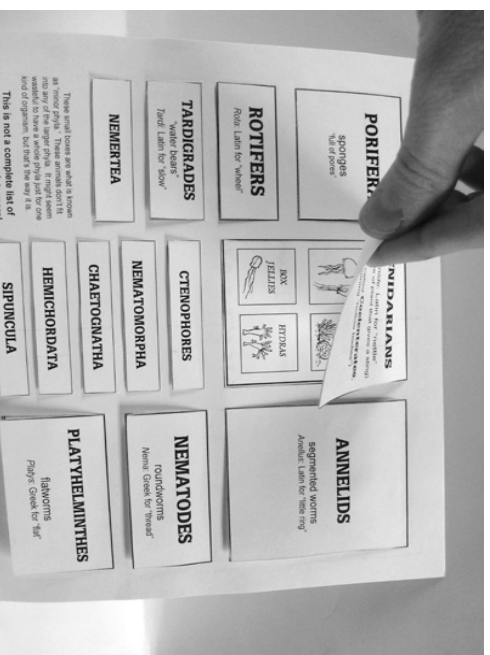


# LIFT-THE-FLAP CLASSIFICATION CHART OF INVERTEBRATES



**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.

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

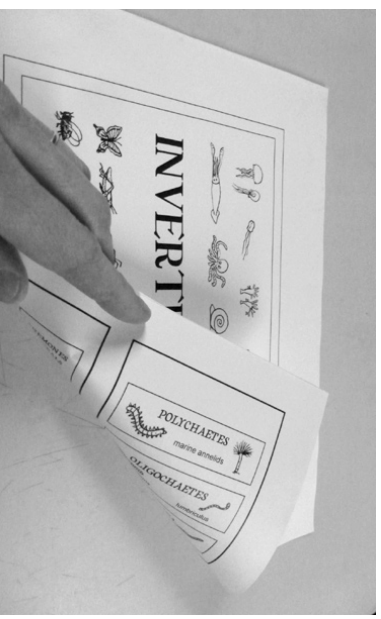
**Target age group:** 9-16

**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), scissors, an X-Acto knife or razor blade, and a heavy piece of cardboard to lay under papers while you cut the flaps with the knife

## 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 of the cover, as shown in the picture.



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, being very careful not to get glue on the backs of the flaps themselves. You only want the glue on the in-between strips. If you are using white glue, you may want to provide the students with a small paintbrush with which to apply the glue, to avoid getting too much glue dripping all over the flaps. White glue is very strong and kids usually use way too much of it. (My guideline is always that if you see glue oozing out from the cracks, you've put on too much. No oozing!) Note: white glue might be trickier to work with on this particular project because it may become too dry too fast.

After laying the flap page down onto the appropriate picture page, press very firmly along all edges and middle strips between flaps. Press and rub until you are sure the papers are firmly attached. Also, pry each flap up just a bit (not all the way) just to make sure that they are not permanently bonded to the picture page.

4) Once the flap pages are glued, you only need to attach the top to the bottom. Lay the pages on the table and be meticulous about making sure the seam edges will match up exactly. Use a small piece of tape at each side to hold the pages in place. This will make it much easier to get the seam straight when you apply the wide tape.

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.

#### NOTES:

For my classroom, I made a large version of this chart using 4 sheets posterboard. I could point to things on a central chart that all the students could see from anywhere in the room. In a classroom setting, it can be difficult to make sure that every student is looking at what you are talking about if they are looking only at their own individual copies. (This is especially true for younger students.) It took me about an hour to make my large version but I felt it was worth the time.

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.

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 taxonomy.



# **ECHINODERMS**

*Echino:* Greek for “spiny”

*Derma:* Greek for “skin”

# **MOLLUSKS**

*Mollis:* Latin for “soft”

# **ARTHROPODS**

*Arthro:* Latin for “joint”

*Pod:* Latin for “foot”

**BRACHIOPODS**

**BRYOZOANS**

## **PORIFERA**

sponges  
“full of pores”

## **ROTIFERS**

*Rota*: Latin for “wheel”

## **TARDIGRADES**

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

## **NEMERTEA**

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!**

## **CNIDARIANS**

*Cnide*: Latin for “nettle”  
(a type of plant that gives a sting)

(also called **Coelenterates**,  
meaning “hollow bodies”)

