Strand: Scientific Investigation and Force, Motion, and Energy

Standards: K.1, K.3, 1.1, 1.2, 2.1, 2.2, 3.1, 3.2

Form of Assessment: Teacher observation of project-based activities, benchmarks, teacher feedback

Teaching Method: Inquiry-Based

Vertical team objectives: Meet beforehand to prepare and reflect on results/effectiveness after.

Timeframe: 5 weeks

Kindergarten

Key Science Concepts: Scientific reasoning and investigation, magnetism
Best learning activities: Week 1 – Sorting and sequencing on a single characteristic: sorting fruit loops by color, sequencing puzzles, sorting buttons by shape Week 2 – Continued sorting, plus describing physical attributes: sorting pattern blocks, mystery bag (feel items, use describing words to explain to class) Week 3 – Introduce experiments, focusing on observations: mixing finger paint colors, learn about the job of a scientist, learn scientist song Week 4 – Experiments and experiments with magnets: magnet hunt (walk around room with magnets to find magnetic/nonmagnetic items), magnetic races, "floating" magnets Week 5 – Magnet uses and experiment wrap up – magnets in everyday items, soda explosion experiment
Cross Curricular SOL and how curriculum is integrated: Size Comparisons: Sci K.1c – Math K.11b; Sort by Attributes: Sci K.1a, d – Math K.15; Predicting an Unseen Idea in a Sequence: Sci K.1f – Math K.16; Graphing: Sci K.1i – Math K.14; Gathering Data: Sci K.1h – Math K.13, K.14 Measurement: Sci K.1e – Math K.8, K.10; Descriptions: Sci K.1a, c, d, k, K.4, Eng K.2 a, b, c, d, e, SS K.3; Develop Questions: Sci K.1g, Eng K.2g; Recording: Sci K.1h, Eng K.11
Resources: fruit loops, sequencing puzzles, various buttons, finger paints, cardstock, magnets, paperclips, soda, m&ms, mentos Scientific Method Song: http://player.discoveryeducation.com/index.cfm?guidAssetId=147bdb47-3f83-492a-9654-55fc2d7acdee

First Grade

Key Science Concepts: Scientific reasoning and investigation, magnetism, force and motion
Best learning activities:
Cross Curricular SOL and how curriculum is integrated:
Resources:

Second Grade

Key Science Concepts: Scientific reasoning and investigation, magnetism, and force and motion
Best learning activities: Water Balloon Launch Experiment, Air as a Force Experiment, 5 weeks- Week 1-What is science? Exploring the Scientific Process through three experiments. -strong paper structures, play-doh boats, and tallest playing card and popsicle stick towers Week 2-Scientific Investigation with Motion: Conduct an experiment with a water balloon launcher. Making predictions and observations. Also measuring distance, mass, and angles. Week 3- Scientific investigation with motion-Hair dryer and ping pong balls Week 4- Scientific investigation with magnets-Strongest magnets Week 5-Scientific investigation with magnets-Magnetic fishing
Cross Curricular SOL: **Math:** Length- 2.11a Weight/Mass- 2.11b, Angles- 3.15 **Social Studies**- China 2.5 **Language Arts-** 2.2b Explaining ideas orally, 2.5b Using sentence structure for recording data and observations.
Resources: Water balloon launchers, hair dryer, ping pong balls, necessary work pages for recording of predictions/outcomes Magnetism leveled readers (to be added later)

Third Grade

Key Science Concepts: Scientific reasoning and investigation, simple machines

Students will use scientific investigation to understand simple machines. Key concepts from grades K-12 will be incorporated into the investigation of simple machines. Cross curricular activities will reinforce concepts

Best learning activities:

Week 1

Introduction to simple machines and related vocabulary

Scientific investigation of force and motion

- Water Balloon Launch with second grade

Week 2

Scientific investigation of inclined planes and wheels and axles

- Students will make and race cars

Week 3

Scientific investigation of wedges

- Students will make and fly paper airplanes to better understand wedges

Week 4

Scientific Investigation of wedges and pulleys

- Students will make their own levers and pulleys (magnets will be available to add to pulleys0, and then investigate their uses

Week 5

Culminating Activities

- simple machine sort
- internet research of a simple machine
- Students will share simple machine projects that were completed at home

Cross Curricular SOL and how curriculum is integrated:

English

Each week students will reinforce concepts with leveled reading activities (3.4, 3.6), research and writing (3.10), oral presentations (3.1).

Math

measurement (3.10), Application of data (3.17)

History

architecture in ancient civilizations (3.1, 3.2)

Resources

website **www.edheads.org**

AIMS activities and related materials

Simple Machine related leveled readers (to be added later)