



# Classifying the Universe

Learning to separate the structures of the Universe

Classroom Activity – Before visiting the Observatory

## Overview

**Age Range:** 10 – 13 years

**Prep. Time:** 30 minutes

**Lesson Time:** 35 minutes

**Cost per activity:** Cost of printing and optionally laminating the cards

**Includes the use of:** Printed cards

## Outline

In this activity, the students will learn different ways of roughly separating the features of observable structures in the universe and will gain the tools needed for identifying what kinds of objects they can observe through telescopes when visiting the observatory.

## Pupils will Learn:

- The basics behind structures of the universe
- Identifiable features of galaxies, nebulae and star clusters

## Lesson Plan:

Description	Time	Notes
Introduction to the subject	15 min	Use PDF <i>Classifying_powerpoint.pptx</i>
Activity	10 min	Use PDF <i>Classifying_gameprintout.pdf</i>
Assessment	10 min	

The online observatory collaboration consists of the following partners:

Baldone Observatory, Brorfelde Observatory, Cardiff University, Harestua Solar Observatory, Helsinki Observatory



## Introduction to the subject:

When looking for pre-determined objects in the night sky, it is very helpful if the students already have some basic knowledge of what the different structures of the universe can look like. When the students either come to the observatory and are equipped with telescopes or observe the night sky on their own using binoculars, it can be difficult for them to know whether they are observing the correct object, if they are unfamiliar with what it should look like. It is therefore useful to have some basic tools for differentiating between the observable structures of the universe, so that the students on their own are able to observe the correct objects in the sky.

## Activity:

- Print and laminate the cards using the PDF *Classifying\_gameprintout.pdf*.

Page 1-4 are the objects to be identified. The image will make up one side of the card and the square next to it will be the backside, needed for the students to know whether they have picked the right object. Thus, page 1-4 should each be cut into three sections and bend in half to create the picture-cards.

Page 5-6 are the word-cards that the students will draw in turn and each page should be cut into 6 sections.

Take special care of letting the students know, that the images on the cards have been chosen for their looks and are mostly perfect examples of the structures that can easily be recognized and classified. When they will later be observing on their own, it will most likely be a lot harder to discern some of the structures from each other.

1. Divide the students up in groups of two and assign each group a set of 12 picture-cards and the corresponding word-cards.
2. Have the students lay out all of the pictures-cards on a table with the pictures pointing upwards, so that the word on the back is pointing down towards the table and cannot be seen/read.
3. The students must then in turn draw a word-card and try to identify a picture-card with the corresponding object.
4. Once an object has been picked by a student, they can flip it upside down to see what kind of structure is pictured and whether the object they choose is correct for their word-card. If the match is correct, they can pick up the picture-card and this is then one point. If the match is incorrect, the picture-card is flipped back and the word-card is put at the bottom of the word-card pile.
5. This continues until all of the picture- and word-cards have been paired up. The winner is the student with the most points.



## Assessment:

Discuss which objects were hard to classify and whether any of them had some similar features that made the students mischoose the match between the word-card and the picture-card.

Can the students come up with other ways of identifying the structures based on the features of them?

## Further Activities:

This lesson can be combined with the Galaxy Classification-lesson for a more thorough way of identifying and classifying each type of galaxy.

## Background Material:

All of the images on the pictures-cards have been found from NASA's website, *nasa.gov*.