Interdiciplinary Unit
Second Grade Unit 2

Concept: INVESTIGATION

Essential Question:
What are the best questions to ask in order to get the most accurate information?

Deepening Question:
How can you collect, organize, and display data?
What skills do scientists use to learn about the world?
How does studying the past make it possible for us to understand American history?
What are the best kinds of questions to ask when I want to know more about what I am reading?

Hook: *Yellow Red and Blue c. 1925* by Wassily Kandinsky
Possible Activities:

1. Asking questions about a painting
2. Learning about Kandinsky-class biography project
3. Graphing and using data about paintings (colors, shapes, lines)
4. Measuring features in the paintings
5. Kadinsky inspirations: http://campuses.fortbendisd.com/campuses/documents/Teacher/2012%5Cteacher_20120516_0846.pdf

Section 1: Measurement and Investigating Data
Deepening Questions: How can you collect, organize, and display data?

TPT Unit on measuring $9.50: http://www.teacherspayteachers.com/Product/Common-Core-Measurement-and-Line-Plot-Unit-2nd-Grade-454714

- Measuring length
    - Inch, foot, yard
    - Centimeters, meters
- Measuring one item, different units of measure
- Estimate length
- Relate addition and subtraction to length
        - Length word problems (attachment)
    - Number Line Addition and Subtraction
        - Worksheets (attachments)

Additional resources:
http://www.mathsisfun.com/links/core-grade-2.html
http://www.k-5mathteachingresources.com/2nd-grade-measurement-and-data.html

- Identifying and Creating graphs
    - Line graph
    - Pictograph
    - Bar Graph
        - Create a bar graph: http://www.toytheater.com/fruit-fall.php

    - Tally Chart
        - Online tally graph activity- http://www.topmarks.co.uk/Flash.aspx?b=maths/interpretingdata
    - Line Plot
        - How long are our pencils? http://www.theteacherstudio.com/2013/04/line-plots-in-action.html
- Different ways to represent the same data
        - Create both a tally chart and line plot about a real world situation: http://www.learnalberta.ca/content/me3us/flash/lessonLauncher.html?lesson=lessons/15/m3_15_00_x.swf

Additional resources:
Graphing activities: http://mssmiths2ndgradeclassroom.weebly.com/data-measurement-graphing.html

Section 2: Scientific Method
Deepening Question: What skills do scientists use to learn about the world?

- Use Closer Look TE pages 2-16 (before unit A)
- What do scientists do?
    - Make a Model
        - Activity on A Closer Look page 3: How can a frog float on a lily pad?
    - Observe
        - Investigating fingerprints (attachment)
    - Compare
    - Classify
        - Sink or Float? (attachment)
- How do scientists work?
        - Read *An Egg is Quiet* by Dianna Hutts Aston and print picture (true to size) of different types of animal eggs.
        - Students will measure the eggs, record the data, order eggs in different ways and then infer what egg belongs to what animal.
        - Reading a-z also has a book called *Whose Eggs Are These?*
    - Measure
    - Record data
    - Put things in order
    - Infer
- Steps in the Scientific Method
        - Create comic strip about scientific method
    - Observe
    - Ask a Question (Hypothesis)
    - Make a Prediction
    - Make a Plan (Procedure)
    - Follow the Plan
    - Record the Results
        - **Review data collection and graphing from previous section
    - Draw Conclusions
- Conduct simple experiments using scientific method

        - M and M science: http://www.scienceteacherprogram.org/genscience/AMeyer05.html
        - Skittles science: http://thesciencepenguin.com/2013/09/skittles-experiment.html
    - ***NOTE: Section 1 on data and section 2 can be blended together so that students see real world application of data collection and graphing.
        - Penny Cleaning Experiment: http://dollarstoremom.com/2012/02/penny-experiment-for-kids/
        - Activities to teach scientific methods: http://everydaylife.globalpost.com/activities-teach-scientific-method-2nd-grade-30166.html
    - Practice with graphing
        - Winter graphing activities (attachment)
        - Winter line graph and bar graph center (attachment)
        - Graphing favorite lunch (attachment)
- Informative Writing: Writing Instructions

Section 3: Stories of Our Past
Deepening Questions:
How does studying the past make it possible for us to understand American history?

