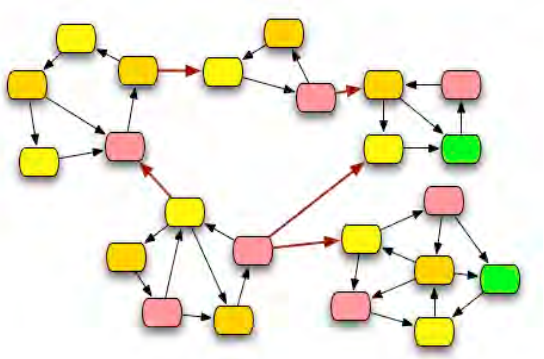
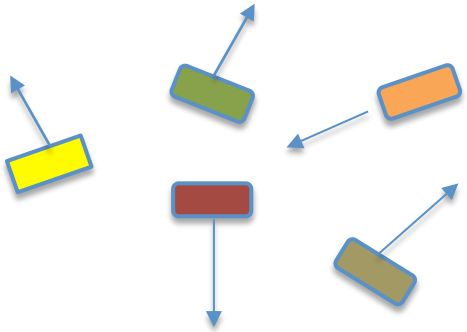
Anchoring phenomena

def: A puzzling event or process whose full explanation requires a wide range of science ideas to be coordinated with one another and with evidence.

What's going on here?



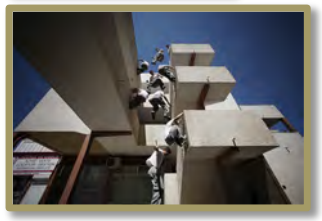
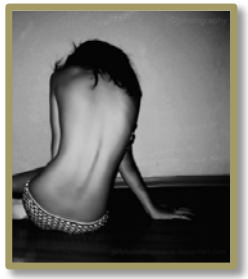


