

Crosscutting Concepts Practiced at YMCA Point Bonita

September 15, 2015

Patterns	Structure & Function	Stability & Change	Systems and Models
<ul style="list-style-type: none"> ● Emotional Responses ● Sand Crabs ● Plant Observations ● Tidal Patterns/zones ● Battery and Landscape Interface ● Constellations ● Waves Tag ● Moon Phases ● Sand/Beach Art ● Rock Patterns ● Geology Identification ● Water Availability ● Seasonal Cycles ● Climate Changes throughout the day (fog vs clear) 	<ul style="list-style-type: none"> ● Create-a-critter ● Pond ● MMC ● Animal Adaptations ● Tide pools ● Coyote/deer skull ● Human Ladder ● Camouflage ● Adaptations ● Predator/Prey Game ● Fort Barry ● Military Batteries 	<ul style="list-style-type: none"> ● Global Climate Change ● Stewardship ● Dam/Watershed building ● Cultural History ● Military Batteries ● Erosion @ Lighthouse ● Suspension Bridge ● Geology ● Predator/Prey game ● Bioaccumulation game 	<ul style="list-style-type: none"> ● Oreology ● Build a Watershed ● Water cycle Dance ● Incredible Journey ● Watershed paper ● Park Partners ● Team Building ● Turkey Vulture Tag ● Check System ● Hoppers @ dinner ● Garden Decomposers
Energy & Matter	Scale, Proportion & Quantity	Cause & Effect	
<ul style="list-style-type: none"> ● Lunch energy discussion ● Decomposer Tag ● Garbology ● Water Cycle Boogie ● Compost ● Fairy/Gnome homes 	<ul style="list-style-type: none"> ● Ocean Pollution ● Coastal Cleanup ● Whale/Marine Mammals ● Pond Study ● Hill 88 ● Watersheds ● Bioaccumulation Tag ● Sand Crabs ● Sherlock Observation 	<ul style="list-style-type: none"> ● Sharks and Minnows ● Team Building Games ● Erosion ● Rock Cycle Game ● Turkey Vulture Tag ● Energy Cycle ● Wave Tag ● Ice Plant ● Adaptations 	

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Crosscutting concepts have value because they provide students with connections and intellectual tools that are related across the differing areas of disciplinary content and can enrich their application of practices and their understanding of core ideas. — Framework p. 233

The Point Bonita YMCA incorporates Next Generation Science Standards into our science lessons and curriculum. Above is a short list of games, activities, and lessons that we use to direct students to use cross-cutting concepts in their understanding of science. Cross-cutting concepts are common applications that unify the themes of science and engineering. Through the discovery and use of these seven cross-cutting concepts, our students make connections and deepen their knowledge about the natural world.

1. **Patterns:** Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them.
2. **Cause and effect:** Mechanism and explanation. Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts.
3. **Scale, proportion, and quantity:** In considering phenomena, it is critical to recognize what is relevant at different measures of size, time, and energy and to recognize how changes in scale, proportion, or quantity affect a system's structure or performance.
4. **Systems and system models:** Defining the system under study—specifying its boundaries and making explicit a model of that system—provides tools for understanding and testing ideas that are applicable throughout science and engineering.
5. **Energy and matter:** Flows, cycles, and conservation. Tracking fluxes of energy and matter into, out of, and within systems helps one understand the systems' possibilities and limitations.
6. **Structure and function:** The way in which an object or living thing is shaped and its substructure determine many of its properties and functions.
7. **Stability and change:** For natural and built systems alike, conditions of stability and determinants of rates of change or evolution of a system are critical elements of study.