HSTA

Junior Camp



2020

Welcome to HSTA Junior Camp 2020!

We are sad that we won’t be able to see you at West Virginia University, but our wonderful faculty have planned some awesome experiences for you to complete online. Over the next two weeks, you will explore various topics that you will relate to your home communities.

You are receiving two Word documents. This one is your master document that has all of the information you will need. You will visit various websites, presentations, and you will do some activities in your home and community.

Your HSTA teacher will be holding online meetings to assist you as you work through this camp. You will turn in your assignment sheet to your teacher too. If you have any trouble, contact your HSTA teacher or your CRA.

Before you begin, go to the HSTA website ([www.wv-hsta.org](http://www.wv-hsta.org)) and look along the left side. There will be a link to Summer Camp. Then, Junior Camp will be on the left again where you will find all the things you need that aren’t in this document. Click on the WVU college video and check it out.

Also, click on the social media link so that you can interact with your campmates on social media throughout the two weeks.

We hope that you have a great time and stay safe! We can’t wait to see you all in person again.

**Community-Based Chronic Disease Prevention**

**WVU Extension-Lauren Prinzo**

**Overview:**

Health is impacted by a variety of factors and includes personal choices and policies, systems, and environments. Through this module, you will learn how to protect your health and the health of others. You will also reflect on the things in your community that help people stay healthy. The files that aren’t here are on the Junior Camp section on the HSTA website **(wv-hsta.org).** Directions to access are above.

**Unit 1: Your Community**

**Read:**

* Unit 1 Powerpoint (on website)
* ****Article: “The Key to Changing Individual Behavior: Change the Environments that Give Rise to Them.” (on website)

**Do:**

What are your favorite things about your community? Take some time to reflect on what makes your hometown great and the people and places in your community that help keep people healthy.

* + **My Hometown is Cool**: Read through, but the assignment is on the last two pages (on website)
	+ **Picture Perfect:** Take five photos of things in your community that help you and others stay healthy. These can include outdoor spaces, sidewalks, fitness center, quiet places for families to gather, or any other place you love about your town!

**Turn In:**

* A picture of the hometown seal you created in the “My Hometown is Cool” activity
* The five pictures of your favorite places in your community OR write five sentences about your favorite places.

**Unit 2: Yourself**

**Read:**

* Unit 2 Powerpoint (on website)
* Rethink Your Drink Lesson (on website)
* Fruit infused water recipes (on website)

**Do:**

* **Chopped Challenge:** HSTA Edition: Do a check of your kitchen to see if you have the ingredients listed on Powerpoint. Then, add/create a new recipe or infuse one with vegetables or fruit and send a picture to HSTA.
* **Fruit infused water:** Try some fruit infused water as a healthy alternative to sugary beverages. Share with your family!



**Turn In:**

* A picture of your food or recipe card with your fruit/vegetable filled recipe and of your fruit-infused water.

**Preschool Children’s Health and Families**

**Dr. Te’ Allar**

All of the materials for this unit are on the Junior Camp page at **wv-hsta.org.**

**Human Anatomy and Spread of Disease**

**Dr. Rosa Santos**

PDFs are on **wv-hsta.org** at the Junior Camp page.

**Section 1: The Heart**

Read the PDF on the heart (on website)

Watch this short video on the heart: <https://www.youtube.com/watch?v=X9ZZ6tcxArI>

 Optional Video- How the heart pumps:

<https://www.youtube.com/watch?v=FLBMwcvOaEo>

Key concepts to understand:

 Know the 4 chambers of the heart

 Understand how blood flows through the heart

TO DO LIST: Answer the questions on the heart on your assignment sheet.

