LIFT-THE-FLAP CLASSIFICATION CHART OF INVERTEBRATES

**Purpose of craft:**
To provide a resource the student can refer to in current and future studies of the classification of invertebrates.

**Target age group:**
9-16

**Time allowance:**
20-30 minutes  (If an adult pre-cuts the flaps for the students, it can be assembled in 5-10 minutes.)

**Materials you will need:**
Copies of the pattern pages printed onto heavy card stock paper, clear tape, a good quality glue stick or white glue (avoid washable glue sticks and "school glue" if at all possible), an X-Acto knife or razor blade, and a heavy weight of cardboard to lay under papers.

**Instructions:**
1. Copy the pattern pages onto heavy card stock paper.
   Note that one copy will need to be double-sided (unless you want to glue the cover on separately). The picture page with the sponges, cnidarians and annelids at the top needs to be on the reverse side. The picture page with the sponges, cnidarians and annelids at the top needs to be on the reverse of the cover, as shown in the picture.
   NOTE: You may want to emphasize the fact that "phylum" and "flap" both start with the F sound. It will make it easier to remember that the flaps represent phyla.
2. While you cut the flaps with the knife, place a good quality glue stick or white glue (avoid washable glue sticks and "school glue" if at all possible) onto the pattern pages printed onto heavy card stock paper.
3.** Time allowance:** 20-30 minutes  (If an adult pre-cuts the flaps for the students, it can be assembled in 5-10 minutes.)
I used this chart with students as young as 8 years old and had outstanding results. They didn't know this topic was supposed to be hard and they saw it basically as a game. Thus, they now have no fear of it. I used this chart with students as young as 8 years old and had outstanding results. They didn't know it was worth the time.

Longer period of time than if they just looked at a poster with no flaps.

The nice thing about this chart is that you can quiz the students about what is under each flap. The mental act of trying to remember what is under those flaps will help them retain the information for a longer period of time than if they just looked at a poster with no flaps.

For my classroom, I made a large version of this chart using 4 sheets of posterboard. I could point to things so that you will have a durable seam that will bear being opened and closed many times.

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5) Use a strip of clear packing tape across both the inside and outside of the seam. Put tape on both sides so that you will have a durable seam that will bear being opened and closed many times.

2) Place the flap pages onto a piece of cardboard and cut the sides and bottoms of the flaps using the X-Acto knife or razor blade. Then open the flaps just a little, so that there is a very slight crease at the top of them, making it easy for the students to see where the flap is when viewed from the back side. This will help with step 3.

3) If you are using a glue stick, put a very generous amount of glue stick onto the backs of the flap pages. This will make my large version but I felt it was worth the time. It took me about an hour to make my large version but I felt it was worth the time. (This is especially true for younger students.)

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ARThROPOD:s

Arth: Latin for “joint”
Pod: Latin for “foot”

ECHiNODERM:s
Echino: Greek for “spiny”
Derma: Greek for “skin”

MOLLUSKS
Mollis: Latin for “soft”

BRACHiOPODs

BRYOZOANs
PORIFERA
sponges
“full of pores”

CNIDARIANS
*Cnide*: Latin for “nettle”
(a type of plant that gives a sting)
(also called *Coelenterates*,
meaning “hollow bodies”)

ROTIFERS
*Rota*: Latin for “wheel”

ANNELIDS
segmented worms
*Anellus*: Latin for “little ring”

TARDIGRADES
“water bears”
*Tardi*: Latin for “slow”

CTENOPHORES

NEMERTEA

NEMATODES
roundworms
*Nema*: Greek for “thread”

PLATYHELMINThES
flatworms
Platys: Greek for “flat”

HEMICHORDATA

CHAETOGNATHA

NEMATOMORPHA

SIPUNCULA

These small boxes are what is known as “minor phyla.” These animals don’t fit into any of the larger phyla. It might seem wasteful to have a whole phyla just for one kind of organism, but that’s the way it is.

This is not a complete list of minor phyla--there are lots more!
Insects:
- lepidoptera
- orthoptera
- hymenoptera
- coleoptera
- diptera
- odonata
- hemiptera
- siphonaptera

Crustaceans:
- lobsters
- crabs
- shrimp
- copepods

Cephalopods:
- nautilus
- squid

Gastropods:
- snails
- slugs
- limpets, whelks and others

Pelecypods:
- scallops
- razor clams
- oysters
- clams

Sea lilies, sand dollars, sea cucumbers, sea urchins, sea stars, brittle stars

Cephalopods:
- octopus

Gastropods:
- squids

Pelecypods:
- clams

Lamp shells
Bryozoa
tube sponges, barrel sponges, glass sponges, and others

rotifers

"water bears"

ribbon worms

JELLIES

ANEMONES

and CORALS

JELLIES

BOX

JELLIES

HYDRAS

COMB JELLIES

horsehair worms

arrow worms

acorn worms

peanut worms

POLYCHAETES

marine annelids

OLIGOCHAETES

earthworms

lumbriculus

HIRUDINEA

leeches

vinegar eels

hookworms, trichinella, pinworms, guinea worms

FREE-LIVING

PARASITES

planaria

marine flatworms

flukes

tapeworms
INVERTEBRATES