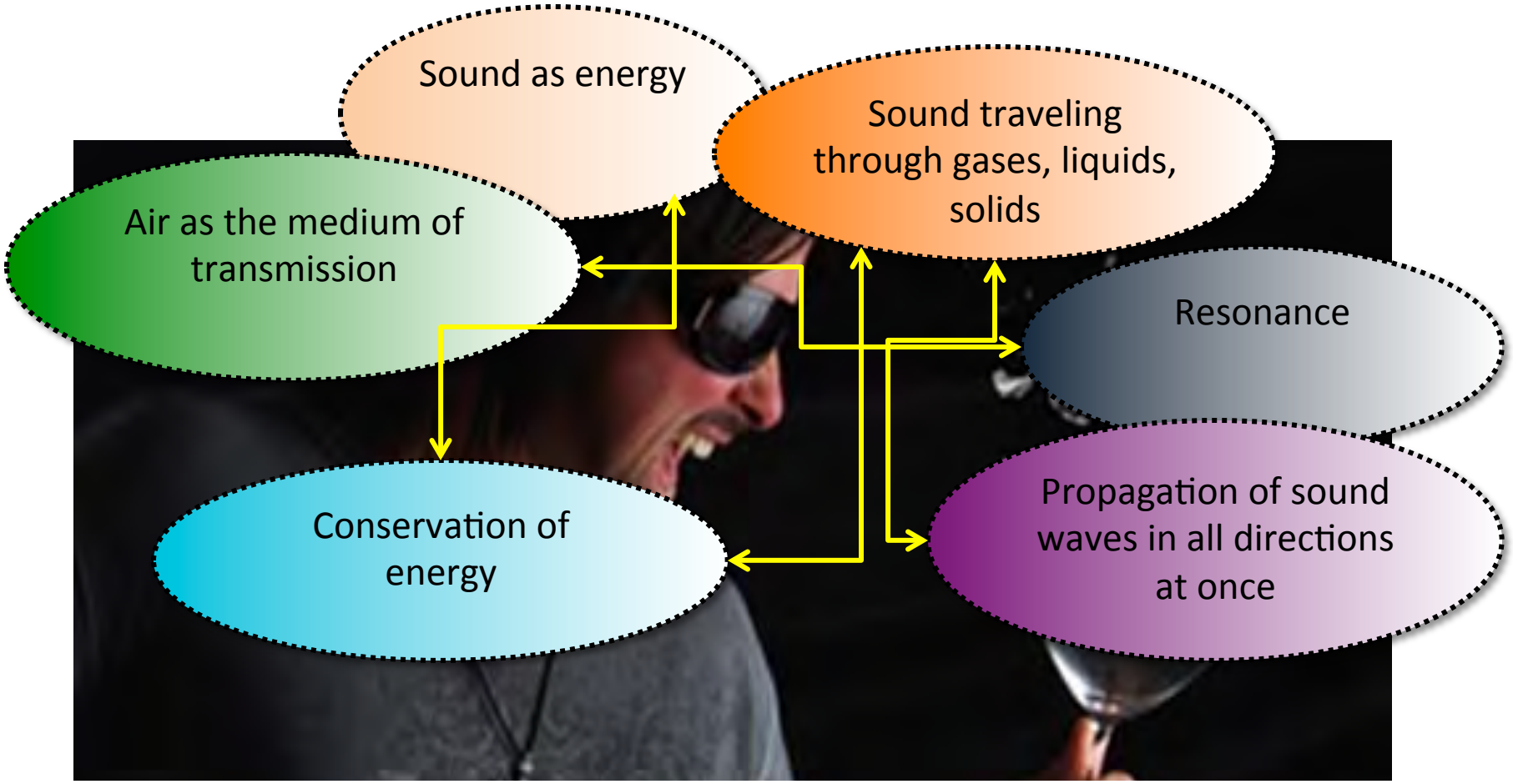
Teachers who ***focused on big ideas*** in the classroom	Teachers who did ***not*** focus on big ideas
• taught conceptual ideas that related inferences with observations and evidence	• tended to teach factual information that did not seem to "hang together" for their students
• could explain what it meant for their students to understand these big ideas	• had difficulty explaining what it meant for their students to understand the ideas in the curriculum
• routinely made changes to their curricula to address student thinking and focus on the Big Idea	• followed the curricula they were given without making any adaptations to it
• taught fewer ideas but in greater depth and connectedness	• ended up teaching far too many ideas in each class period.

Why should we care about anchoring our units in big ideas and events?