**Section 2: Respiratory System**

Read the PDF on the respiratory system (on website)

Watch this short video on the Lungs: <https://www.youtube.com/watch?v=bHZsvBdUC2I>

 Optional Video- Gas exchange: <https://www.youtube.com/watch?v=Cqt4LjHnMEA>

Key concepts to understand:

Understand how oxygen flows into the lungs

Understand where gas exchange occurs in the lungs

Understand how carbon dioxide flows out of the lungs

TO DO LIST: Answer the questions on the Respiratory System on your assignment sheet.

**Section 3: Circulatory System**

Read the PDF on the circulatory system (on website)

Optional Video- Blood Vessels:

<https://www.youtube.com/watch?v=v43ej5lCeBo>

Optional Video- Blood pressure and Heart Failure:

 <https://www.youtube.com/watch?v=ZVklPwGALpI>

Key concepts to understand:

Understand gas exchange at the lungs versus gas exchange at tissues.

TO DO LIST: Answer the questions on the Circulatory System on your assignment sheet.

**Section 4: Infectious Diseases**

Read the PDF on COVID-19 (on website)

Watch this short video on infectious diseases:

 <https://www.youtube.com/watch?v=9axOFtPqS0c>

Watch this short video on how to control the spread of infectious diseases:

 <https://www.youtube.com/watch?v=2JWku3Kjpq0>

Check out this website on the scale of the universe, including the sizes of things that cause infectious diseases. Have fun exploring:

 <https://scaleofuniverse.com>

Optional Videos- review on the immune system:

 <https://www.youtube.com/watch?v=GIJK3dwCWCw>

 <https://www.youtube.com/watch?v=2DFN4IBZ3rI>

Key concepts to understand:

Understand how infectious diseases spread.

Understand your role & responsibility in reducing the spread of infectious diseases.

TO DO LIST: Complete Activities A-C below

Infectious diseases can spread easily and it’s OUR responsibility to try to minimize the spread of infection.

**Activity A - FaceTime**

A common way that infections spread is by coming in contact (touching) a contaminated surface and then touching our face with a contaminated hand. Our faces contain many areas that allow us to introduce infections into our bodies (nose, mouth, eyes), so it is important that we consciously try to avoid touching our face to avoid the spread of infection.

Today you will be observing someone else to see how often they touch their face. Before you begin your investigation, here are some suggested guidelines:

* Don’t tell the person you are observing that you will be observing them. If you do, it will make them more conscious about their behavior and will alter (change) your results.
* Don’t stare at the person you are observing. No one likes being stared at, its uncomfortable… and it makes you look like a creep! Make it a natural interaction, for example: have a conversation with them (in person or on zoom), observe them while they are doing something (like cooking), show them a video, etc…
* Observe for at least 10 minutes.
* Have something to take notes on.
* Be observant! Don’t just write down how often they touched their face. What region did they touch? Did they rub their eyes? Did they use their fingers or the back of their hand? Note the time when they touched their face. What hand did they use? Did they touch something else before touching their face?

When collecting data such as this, it is important to make sure the participant is anonymous, so do not include their name. Also, while you don’t want them to be conscious of your observation, it is important to ensure that your participant is aware that he or she is part of your data collection. Ethics are essential!

Complete the questions on your assignment sheet.

**Activity B - Hand Washing Technique**

You will be investigating the efficiency of your washing technique. To test how well you wash your hands, you will be using GloGerm, a non-toxic substance that glows under ultraviolet (UV) light, and a UV flashlight to track the GloGerm. If you are interested in learning more about GloGerm, please visit their website: <http://www.glogerm.com>

Instructions:

* Take a dime size dollop of GloGerm and spread it on your hands like you were moisturizing your hands with lotion (palm side of hand, back side of hand, and between fingers).
* Have someone shine the UV flashlight on your hands to ensure that you can visualize the GloGerm.
	+ Note: This step should take less than 5 seconds; **DO NOT overexpose your hands to UV light.**
* Wash your hands with soap. Use the hand washing technique that you **normally** use (say for example before having dinner or after using the restroom). DO NOT change your normal technique (don’t overcompensate by over-scrubbing, taking extra time, etc.).
* Have someone shine the UV flashlight on your hands.
	+ Pay special attention to the creases in your hands, finger nails, the back side of your hands, and between fingers.
	+ Note: This step should take less than 10 seconds; **DO NOT** **overexpose your hands to UV light.**
* If you saw the presence of GloGerm on your hands, wash your hands again until you no longer visualize GloGerm under UV light.