- Past, Present, Future
        - MMH Treasures Unit 3, Week 5: *Stirring Up Memories* by Pam Munoz Ryan
    - Review community change (from unit 1)
    - Brainstorm ways things have changed and will change such as transportation, school, retail/stores, houses, etc. Create a visual comic strip.
        - Past, Present, Future Powerpoint (attachment)
        - Artifacts Past, Present, Future sort (attachment)
- Sequence of Events
    - Invention of the future-take an item such as the iron, tell how it's changed over time
- Personal Narrative
    - Each student will write a personal narrative (after creating a timeline) that includes past, present and possible future.
- Review Early America
        - Coming to America (like a true/false) activity)
- Colonies and Settlers
        - Pilgrim Village Online Reader: http://teacher.scholastic.com/commclub/pilgrim_village_activity2/
        - Life in the Thirteen Colonies: http://www.socialstudiesforkids.com/articles/ushistory/13colonieslife.htm
        - Making Butter: Colonial Resources (attachment)
- American Independence
    - Timeline of Early America up to First President
    - Declaration of Independence
    - Constitution
    - Famous Leaders: Thomas Jefferson, George Washington
        - George Washington Timeline (attachment)
- American Heritage

    - Symbols of our country
        - Constitution
        - Pledge of Allegiance
        - Symbols: Bald Eagle, Flag
        - Landmarks: Statue of Liberty
        - Monuments and memorials
- Stories of the Past
        - Biographies-Portraits from American History TPT resource ($9.50): http://www.teacherspayteachers.com/Product/Biographies-Portraits-from-American-History-1036432
        - Abraham Lincoln Biography (attachment)
- Famous American
        - Fact or Opinion worksheet (attachment)
    - Learn about several different Americans
        - HMH Journeys Lesson 14: *Hellen Keller* by Jane Sutcliffe
        - MMH Treasures Unit 2, Week 4: *African American Inventors* by Jim Haskins
        - TPT Famous Americans Pack ($33.00) http://www.teacherspayteachers.com/Product/Famous-American-Bundle-Pack-PowerPoint-Printables-Virginia-2nd-Grade-1543284
        - Historical Heroes (multiple attachments)
    - Writing a Biography: Select American Hero

Section 4: Asking Questions
Deepening Questions:
What are the best kinds of questions to ask when I want to know more about what I am reading?

Hook: Chris Van Allsburg http://msalleysclass.blogspot.com/2012/02/asking-questions-and-van-allsburg.html

- Questions for Comprehension
    - Who, What, Where, When, Why and How
        - Question Words: http://secondgradediscoveries.blogspot.com/2012/10/question-words.html
    - Thick and thin questions
- Strategies for Questioning
    - Before, During and After
        - *This is Not My Hat* by Jon Kless: http://luckeyfrogslilypad.blogspot.com/2013/10/the-perfect-book-to-teach-asking.html
    - QAR (Question Answer Relationship) (QAR packet-attachment): http://www.readingrockets.org/strategies/question_answer_relationship
    - QUaD Strategy (Question-Answer-Detail): citing evidence
- Learning about a character through questioning
        - HMH Journeys Lesson 17: *Luke Goes to Bat* by Rachel Isadora and *Jackie Robinson* by

Common Core Standards

ELA Standards

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| RL.2.1 | Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. |
| RL.2.7 | Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot. |
| RI.2.1 | Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. |
| RI.2.3 | Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text. |
| RI.2.6 | Identify the main purpose of a text, including what the author wants to answer, explain, or describe. |
| RI.2.9 | Compare and contrast the most important points presented by two texts on the same topic. |
| RI.2.10 | By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2-3 text complexity band proficiently, with scaffolding as needed at the high end of the range. |
| W.2.3 | Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure. |
| W.2.7 | Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). |
| W.2.8 | Recall information from experiences or gather information from provided sources to answer a question. |

Math Standards

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| 2.MD.1 | Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. |
| 2.MD.2 | Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chose. |
| 2.MD.3 | Estimate lengths using units of inches, feet, centimeters, and meters. |
| 2.MD.4 | Measure to determine how much longer one object is than another, expressing the length different in terms of standard length units. |
| 2.MD.5 | Use addition and subtraction within 100 to solve word problems involving lengths that are given the same units, e.g., by using drawing (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem. |
| 2.MD.6 | Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, …, and represent whole-number sums and differences within 100 on a number line diagram. |
| 2.MD.9 | Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units |
| 2.MD.10 | Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information in a bar graph. |

