

Third Grade Heat Inquiry Unit Outline

AKS	<p>Heat: 10- explain how heat is produced and the effects of heating and cooling (GPS, ITBS)</p> <p>10a - understand that a change in temperature indicates a change in heat (GPS)</p> <p>10b - categorize ways to produce heat energy such as burning, rubbing (friction), and mixing one thing with another (GPS)</p> <p>10c - investigate how insulation affects heating and cooling (GPS)</p> <p>10d - investigate the transfer of heat energy from the sun to various materials (GPS)</p> <p>10e - use thermometers to measure the changes in temperature (hot, warm, cold) of water samples over time (GPS)</p>
Content Focus	<p>We will use the Essential Questions to help guide our frontloading for Heat. They will have copies of these questions at the beginning of the unit to ensure that students work on mastery of these concepts as the unit unfolds.</p> <p>Essential Questions Heat Unit</p>
Process Focus	<p>Students will continue to work on developing their collaboration skills since we have completed a collaborative inquiry project earlier in the school year. Students will also continue to develop their research skills with guidance from instructors. We will continue to reinforce all of the comprehension strategies as we frontload material during Reader's Workshop. These strategies include Determining Importance, Asking Questions (including the difference between Thick and Thin Questions) Monitoring Comprehension, Inferring, and Synthesizing.</p> <p>Additionally, over the course of the unit, teachers and Inquiry Specialists teachers will provide instruction on graphing and data collection as it applies to heat experiments. Students will have practice with creating graphs and tables to document data.</p>
Resources	<p><u>Heat</u> Science Textbook, Student Interactive Workbook</p>

	<p>Online Media Resources:</p> <ol style="list-style-type: none"> 1. See With Heat: online book 2. Power Knowledge: Physical Science (31 articles) <p>Media Center Collection:</p> <ol style="list-style-type: none"> 1. Friction, Wheels and Brakes 2. Learning About Heat and Temperature 3. Heat 4. Heat Science Explorer 5. Heat Energy in Action 6. Electricity 7. Exploring Electricity 8. Check it Out Electricity <p>Videos:</p> <ol style="list-style-type: none"> 1. Bill Nye Heat 2. Magic School Bus in the Arctic 3. Bill Nye Solar Energy 4. Brainpopjr: Heat 5. Brainpopjr: The Sun 6. Brainpop: Heat 7. Brainpop: Temperature
<p>Immerse Invite Curiosity, Build Background, Find Topics, and Wonder</p>	<p>As classroom teachers, we will have a class Wonder Chart, and individual wonder notebooks so that students can keep track of their own questions. We will also create Wonder Webs with the students to help guide their questions for later grouping purposes. This will make the process of determining a Driving Question much more fluid. Students can then refer back to the Wonder Charts to complete mini-inquiries or to determine whether they have already found an answer to their question. Review the chart periodically to distinguish between thick and thin questions.</p> <p>Student Wonder Chart Driving Question Starters</p>
<p>Investigate Develop Questions, Search for Information and</p>	<p>Students will be given a Project Rubric at the start of the unit so that they know upfront what the expectations are.</p> <ol style="list-style-type: none"> 1. Students will decide what aspect of heat they will investigate 2. Then those students will brainstorm all of their wonders and record them as a web on the corresponding chart.

<p>Discover Answers</p>	<ol style="list-style-type: none"> 3. Then they will find questions that have similarities and group those questions by color coding them. 4. Teachers will group students according to student selection of their wonder. 5. Students will complete the Membership Grid as a way of preparing for the upcoming group work. 6. Students will come together to determine their group norms. 7. Students will need to set up a guideline to pace themselves through the use of a monthly calendar. 8. Students will then discuss their interests and wonders to determine a group Driving Question. 9. Upon selecting the Driving Question, students will revisit their wonder web and determine whether these questions are appropriate sub-topics for their newly defined Driving Question. 10. If they are not, then they will brainstorm additional sub-topics that will guide them in answering their Driving Question. 11. Once students have determined their Driving and Branching Questions, they will then complete the Individual Roles and Responsibilities document in which students will document their Branching Question to guide their research. 12. Students will independently research their Branching Questions using the Stop, Think, and React document. They will use a new document for each source so that they can better track their sources. <p>Project Rubric Membership Grid Project Outline- Individual Goals and Responsibilities Stop, Think, React</p>
<p>Synthesize (Coalesce) Intensify Research, Synthesize Information, and Build Knowledge</p>	<ol style="list-style-type: none"> 1. Every day, groups will meet for the first five minutes to review what needs to be done for the day. They will also meet for the last five minutes to review what was done, where they fell short, and what needs to be done the following day. They will record this information on the First 5/Last 5 Group Meeting Notes. 2. Students will revisit driving question(s) to make sure that their Branching Question coincides. 3. Students will refine group roles and responsibilities to ensure that everyone is keeping on schedule and doing their part.

	<p>4. Students will work together to establish a work plan to ensure that all Branching Questions are covered and that they are on track to complete the research portion on time.</p> <p>5. Students will continue research in the media center, labs, collaboration space; and they may also use their own devices to continue researching.</p> <p>6. Students will use the resources listed above including: literature, articles, online media resources, videos, etc.</p> <p>7. Students will acquire information and collaborate to carry out their plans making sure to discuss their daily goals, where they are, and where they are going.</p> <p>8. Students will take on jobs individually according to their work plan.</p> <p>9. Students will work toward the goal of project completion based on a timeline that they have preset using the calendar at the beginning of this process.</p> <p>First 5/Last 5 Group Meeting Planner</p>
<p>Go Public (Presentation) Share Learning, Demonstrate Understanding, Take Action</p>	<p>1. Students will work with their peers and teacher to decide on how they will go public. They will use the Project Description document to outline their plan.</p> <p>2. They have been front-loaded with a wide array of technology 2.0 tools that they can use to go public. These include: Powerpoint, Animoto, Voki, Glogster, Wordpress, or Padlet, etc.</p> <p>3. Students are also encouraged to use the visual arts in their presentations if so desired (posters, clay models, etc).</p> <p>4. Students can also create videos, plays, reader's theaters, poems, music, dance performances, and science experiments. If applicable, they will make sure to clearly present their data in mathematical form; ie, graphs, charts, etc.</p> <p>5. Students will brainstorm ways to present their new learning. There needs to be a combination of entertainment and engaging presentation of new learning,</p> <p>6. Students will have to create a plan using a storyboard.</p> <p>7. Students will then have time to rehearse to go public and they should create a script of what they will say during their presentation (teleprompts).</p> <p>8. They will have an opportunity to share their experiences with a final presentation as the culminating event which can be done in the collaboration room with another class as an audience. Student audience members will be required to takes notes on peer</p>

	<p>presentations so that they can write up a summary of their new learning from their peers.</p> <p>9. Reflect as a group and individually on successes and pitfalls using a Peer/Self Evaluation form.</p> <p>10. Students will also create an individual written informational piece to document mastery of their topic.</p> <p>11. Upon completion of the unit, teachers will complete the Teacher Evaluation Sheet for each student.</p> <p>Project Description Checklist</p> <p>Storyboard</p> <p>Peer Self Evaluation Form</p> <p>Teacher Evaluation Form</p>
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