Samples of successful anchoring phenomena

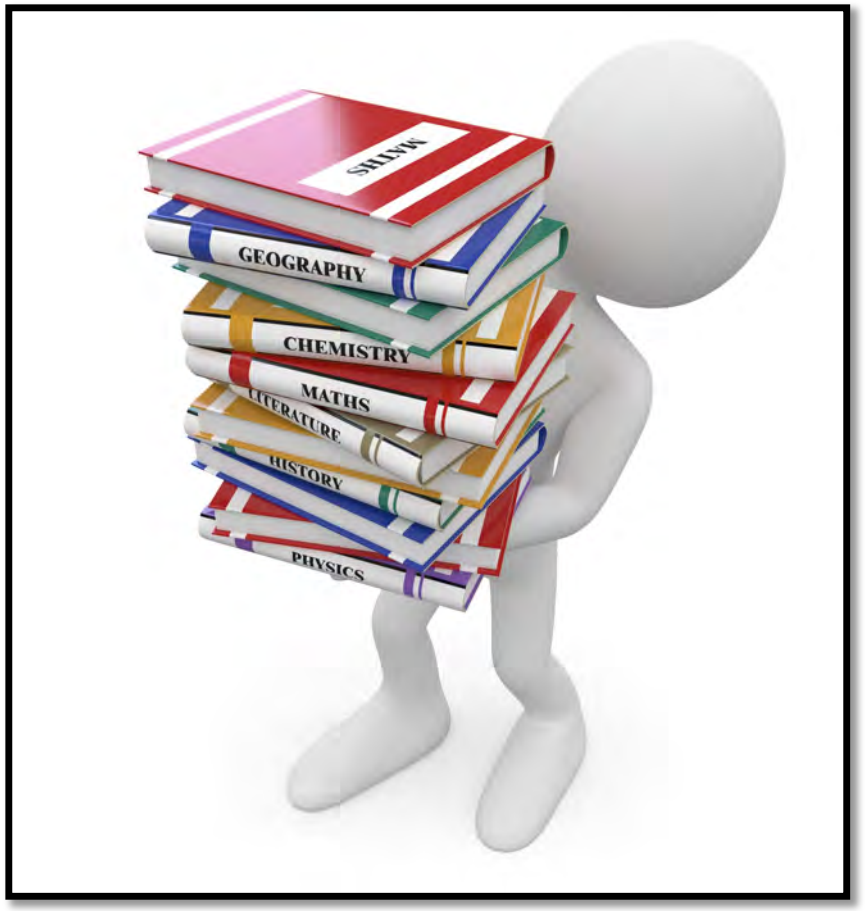
- Newton's Laws: Skateboarder who can't decide to jump off before she hits wall
- Friction and inertia: Guy doing parkour, back-flip off a wall.
- Systems in the body: the cases of the ultra-marathoner and the bulimic women
- Solar system: Why does Pluto have an erratic orbit?
- Sound: Boy is blind, but navigates by echo-location



Remember what science ideas were "pulled together" by our 3rd graders?

Look first at your standards and your curriculum

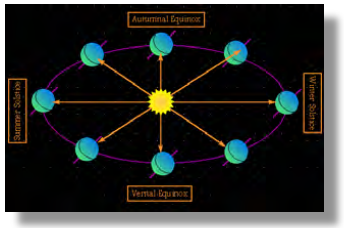


How to find or create and anchoring phenomena—6 helpful hints

1) Kids have to find them comprehensible and perhaps related to their lived experiences. They'll let you know if it's lame

Option A.
Draw upon their everyday experiences or their family's experiences--who they are, what they do

Family members around the world, how do they experience the seasons?



How does the Ramen noodle mix my family uses every day get dissolved in hot water? Are the noodles dissolving?

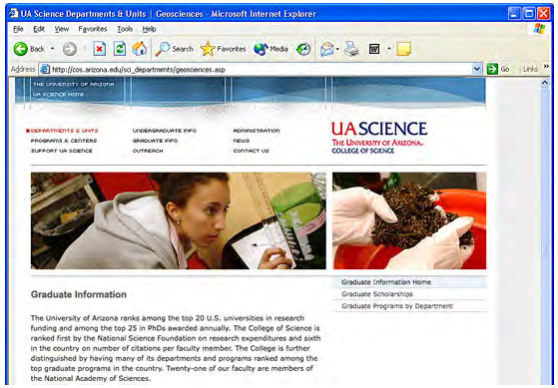
How can I have my grandfather's nose, when my father didn't really have that trait?

Option B.
Draws upon what they are interested in with everyday life

Food
Clothes
Social activities
Pets
Work
Arts
Sports
Technology
Social activity
"Why is asthma so prevalent in the Central District?"

Comparison between anorexic young girl and ultra-marathoner girl – why do they show similar symptoms of distress?

Should the girl jump off the skateboard? What will happen in terms of forces?

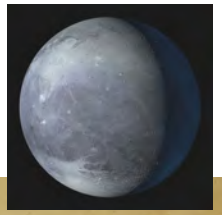


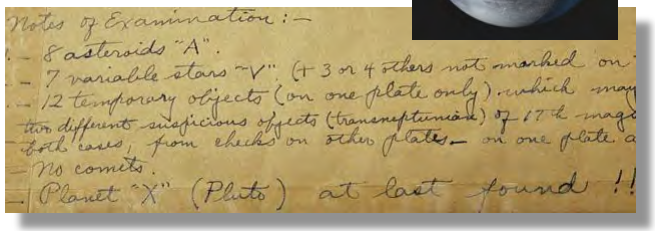
Option C. Phenomena in the media

Why was the boy who drowned able to come back to life?