Standards by State

Ohio

Social Studies

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| HS.HTS.2.1 | Time can be shown graphically on calendars and timelines. |
| HS.HTS.2.2 | Change over time can be shown with artifacts, maps, and photographs. |
| HS. H. 2.3 | Science and technology have changed daily life. |
| HS.H.2.4 | Biographies can show how peoples' actions have shaped the world in which we live. |

Science

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| SIA.2.1 | Observe and ask questions about the natural environment; |
| SIA.2.2. | Plan and conduct simple investigations |
| SIA.2.3 | Employ simple equipment and tools to gather data and extend the senses |
| SIA.2.4 | Use appropriate mathematics with data to construct reasonable explanations |
| SIA.2.5 | Communicate about observations, investigations and explanations |
| SIA.2.6 | Review and ask questions about the observations and explanations of others |

Michigan

Social Studies

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| 2-H2.0.1 | Demonstrate chronological thinking by distinguishing among years and decades using a timeline. |
| 2-H2.0.3 | Use an example to describe the role of the individual in creating history. |

Science

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| MI.S.IA.02.12 | Share ideas about science through purposeful conversation. |
| MI.S.IA.02.13 | Communicate and present findings of observations. |
| MI.S.IA.02.14 | Develop strategies and skills for information gathering and problem solving (books, internet, ask an expert, observation, investigation, technology tools). |
| MI.S.IP.02.11 | Make purposeful observation of the natural world using the appropriate senses. |
| MI.S.IP.02.12 | Generate questions based on observations. |
| MI.S.IP.02.13 | Plan and conduct simple investigations. |
| MI.S.IP.02.14 | Manipulate simple tools (ruler, meter stick, measuring cups, hand lens, thermometer, balance) that aid observation and data collection. |
| MI.S.IP.02.15 | Make accurate measurements with appropriate units (meter, centimeter) for the measurement tool |
| MI.S.IP.02.16 | Construct simple charts and graphs from data and observations. |
| MI.S.RS.02.11 | Demonstrate scientific concepts through various illustrations, performances, models, exhibits, and activities. |
| MI.S.RS.02.13. | Recognize that when a science investigation is done the way it was done before, similar results are expected. |
| MI.S.RS.02.15 | Use evidence when communicating scientific ideas. |

Missouri

Social Studies

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| SS1 1.6 | Describe the importance of the pledge of allegiance. |

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| SS3 1.9 | Compare and contrast the habitats of, resources, art and daily lives of native American peoples, including Woodland and Plains Indians. |
| SS7 1.4, 1.5, 1.10 | Identify, select and use primary and secondary sources (diaries, letters, people, interviews, journals and photos.) |
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Science

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| MO.2.7.1.A.a | Pose questions about objects, materials, organisms and events in the environment |
| MO.2.7.1.A.b | Plan and conduct a simple investigation (fair test) to answer a question |
| MO.2.7.1.B.a. | Make qualitative observations using the five senses |
| MO.2.7.1.B.b | Make observations using simple tools and equipment (e.g., magnifiers/hand lenses, magnets, equal arm balances, thermometers) |
| MO.2.7.1.B.c | Measure length, mass, and temperature using standard and non-standard units |
| MO.2.7.1.B.d | Compare amounts/measurements |
| MO.2.7.1.C.a | Use observations as support for reasonable explanations |
| MO.2.7.1.C.b | Use observations to describe relationships and patterns and to make predictions to be tested |
| MO.2.7.1.C.c | Compare explanations with prior knowledge |
| MO.2.7.1.D.a | Communicate simple procedures and results of investigations and explanations through: oral presentations, drawings and maps, data tables, graphs (bar, pictograph), writings |
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<u>Wisconsin</u>

