

Student Guide to Galaxy Shapes

It wasn't until telescope design and the ability to capture photographic images had developed that astronomers came to the conclusion that galaxies exist outside our own Milky Way. Before that time, these fuzzy objects, or nebulae, were simply in a class of objects that were "not galaxies." With the improved magnification and resolution provided by telescopes of the early 1920's, the first thing astronomers noticed were patterns in the shape of these objects. Let's see what we can find out by observing galaxy images from the Sloan Digital Sky Survey. To do this, we are going to use the citizen science project tool called Galaxy Zoo Navigator.

Classifying Galaxies by Shape in Galaxy Zoo Navigator

You should already have a Galaxy Zoo account and directions from your instructor about how to use the Navigator tool. While you are classifying galaxies in Navigator, you have two important tasks:

- Record what you observe about the type of questions you are asked while classifying in the Navigator tool.
- Save at least twelve galaxies to your Favorites that you think are good examples of the variety of galaxy shapes you observed during your session. It will be easier if you choose galaxies from SDSS only.



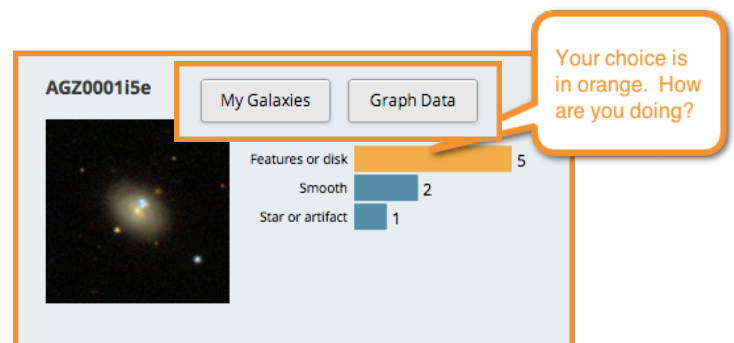
will



How Are You Doing?

After you have been classifying galaxies for a while, your instructor may want you to compare your classification choices to others.

- Return to your group page
- Click My Galaxies

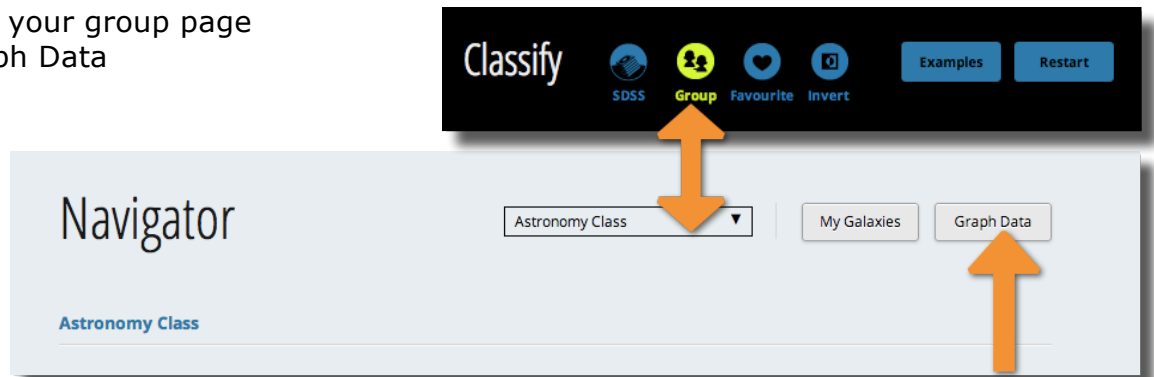


- The last 14 galaxies that you classified that also belong to the SDSS database are shown on this page along with a report of how many people who classified this same galaxy identified it as smooth or a galaxy with features.

Analyze Your Classifications (optional)

Your instructor will let you know when it is time to move on. The next step is to look at your classification data using the Navigator Graphing tool.

- Return to your group page
- Click Graph Data



- Construct a graph that shows the distribution of how bright the galaxy appears in the sky (apparent brightness) for smooth galaxies and galaxies with features. Remember that our measure of brightness (magnitude) runs backward. The smaller the number, the brighter the object.
- Compare your group's data to classifications made by all citizen scientists contributing to Galaxy Zoo. Make a new graph if necessary.

Organize Your Favourites

Return to your Favourites under the Profile link at the top of any Galaxy Zoo page. Hopefully, you have been able to save a variety of galaxy images. Your goal for this section is to create your own organization diagram for your collection. Sort and order them in anyway you like. You can do this by saving snapshots of each of your galaxies using a snipping tool or by printing a black and white (inverted) image of your galaxies and arranging them on a large piece of paper. A resource video is available if you get stuck. [Printing Inverted Images](#)

When you are finished, share your work with others in your group and explain your reasoning. When you are done with this step, continue this activity with an exploration of how astronomers in the past first organized their galaxy images in the activity, "The Tuning Fork."