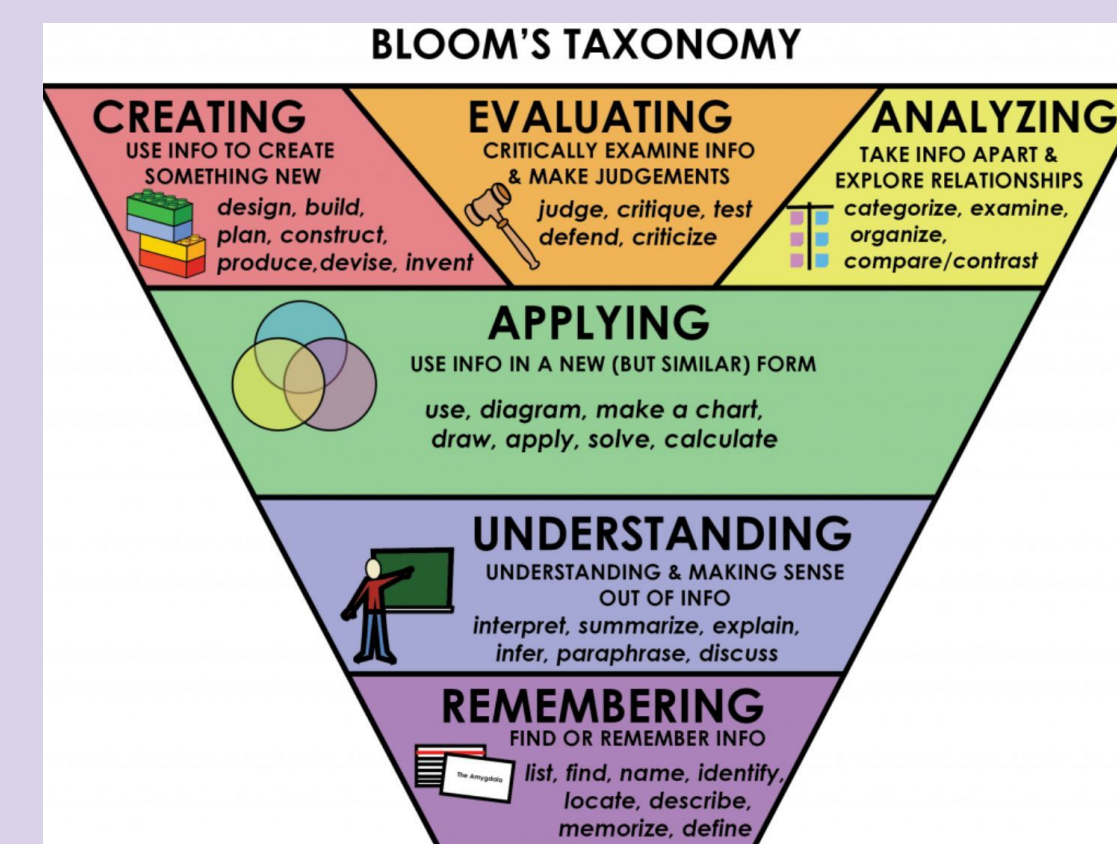


Figure 4 shows an example of Bloom's Taxonomy which was used to create challenging and applicable questions for the students to encourage participation and help students retain information (Lewis 2019).

- Step 5: Create a Google Forms quiz for pre-post evaluations to track student progress and learning before and after watching the videos

Preliminary Quiz

Please complete this accurately for extra credit thank you!!! :)

Email *

Valid email

This form is collecting emails. [Change settings](#)

Which system in your body is responsible for fighting against bacteria and foreign diseases?

Nervous system

Immune system

Endocrine system

Cardiovascular system

Figure 5 shows an example of one question created using Bloom's Taxonomy which was included in the preliminary quiz to help gauge student's understanding of the subject before watching our videos.