Social Studies

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| B.4.1 | Identify and examine various sources of information that are used for constructing an understanding of the past, such as artifacts, documents, letters, diaries, maps, textbooks, photos, paintings, architecture, oral presentations, graphs, and charts |
| B.4.2 | Use a timeline to select, organize, and sequence information describing eras in history |
| B.4.3 | Examine biographies, stories, narratives, and folk tales to understand the lives of ordinary and extraordinary people, place them in time and context, and explain their relationship to important historical events |
| B.4.4 | Compare and contrast changes in contemporary life with life in the past by looking at social, economic, political, and cultural roles played by individuals and groups |
| B.4.6 | Explain the significance of national and state holidays, such as Independence Day and Martin Luther King, Jr. Day, and national and state symbols, such as the United States flag and the state flags |
| B.4.7 | Identify and describe important events and famous people in Wisconsin and United States history |
| B.4.8 | Compare past and present technologies related to energy, transportation, and communications and describe the effects of technological change, either beneficial or harmful, on people and the environment |

Science

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| C.4.2 | Use the science content being learned to ask questions, plan investigations, make observations, make predictions, and offer explanations |
| C.4.4 | Use simple science equipment safely and effectively, including rulers, balances, graduated cylinders, hand lenses, thermometers, and computers, to collect data relevant to questions and investigations |
| C.4.5 | Use data they have collected to develop explanations and answer questions generated by investigations |
| C.4.6 | Communicate the results of their investigations in ways their audiences will understand by using charts, graphs, drawings, written descriptions, and various other means, to display their answers |
| C.4.8 | Ask additional questions that might help focus or further an investigation |

Minnesota

Social Studies

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| 2.4.1.1.1 | Use and create calendars to identify days, weeks, months, years and seasons; use and create timelines to chronicle personal, school, community or world events. |
| 2.4.1.2.1 | Use historical records and artifacts to describe how people's lives have changed over time. |
| 2.4.2.4.1 | Compare and contrast daily life for Minnesota Dakota or Anishinaabe peoples in different times, including before European contact and today. |

Science

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| 2.1.1.2.1 | Raise questions about the natural world and seek answers by making careful observations, noting what happens when you interact with an object, and sharing the answers with others. |

Illinois

Social Studies

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| 2.14.f.1 | Describe political ideas and traditions important to the development of the United States including democracy, individual rights and the concept of freedom. |
| 2.16.B.1b | Explain why individuals, groups, issues and events are celebrated with local, state, or national holidays or days of recognition. |
| 2.16.B.1 | Explain the contribution of individuals and groups who are featured in biographies, legends, folklore and tradition. |
| 2.16.A.1a | Explain the difference between past, present and future time; place themselves in time |
| 2.16.A.1b | Ask historical questions and seek out answers from historical sources. |

Science

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| 2.11.4.01 | Understand how to design and perform simple experiments. |
| 2.11.4.02 | Distinguish among and answer questions about performing the following: observing, drawing a conclusion based on observation, forming a hypothesis, conducting an experiment, organizing data, constructing and reading charts and graphs, and comparing data. |
| 2.11.4.03 | Compare observations of individual and group results. |

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| 2.11.4.04 | Distinguish among the following: recording the data from an experiment, organizing the data into a more useful form, analyzing it to identify relevant patterns, and reporting and displaying results. |

Indiana

Social Studies

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| 2.1.1 | Identify when the local community was established and identify its founders and early settlers. |
| 2.1.2 | Explain changes in daily life in the community over time using maps, photographs, news stories, Web sites or video images.<br>Example: Changes in architecture, business/industry, transportation, community buildings, work and use of<br>leisure time |
| 2.1.3 | Identify individuals who had a positive impact on the local community. |
| 2.1.4 | Identify and describe community celebrations, symbols and traditions and explain why they are important.<br>Example: Local and regional festivals, city flags and seals, and community mottos |
| 2.1.6 | Create and maintain a calendar of important school days, holidays and community events |

Science

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| IN.2.PS.A1 | Use a scientific notebook to record predictions, questions and observations about data with pictures, numbers or in words. |
| IN.2.PS.A2 | Conduct investigations that may happen over time as a class, in small groups, or independently. |
| IN.2.PS.A3 | Generate questions and make observations about natural processes. |
| IN.2.PS.A4 | Make predictions based on observations. |
| IN.2.PS.A5 | Discuss observations with peers and be able to support your conclusion with evidence. |
| IN.2.PS.A6 | Make and use simple equipment and tools to gather data and extend the senses |
| IN.2.PS.A7 | Recognize a fair test. |