Complete the questions on your assignment sheet.

**Activity C - Watch the Spread**

Next, you will be conducting an experiment to investigate the spread of germs. To test this, you will spread some GloGerm on your palms and then go about your normal daily routine. You will observe the spread of GloGerm at three time-points after “infecting” your hands: 30 minutes, 1 hour, 4 hours.

Instructions:

1. Spread a dime size dollop of GloGerm on the palm side of your hands (not the backside of your hands).
2. Note the time that you started this experiment.
3. Set a timer for 30 minutes after start time.
4. Go about your day as normal.
5. Retrace your steps after 30 minutes and look for the spread of GloGerm using the UV flashlight.
6. Note your observations.
7. Set a timer for 1 hour after start time.
8. Go about your day as normal. Wash your hands if necessary (if you went to the restroom, got your hands dirty, going to have a meal, etc.)
9. After this time point, look for the spread of GloGerm using the UV flashlight. This time re-tracing your steps alone may not be enough, as others in the household may have contributed to the spread of the GloGerm by now.
10. Note your observations.
11. Set a timer for 4 hours after start time
12. Repeat steps 9-11 for each time point.
13. Review your observations, summarize them, and answer the questions in your conclusion.

Some guidelines/tips:

* Start your experiment after a meal or using the restroom. You don’t want to start your experiment and then have to wash your hands immediately after applying GloGerm.
* Go about your day/week as you normally would.
* Clean your house (kitchen, bedroom, bathroom, etc.) as you normally would throughout the day/ week.
* Have someone help you with the UV flashlight or taking notes so you can focus on doing the observing part of the experiment.

**Exercise Physiology**

**Dr. Emily Murphy and Danny Bonner**

**Why are the lungs important?**

Every cell in your body needs oxygen in order to live. The air we breathe contains oxygen and other gases. As was discussed above, once in the lungs, oxygen is moved into the bloodstream and carried through your body. At each cell in your body, oxygen is exchanged for a waste gas called carbon dioxide. Your bloodstream then carries this waste gas back to the lungs where it is removed from the bloodstream and then exhaled. Your lungs and respiratory system automatically perform this vital process, called gas exchange.

* Your **diaphragm** is the strong wall of muscle that separates your chest cavity from the abdominal cavity. By moving downward, it creates suction in the chest, drawing in air and expanding the lungs.
* **Ribs** are the bones that support and protect your chest cavity. They move slightly to help your lungs expand and contract.

Click on the link below to watch a short video on how the lungs work:

<https://www.bing.com/videos/search?q=video+on+how+the+lungs+work&docid=608026201932432762&mid=D73B0B0A02F03A3E1C39D73B0B0A02F03A3E1C39&view=detail&FORM=VIRE>

**How Does Exercise Strengthen the Respiratory System/Lungs?**

When you are physically active, your heart and lungs work harder to supply the additional oxygen your muscles demand. Just like regular exercise makes your muscles stronger, it also makes your lungs and heart stronger. As your physical fitness improves, your body becomes more efficient at getting oxygen into the bloodstream and transporting it to the working muscles. That's one of the reasons that you are less likely to become short of breath during exercise over time.

Some types of exercise can also strengthen the muscles of the neck and chest, including the diaphragm and muscles between the ribs that work together to power inhaling and exhaling.