- Step 6: Create a slideshow and film each video using the informational templates and then send them out to the highschool students

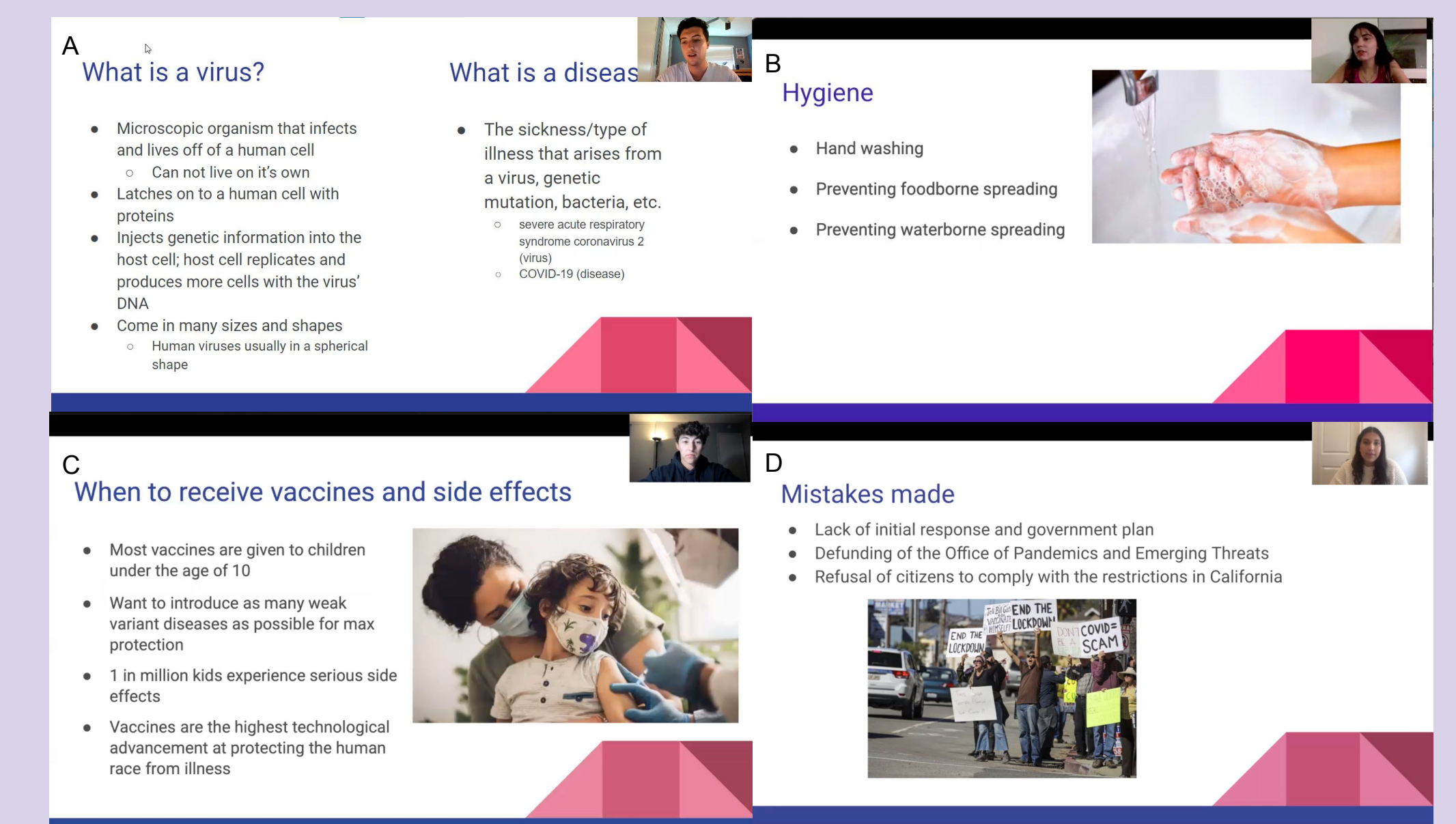


Figure 6 shows the videos that were completed as part of the educational portion of the project. Figure A is from week 1, figure B is from week 2, figure C is from week 3, and figure D is from week 4

Contributions and Impact

- Our team gained invaluable research experience in creating our curriculum and designing an effective program
- Teachers will have easy access to our entire program all in one google drive making it easy for them to give a well-rounded and reputable lesson to students in or out of the classroom
- Once implemented into public schools and home school programs students will be given a concrete understanding of viruses and disease prevention and mitigation techniques
- Students' understanding will be tested and improved by the pre-post evaluations

Next Steps

- Our videos and quizzes have been compiled into a google drive that can be published online and shared with schools
- This program is now available to homeschool programs and public schools who want to teach their students about COVID-19
- Our team can make a social media page or website that informs people about our videos and allows them to access our google drive

Acknowledgements

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