Why are the Orcas in Puget Sound declining?

Why does Pluto have such a crazy orbit?





6 helpful hints, continued

2) Phenomenon should be complex to explain (it's "rich" in science content)

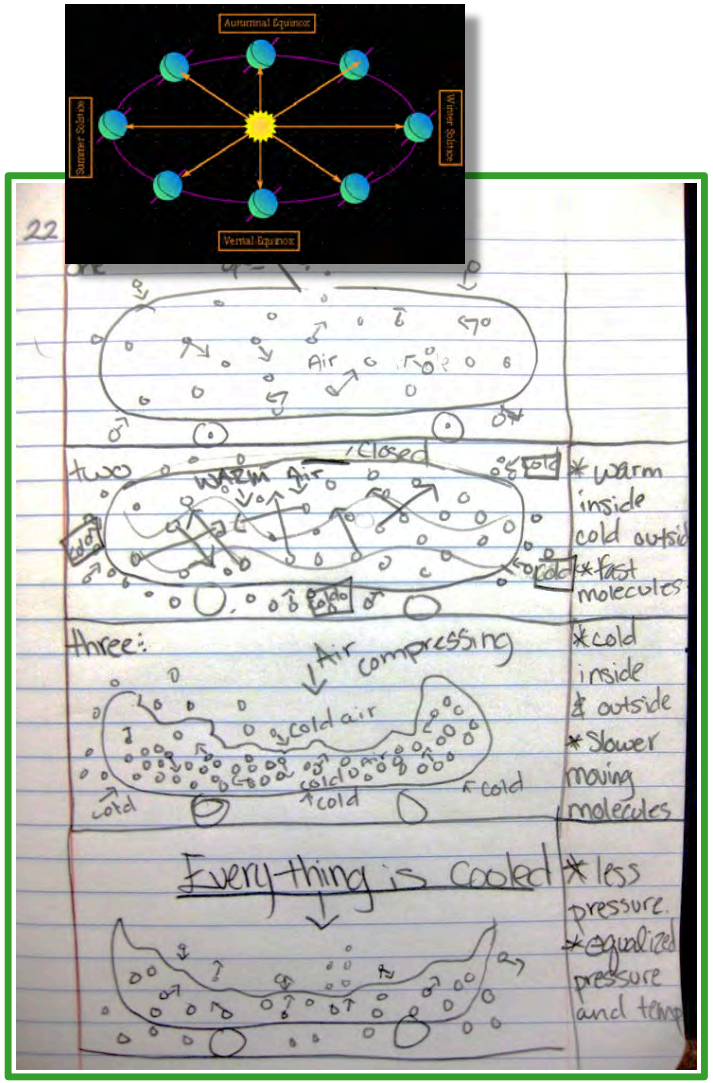
3) The phenomena is observable--it can be an event, or a process

4) The best puzzling phenomena have been "cases" of a specific event in a specific context

6 helpful hints, continued

5) The questions you pose about the phenomena are important (not “What causes the seasons?” but “Why don’t we have seasons near the equator?”)

6) Have student model the anchoring phenomenon from a before-during-after scenario



Pick one: Consider what an anchoring phenomena could be

- Homeostasis
- Newton's Laws
- The Gas Laws
- The seasons

1) Kids have to find them comprehensible

2) It's complex to explain (it's "rich" in science content)

3) The phenomena is observable--it can be an event, or a process

4)The best puzzling phenomena have been "cases" of a specific event in a specific context

5) The questions you pose about the phenomena are important (not "What causes the seasons?" but "Why don't we have seasons near the equator?")

6) Investigate your anchoring phenomenon from a before-during-after viewpoint