**The Benefits of Exercise**

Exercise has lots of benefits for everyone, whether you are young or old, slender or large, able-bodied or living with a chronic illness or disability. Physical activity can reduce your risk of serious illness, including heart disease, stroke, diabetes and some forms of cancer, including lung cancer. Being active can help you stay active by strengthening bones, improving flexibility and agility, reducing weight gain and improving sleep. Regular exercise is good for your head, too. It can reduce feelings of anxiety and depression, improve attention and memory, and reduce the risk of dementia, including Alzheimer's disease.

**What Types of Exercise and How Much?**

National guidelines recommend that all children get at least 60 minutes of exercise each day and that adults get 30 minutes of moderate physical activity five days a week. It doesn't have to be a formal exercise program to be beneficial. Some examples of moderate activity include walking briskly, recreational bicycling, gardening and vigorous housecleaning.

Both aerobic activities and muscle-strengthening activities can benefit your lungs. Aerobic activities like walking, running or jumping rope give your heart and lungs the kind of workout they need to function efficiently. Muscle-strengthening activities like weightlifting or Pilates build core strength, improving your posture, and toning your breathing muscles.

**How does COVID-19 Effect your lungs:**

Please click on the following links and read about how COVID-19 can affect your lungs and then answer the questions below:

* <https://www.lung.org/lung-health-diseases/lung-disease-lookup/covid-19/about-covid-19>
* <https://www.sciencenews.org/article/coronavirus-covid-19-some-patients-may-suffer-lasting-lung-damage>

**What is Aerobic Capacity?**

Aerobic capacity is evaluated using estimates of VO2max (also known as maximal oxygen uptake). VO2max reflects the maximum rate that the respiratory, cardiovascular, and muscular systems can take in, transport, and use oxygen during exercise.

Please click on the link below and watch a short video about aerobic capacity:

<http://www.cooperinstitute.org/fitnessgram/aerobic-capacity>

* **How can I measure my own aerobic capacity?**

The most reliable way to find your VO2max is to have a functional stress test done in a lab or gym. But you can test your aerobic capacity by using a variety of field tests as well. Two popular and fairly easy ways to measure your aerobic capacity are the Rockport Walk Test and the Cooper 1.5 Mile Run/Walk Test. Click on the link for each of the tests below. Read about each test.

* 1. Rockport Walk Test
		1. <https://www.verywellfit.com/rockport-fitness-walking-test-calculator-3952696>
	2. Cooper 1.5 Mile Run/Walk Test
		1. [https://www.humankinetics.com/AcuCustom/Sitename/DAM/082/Cooper\_ Walk\_Run\_Test.pdf](https://www.humankinetics.com/AcuCustom/Sitename/DAM/082/Cooper_%20Walk_Run_Test.pdf)

**Finally, click on the link below to read an article on how you can help improve your aerobic capacity:**

<https://www.acefitness.org/education-and-resources/professional/expert-articles/6464/8-things-to-know-about-aerobic-capacity-and-how-to-improve-it/>

* **Outline a plan to improve your aerobic capacity over the next 2 months. Write about your plan on the assignment sheet in 3-4 sentences.**

**Lab Sciences**

**Dr. Mike Gunther**

All of the links for this section are on the Junior Camp page at wv-hsta.org

1. Watch both videos on the webpage.
2. Watch the following video: <https://www.youtube.com/watch?v=oyXKE57N9qI&feature=emb_rel_end>
3. Go to the virtual lab here: <https://media.hhmi.org/biointeractive/vlabs/immunology/index.html>
4. Complete the lab and take a picture of your results.
5. Write 5 sentences about what you learned.

