

Lesson 2: Google Teachable Machines: Vacation without Trash!



About this product:

The following items are instructions for Google Teachable Machines implementation as well as a data collection page and questions for analyzing how the Teachable Machines work.

Who should use this: science teacher, computer teacher, arts teacher

These instructions and worksheet should only be used after the software: Google Teachable Machines has been taught. Further, there are two instructions, one is more detailed for students who need chunked learning while the other is abridged for learners comfortable with technology or who like a challenge.

What it contains:

There are 2 instructions pages, and a front and back activity guide that correlates to using Teachable Machines. These pages **MUST BE USED** with Teachable Machines from Google: [Google Teachable Machine](#)

The Key is provided on the last page for the activity entitled "Teachable Machines: Vacation without Trash!"

Instructions: Teachable Machines: Vacation without Trash!

Detailed, Step by Step Instructions

1. Type in Teachable Machines into Google Search.
2. Click on the second link “Teachable Machines”
3. Click on “Get Started”
4. Click on “Image Project”
5. Click on “Standard Image Model”
6. Rename “Class 1” -> “Waterways”
7. Rename “Class 2” -> “Trash-filled Waterways”
8. Click on “Upload” from under the Waterways Class
9. Click on “Import images from Google Drive”
10. Find the folder called “Waterway Training Data”
11. Upload all 20 photos from this folder into the Waterways Class
12. Click on “Upload” from under the Trash-filled Waterways Class
13. Click on “Import images from Google Drive”
14. Find the folder called “Trash Training Data”
15. Upload all 20 photos from this folder into the Trash-filled Waterways Class
16. Train the model. Make sure to not close out the tab while it trains.
17. Under the “Preview” click on the drop down menu, and choose File and not “Webcam”
18. Click on “Import images from Google Drive”
19. Click on the folder entitled “Nature Vacation Waterways”
20. Import 1 photo at a time 1– 8 and Answer the questions with the corresponding photo!

Instructions: Teachable Machines: Vacation without Trash!

Abridged Instructions

1. Type in Teachable Machines into Google Search.
2. Click on “Get Started”
3. Click on “Image Project”
4. Click on “Standard Image Model”
5. Upload images from from “Waterway Training Data” in Google drive to one class and “Trash Training Data” into the other class. Name classes accordingly.
6. Train the model. Make sure to not close out the tab while it trains.
7. Under the “Preview” panel, click “Import images from Google Drive”
8. Click on the folder entitled “Nature Vacation Waterways”
9. Import 1 photo at a time 1– 8, and Answer the questions/ fill-in with the corresponding photo!

Tips and Tricks for using Teachable Machines

1. Make sure you and the students watch the three videos called: **Gather**, **Train** and **Export** from Teachable Machines via **Google** (they are on the presentation slides 35 through 37)
2. Using the web app of Teachable Machines will take 30 to 45 minutes.
3. When you are training the classes, you must open the folder shared with you. You **CANNOT** upload the entire folder into google Teachable Machines.
4. Uploading is time consuming because this is an AI, and a user should only upload about 5 images at a time.
5. When the user has progressed to the “preview” panel, the user needs to start using the activity sheet entitled “Teachable Machines: Vacation without Trash!”



Name: _____

Teachable Machines: Vacation without Trash!

Directions Upload Images 1- 8 from the "Nature Vacation Waterways," and fill-in/ answer each question.

Image Vacation 1

Human Eye
Trash? Yes No
Description:

AI "eye" Waterway Trash
Percentage
Description:

Image Vacation 2

Human Eye
Trash? Yes No
Description:

AI "eye" Waterway Trash
Percentage
Description:

Image Vacation 3

Human Eye
Trash? Yes No
Description:

AI "eye" Waterway Trash
Percentage
Description:

Image Vacation 4

Human Eye
Trash? Yes No
Description:

AI "eye" Waterway Trash
Percentage
Description:

Image Vacation 5

Human Eye
Trash? Yes No
Description:

AI "eye" Waterway Trash
Percentage
Description:

Image Vacation 6

Human Eye
 Trash? Yes No
 Description:

AI "eye" Waterway Trash
 Percentage
 Description:

Image Vacation 7

Human Eye
 Trash? Yes No
 Description:

AI "eye" Waterway Trash
 Percentage
 Description:

Image Vacation 8

Human Eye
 Trash? Yes No
 Description:

AI "eye" Waterway Trash
 Percentage
 Description:

Questions

What was surprising about image 1?

In image 3, what might have skewed the data to not make it 100% either way?

In image 4 and 8, what might have skewed the data to not make it 100% either way?

What images were clearly 100%?

Why do you think the AI detected it 100%?

What kinds of biases did we create with this AI?

What are some ideas to make the AI more accurate?

Name: **KEY**

Teachable Machines: Vacation without Trash!

Directions Upload Images 1- 8 from the "Nature Vacation Waterways," and fill-in/ answer each question.

Image Vacation 1

Human Eye
Trash? Yes No
Description: water, grass, a couple
brown leaves.

AI "eye" Waterway Trash
Percentage
Discrepancy?: yes, the leaves

Image Vacation 2

Human Eye
Trash? Yes No
Description: grasses, a cup, a
bottle, no water

AI "eye" Waterway Trash
Percentage
Discrepancy?: no

Image Vacation 3

Human Eye
Trash? Yes No
Description: a small stream, 1 old
glass bottle, brown-filled image.

AI "eye" Waterway Trash
Percentage
Discrepancy?: mostly yes, the 1
bottle

Image Vacation 4

Human Eye
Trash? Yes No
Description: a bird in the water,
grass in the background, shallow
water

AI "eye" Waterway Trash
Percentage
Discrepancy?: mostly no, the bird

Image Vacation 5

Human Eye
Trash? Yes No
Description: grass, mud and water
in the background.

AI "eye" Waterway Trash
Percentage
Discrepancy?: yes, the GREEN
bottle

Image Vacation 6

Human Eye
 Trash? Yes No
 Description: grass with a couple of plastic, paper and glass bottles or cups

AI "eye"	Waterway	Trash
Percentage	0	100
Discrepancy?:	no	

Image Vacation 7

Human Eye
 Trash? Yes No
 Description: a beautiful scene with sky of waterways, grass and shrubs or trees

AI "eye"	Waterway	Trash
Percentage	100	0
Discrepancy?:	no	

Image Vacation 8

Human Eye
 Trash? Yes No
 Description: a crab in the mud with leaves. Close up photo with clear water and oyster shell

AI "eye"	Waterway	Trash
Percentage	26	74
Discrepancy?:	yes, the crab or the oyster shell is not recognized.	



Questions

What was surprising about image 1? **There was no trash, but the AI saw there was 68% trash.**

In image 3, what might have skewed the data to not make it 100% either way? **The bottle in the marsh was what skewed the data- maybe because of the color**

In image 4 and 8, what might have skewed the data to not make it 100% either way? **The presence of the animal did not mess up for the bird, but did mess up for the crab.**

What images were clearly 100%? **Images 2, 6 and 7**

Why do you think the AI detected it 100%? **Image 2 was a close up of trash, Image 6 was white colored trash, image 7 had only water, shrubs and mud. These images were not obscured, and most clearly matched the Training Data Sets.**

Accurate? **Add more images to trash classification, add more classifications ie animals, shrubs, leaves, manually analyze some of the data to be more specific**