

Cast not away your confidence, it has great reward!

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ENGAGE

Sea Level Project Part 1

In this section students will review their basic understanding of functions as they explore real world phenomena using a variety of exploratory tasks. They will progress, utilizing a project based learning framework, to investigate function modeling in the context of sea level rise in coastal Georgia using original tidal data from Fort Pulaski and use regression analysis to make sense of their findings.

Students will watch:

Video #1: [TED Talk: Turning Powerful Statistics into Art](#) which explains how big data poses problems for us to conceptualize as humans. We need some way to be able to visualize it and the speaker uses art integration as a means to do so. After watching the video, students may discuss the importance of collecting data over long periods of time with a partner or in small groups, they will be asked to summarize their key take-aways.

Video #2: NASA [Rising Tides: Understanding Sea Level Rise](#) .

This video shows that as human activity warms our planet, the ocean absorbs over 90 percent of the excess heat. This increases water volume and melts ice sheets and glaciers, contributing to sea level rise.

Video #3: [Faces of Resiliency: Planning for Future Flooding and Sea Level Rise](#)

Climate change is exacerbating sea level rise and flooding on the coast. In Georgia, coastal municipalities and resource managers are proactively planning for these impacts by participating in programs that reward communities for implementing resilience measures.

Additional Resource:

- [PBS News Hour: Report Shows Devastating Economic Impact of Rising Sea Levels Along American Coast](#) PBS NewsHour · Sep 14, 2022
- **Faces of Resiliency:** [Improving Flood Literacy in Coastal Georgia](#)

ENGAGE: Student Task Sheet 1

Discussion and Takeaways from Videos

You will use this space to take notes as you watch the videos and engage in discussion. What do you KNOW, LEARN, WONDER? Think about this for yourself then discuss this with your partner or group.

Video 1:

1) What Do I KNOW:

- ☒ ~~What is the title of the video?~~
- ☒ ~~Who is/are the speaker/s?~~
- ☒ ~~I will briefly summarize what I think that the message of the video is about in at least 5 complete sentences each.~~

Video Title: Turning Powerful Stats into Art

Speaker: Chris Jordan

This video will be about data and ways to visualize it. Numbers alone can be confusing for people to study. This is why it is important to visualize those numbers by using charts and graphs. The speaker, Chris Jordan, may be talking about ways to abstract these visualizations even more. I think this further abstracting looks like turning the numbers into art, which integrates art and math.

2) What Did I LEARN?

- ☒ ~~I will write at least 5 math related pieces of information that I learned about from each video.~~
 - ☒ ~~Statistic 1~~
 - 4 million cups a day are used on airline flights (Non are reused.) 40 million paper cups are used a day.
 - ☒ ~~Statistic 2~~
 - America has the largest population of people in prison within the country. 1 out of 4 people in prisons are Americans within the U.S. (2.3 million incarcerated since 2005)
 - ☒ ~~Statistic 3~~
 - More than 400,000 people die in the U.S. every year from smoking cigarettes. 1,100 people die a day from smoking.
 - ☒ ~~Statistic 4~~
 - 213,000 hospital room visits yearly in the U.S. attributable to abuse and misuse of prescription painkillers and anti

anxiety medications. $\frac{1}{3}$ of all drug overdoses in the U.S. are prescription drugs.

☒ ~~Statistic 5~~

- 384,000 American women, in 2007, went in for elective breast augmentation surgery. 32,000 breast augmentation surgeries are performed in the U.S each month. (The vast majority are women under 21)

3) What Do You Wonder?

- ☒ ~~I will write at least TWO questions that I have about the information presented.~~

What are the steps to making change for issue that may not apply to you directly such as smoking and plastic surgery?

Has any of the art shown directly linked to a decrease in the issues they represent?

ENGAGE: Student Task Sheet 2

Discussion and Takeaways from Videos

You will use this space to take notes as you watch the videos and engage in discussion. What do you KNOW, LEARN, WONDER? Think about this for yourself then discuss this with your partner or group.

Video 2:

4) What Do I KNOW:

- ☒ ~~What is the title of the video?~~
- ☒ ~~Who is/are the speaker/s?~~
- ☒ ~~I will briefly summarize what I think that the message of the video is about in at least 5 complete sentences each.~~

Video Title: Rising Tides: Understanding Sea Level Rise

Speaker: NASA

This video will be about the drastic rise in sea level as a result of global warming. The video may talk about current factors that cause global warming such as pollution. Because greenhouse gasses increase atmospheric temperature, it causes an increase in temperature in the ocean. This might lead to the speaker talking about the harms of a rising sea level which include flooding and other natural disasters. The video may also conclude with what actions the general population can take to prevent global warming which includes avoiding things that emit CO₂.

5) What Did I LEARN?

☒ ~~I will write at least 4 math related pieces of information that I learned about from each video.~~

☒ ~~Statistic 1~~

- Our ocean absorbs over 90% of excess heat from greenhouse gas emissions.

☒ ~~Statistic 2~~

- The sea level is rising 3.3 millimeters every year. This is 42 trillion cubic feet of water.

☒ ~~Statistic 3~~

- Since the start of the 20th century, global sea level has risen about 7 inches. The rate of change has doubled.

☒ ~~Statistic 4~~

- By the end of this century, sea level rise could be 1 to 6 feet.

6) What Do You Wonder?

☒ ~~I will write at least TWO questions that I have about the information presented.~~

What damage has been done to populations on the coast caused by rising sea levels?

Has the rise in sea levels ever been reversed?

ENGAGE: Student Task Sheet 3

Discussion and Takeaways from Videos

You will use this space to take notes as you watch the videos and engage in discussion. What do you KNOW, LEARN, WONDER? Think about this for yourself then discuss this with your partner or group.

Video 3:

7) What Do I KNOW:

☒ ~~What is the title of the video?~~

☒ ~~Who is/are the speaker/s?~~

☒ ~~I will briefly summarize what I think that the message of the video is about in at least 5 complete sentences each.~~

Video Title: Faces of Resiliency: Planning for Future Flooding and Sea Level Rise

Speaker: Marshall Shepherd

This video is about dealing with sea level rise on the Georgia coast specifically. Different groups are working to mitigate the effects of climate change on the coast by elevating homes and rewarding communities for implementing safety measures. The video might also talk about what the effects are on coastal communities that don't have safety measures in place. Additionally, they could talk about ways to prevent sea level rises in the first place. This may include finding carbon emission alternatives.

8) What Did I LEARN?

☒ ~~I will write at least 3 math related pieces of information that I learned about from each video.~~

☒ ~~Statistic 1~~

- When it's raining, it raining at a higher intensity than it was 30 years ago. Engineering systems in cities and coastal regions aren't designed for this new generation of rainstorms.

☒ ~~Statistic 2~~

- In Hurricane Harvey, there was 50 inches of rain in over a week.

☒ ~~Statistic 3~~

- Scientific literature suggests that while we may not see more hurricanes, when we do see them they will be stronger.

9) What Do You Wonder?

☒ ~~I will write at least TWO questions that I have about the information presented.~~

Was Hurricane Milton a stronger hurricane than those in the past?

Did new infrastructure help prevent massive damage from Hurricane Milton?

Task Completion: Create a Google Slide to summarize your KEY TAKEAWAYS for the ENGAGE tasks.