**Medical Sociology**

**Misty Harris**

1. **Watch Video Introductions to the Foundations of Sociology**

 [What is Sociology?](https://www.youtube.com/watch?v=YnCJU6PaCio&list=PL8dPuuaLjXtMJ-AfB_7J1538YKWkZAnGA) (9:41)

 [Major Sociological Paradigms](https://www.youtube.com/watch?v=DbTt_ySTjaY&list=PL8dPuuaLjXtMJ-AfB_7J1538YKWkZAnGA&index=3) (9:39)

 [Sociology & the Scientific Method](https://www.youtube.com/watch?v=ZIwyNIdgJBE&list=PL8dPuuaLjXtMJ-AfB_7J1538YKWkZAnGA&index=4) (9:56)

 [Sociology Research Methods](https://www.youtube.com/watch?v=QwhK-iEyXYA&list=PL8dPuuaLjXtMJ-AfB_7J1538YKWkZAnGA&index=5) (10:11)

1. **Watch Video Introductions to Medical Sociology & Health Disparities**

 [Health & Medicine](https://www.youtube.com/watch?v=8NGlENS1qgo&list=PL8dPuuaLjXtMJ-AfB_7J1538YKWkZAnGA&index=43) (11:15)

 [Population Health](https://www.youtube.com/watch?v=D9SWRByzDSo&list=PL8dPuuaLjXtMJ-AfB_7J1538YKWkZAnGA&index=44) (9:56)

 [The Structure & Cost of US Health Care](https://www.youtube.com/watch?v=KriEIJ0ubh0&list=PL8dPuuaLjXtMJ-AfB_7J1538YKWkZAnGA&index=45) (9:50)

 [Health & Health Care Disparities in the U.S.](https://www.youtube.com/watch?v=7qAld9bGwlA) (4:00)

1. **Explore Population Health Data for U.S. and West Virginia & *Take Notes***

***Where does WV rank in the US? Why is it ranked this way? Do you think your county is healthier or less healthy than the state as a whole?***

 [United Health Foundation’s America’s Health Rankings](https://www.americashealthrankings.org/explore/annual/measure/Overall/state/WV)

 [World & US COVID-19 data](https://www.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6) from the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU)

***Where does your county rank in WV? Why is it ranked this way? What surprises you about the health of your county?***

 [Robert Wood Johnson Foundation (RWJF) County Health Rankings](https://www.countyhealthrankings.org/app/west-virginia/2020/overviewv)

 [West Virginia & COVID-19](https://dhhr.wv.gov/COVID-19/Pages/default.aspx) from the West Virginia Department of Health

 and Human Resources

*Additional Resources:* [RWJF on COVID-19](https://www.rwjf.org/en/library/collections/coronavirus-disease-2019--covid-19.html)

**List 5 things you learned on your assignment sheet.**

1. **Complete the RWJF** [**Data Action Learning Guides**](https://www.countyhealthrankings.org/take-action-to-improve-health/learning-guides) **& answer the questions on your assignment sheet.**

 [What are Data? Action Learning Guide](https://www.countyhealthrankings.org/take-action-to-improve-health/learning-guides/what-are-data#/)

 [Introduction to Equity Action Learning Guide](https://www.countyhealthrankings.org/take-action-to-improve-health/learning-guides/introduction-to-equity#/)

**Instance and Prevalence of COVID-19 and Movement**

**Dr. Amanda Stewart**

**Introductory note to my camp-less HSTA students**

There is no question that 2020 will go down in the record books—and in each of our lives—as unprecedented, unsettling, and—let’s face it—bizarre. An event that occurred over 7000 miles from West Virginia induced major change in our nation, state, local community, and even HSTA camp. As unfortunate as this may be, from a scientific and public health perspective, it’s actually really interesting! We have seen—almost in real-time—how a virus can move across the globe! With modern technology, from our home computers and cell phones, we have been able to count and track the instance and effects of Covid-19 alongside epidemiologists studying the disease.

My first introduction to the science of epidemiology came from my college Ecology course, taught by an amazing professor, Dr. Stuart Pimm. I think it’s important for you—as a HSTA student—to know that I was a lot like you before I went to college, and I had no way to know that I would have one of the most world-renowned ecologists as a teacher! *Really, look him up! You never know how college will open doors to new and amazing people!* That class was *many* years ago, and I still recall his lecture that compared the movement of starlings from Central Park in New York City to the spread HIV. His lecture really made an impact, and, decades later, I can more easily understand the realities of Covid-19.