## **CTENOPHORES**

## **NEMATOMORPHA**

## **CHAETOGNATHA**

## **HEMICHORDATA**

## **SIPUNCULA**

## **ANNELIDS**

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

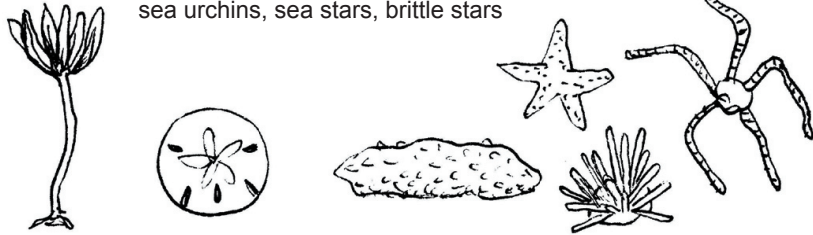
## **NEMATODES**

roundworms  
*Nema*: Greek for “thread”

## **PLATYHELMINTHES**

flatworms  
*Platys*: Greek for “flat”

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



## INSECTS



lepidoptera



orthoptera



hymenoptera



coleoptera



diptera



odonata



hemiptera



siphonaptera

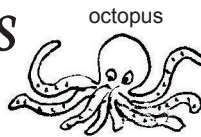
## CEPHALOPODS



nautilus



squid



octopus



snails



slugs



limpets, whelks and others



## GASTROPODS



scallops



razor clams



oysters

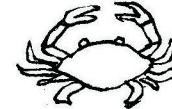


clams

## PELECYPODS



lobsters



crabs



shrimp



copepods



branchiopods

## CRUSTACEANS



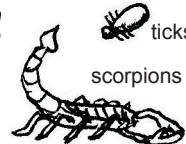
harvestmen



spiders



## ARACHNIDS



scorpions



ticks

## CENTIPEDES



## MILLIPEDES



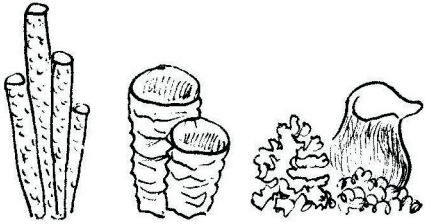
lamp shells



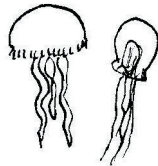
bryozoans



tube sponges, barrel sponges,  
glass sponges, and others



JELLIES



ANEMONES  
and CORALS



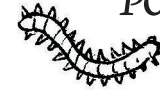
BOX  
JELLIES



HYDRAS



POLYCHAETES



marine annelids



OLIGOCHAETES



earthworms



lumbriculus

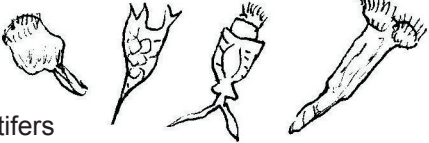
HIRUDINEA



leeches



rotifers



"water bears"



COMB JELLIES



horsehair worms



vinegar eels



hookworms, trichinella,  
pinworms, guinea worms

ribbon  
worms



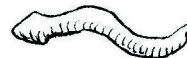
arrow worms



acorn worms



peanut worms



FREE-LIVING



planaria

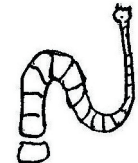


marine flatworms

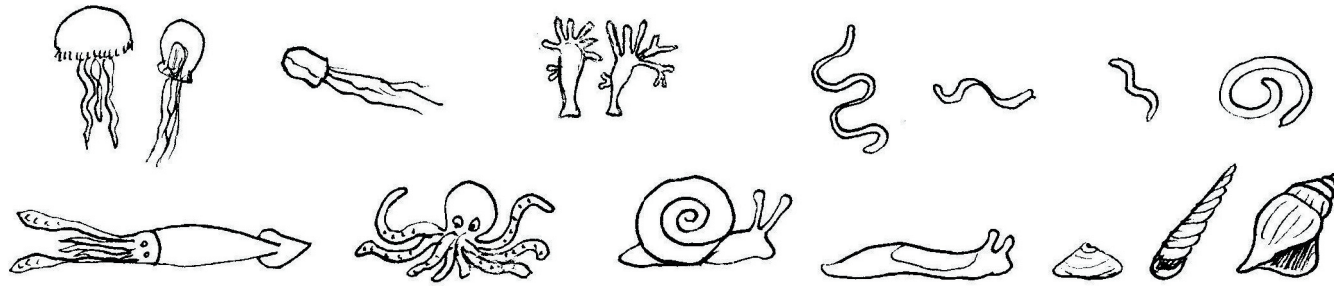
PARASITES



flukes



tapeworms



# INVERTEBRATES

