

## PBL Summer 2011

UV Bead Activity - Experimental Design

June 13, 2011

**Students used a variety of materials to conduct a short experiment using UV beads:**

- Cloth (UV shirt material, white with black dots, black with white dots)
- Corrugated cardboard
- Sunscreen (oil, spray or lotion) SPF 10, 30, 50 and 100+
- Sunglasses (gray lens, amber lens, clip on, child and adult varieties)

**Connections to content areas:**

- Literacy: description, vocabulary, questions, statements, conclusions, persuasive writing, controversy, written responses, lab notes, read and compare claims
- Science: scientific process; evaluation; UVA vs. UVB; UV rays
- Math: timing events (before exposure, during, after, reaction time, etc.); graphing; numerical; color gradient chart
- Critical thinking
- Technology: sunblock technology; scientific design; effective shielding
- Chemistry: calibration scale; coloration; UV chemistry/technology; what is it impregnated with to change colors with UV exposure?; various organic molecules differences; bonding setups; common structures among ingredients
- ICP: levels of heat; pH levels

**Extensions:**

Name brand vs. generic sunscreens (economics)

Wash previously coated beads with water, soap/water (various soaps)

Submerge coated beads in water to see how long “waterproof” lasts?

Is there a difference in protection between colors of sunglass lens? Is there a difference between child and adult lens?

Is there a difference in sunscreens for “natural”, waterproof, etc.?