So, no camp? No problem! Using all of the tech we have at hand, we are going to track people, Covid-19, and the interconnectedness of our communities! You are going to learn that epidemiology can be fun, even *after* you realize how creepy it is that I know where cell phones slept last night and where someone used their debit card. REALLY. We can track it all, and using that knowledge, try to battle the spread of this disease.

**We will be doing a little bit of work to get you ready for some more work in the fall.**

**Choose Your Communities**

For this section, you are going to select two (or more) distinct communities that interest you:

1. Your own community (where your HSTA club is active). Depending on the size of your community this could include one neighborhood, one town, or the entire county. Starting at the county level is probably the best way to begin.
2. One WV county that is distinctly different from your home. For example, you could choose a different WV county that is rural, has a big city, or some location that was a covid-19 “hotspot.” Or you can choose an area like New York City or another area of the country

Complete this on your assignment sheet.

**Get Familiar with the Data**

Researchers have tracked people’s movement throughout the COVID-19 pandemic in various ways, including tracking dollar bills spent, credit card usage, and cell phone tracking. Explore the various data sets and maps below. While you do, think about the two communities you chose above. Write 5 sentences about what you learned on your assignment sheet.

Where’s George?-a website that tracks dollar bills throughout the US.

[https://www.wheresgeorge.com/realtimehitmap.php#](https://www.wheresgeorge.com/realtimehitmap.php)

Safe Graph data about social distancing

<https://www.safegraph.com/dashboard/covid19-shelter-in-place?s=US&d=06-15-2020&t=counties&m=index>

Retail Information

<https://www.safegraph.com/dashboard/covid19-commerce-patterns>

A few other interactive map sites related to COVID-19

* <https://www.healthmap.org/en/> NOTE that healthmap.org has other disease trackers, so check them out!
* COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU) <https://www.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6>
* <https://www.healthmap.org/covid-19/> . It shows new cases each day and cumulative cases starting on January 11, 2020. NOTE, you can rewind and also stop the play bar at any date and see what’s happening on that particular day, and you can grab the bar and move it at the speed you want as well! Zoom in to WV and you will see that the map is not nearly as scary when you look at WV at a state level as compared to the “zoomed out” view where it appears that the entire east coast is affected, including all of WV.
* Look at the CDC’s Morbidity and Mortality Weekly Report (MMWR): <https://www.cdc.gov/mmwr/index.html> On this site, note the comments on health disparities and Covid-19. Doesn’t this sound familiar (HSTA…HSTA…HSTA…)

**Zebrafish**

**Becca Coltogirone and Dr. Sadie Bergeron**

The zebrafish materials not linked below are on the Junior Camp page at **wv-hsta.org.**

1. **Introduction**

Hello and welcome to the very first virtual HSTA Biomed Zebrafish module! The purpose of this module is to introduce you to zebrafish (pictured right, image taken from our lab at WVU!), which are the “hot model” for scientific research right now, but also can be used to help students learn about scientific concepts! At the end of the module, we hope that you’ll not only gain an appreciation for zebrafish and scientific research, but also feel more confident in your own ability to be creative in using the scientific method and to ask unique questions that can be answered scientifically.

The learning goals for our camp are as follows:

1. *Explain* the relevance of zebrafish in scientific research and science education
2. *Identify* and *manipulate* the key variables in experimental design
3. *Design* a unique research project that uses zebrafish to understand a question or issue you identify in your household or community
4. **How to work through the module**

For most of the module, materials are organized into “topics”. For each topic, you’ll start by watching a presentation or completing an online module. After this, you might read a publication or watch a video. Finally, at the end of each topic is an assignment. The assignments are written reflections/discussions about the activity you completed for that topic. To make writing easier, take notes as you move through the materials!

Some materials are linked in the schedule below. Others are located on the link above. where all the module materials are located. If this is the case, the material you need will have the same name as it does in the schedule below.

1. **Checklist/schedule**

[ ]  Take pre-survey (received via an email link)

[ ]  Topic 1: Zebrafish in Research

 [ ]  Watch: “Zebrafish & Research” presentation

 [ ]  Watch: [The Zebrafish Film](https://www.zebrafishfilm.org/)

[ ]  Complete reflection

[ ]  Topic 2: Zebrafish in Education

 [ ]  Watch: “Zebrafish & Education” presentation

 [ ]  Watch: [Project BioEYES Film](https://www.youtube.com/watch?v=Wpu0UgoFdqs)

 [ ]  Read: [Zebrafish in the classroom article](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5878548/pdf/zeb.2017.1503.pdf)

 [ ]  Complete reflection

[ ]  Idea walk

 [ ]  Complete: idea walk (see assignments document)

 [ ]  Complete assignment: “Research proposal” (see assignments document)

[ ]  Take post-survey (received via an email link)

1. **Troubleshooting and questions**

If you have any general questions or need assistance, please don’t hesitate to contact your HSTA mentor(s) or teacher. If you have questions specific to material in the zebrafish camp, feel free to contact Becca Coltogirone, graduate student in the Bergeron zebrafish lab at WVU (and camp designer!), at rar0016@mix.wvu.edu, or Dr. Sadie Bergeron, Bergeron Lab P.I., at sadie.bergeron@mail.wvu.edu.

**Topic 1: Zebrafish in Research**This topic introduced you to zebrafish and why they’re used in research. Now, we want you to get engaged with some zebrafish research.

Steps to complete the assignment for this topic:

1. Watch the Zebrafish & Research presentation and The Zebrafish Film.
2. Think about a biomedical research topic that interests you, such as cancer research, immunology, or genetic diseases and how that may be addressed in research on zebrafish.

**Topic 2: Zebrafish in Education**This topic reviewed how zebrafish can be used in classroom settings as educational tools for students. To demonstrate that implementing zebrafish experiments into a classroom is possible, you are going to first review a scientific publication about this, and then write a reflection.

Steps to complete the assignment for this topic:

1. Watch the Zebrafish & Education presentation.
2. Follow this link to a publication that discusses a collaborative effort between a university lab and a high school to implement a zebrafish tank into the school classrooms: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5878548/>. Alternatively, you can view the PDF version at this link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5878548/pdf/zeb.2017.1503.pdf>
3. Skim the article. **Don’t worry about reading it front-to-back.** Get a general sense of what was done, look at the figures, and perhaps check out the experimental modules that are included at the end. Complete your summary on your assignment sheet.

**Idea Walk**This is the final requirement for the zebrafish module! For this assignment, you will complete an “idea walk”. It’s exactly what it sounds like: take a walk and come up with an idea. The catch is that we want you to identify a question or problem relevant to human or environmental health that can be solved with the help of a zebrafish experiment.

Steps to complete the assignment for this topic:

1. Get ready to take a walk. Grab some water, invite a friend, or leash up the dog!
2. Take a walk. It can be a brief jaunt around your home, or a longer trek through your neighborhood. Regardless of the conditions of your walk, always be aware of your surroundings and use your best judgement.
3. During this walk, make observations about your environment. What do you see? What do you hear? What do you smell? Think about how these things may affect the health of yourself or your environment. The goal of this walk is to identify a problem or question relevant to human or environmental health. Is there anything we can do to learn more about these things? Did you identify a problem we could possibly solve?
4. When you get home, jot down your ideas and do some critical thinking. You’ve learned about zebrafish and so many other things during this camp. How can you apply that you what you just observed during your walk? Complete the activity on your assignment sheet.

**Congratulations!** You have completed HSTA Junior Camp 2020! Check out the information below for ways that you may take the ideas you learned and apply them to your communities and your world!

