**North East School Division Planning Organizer**



**Science Grades K - 5**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Stage 1 – Begin With the End in Mind** | | | | | |
| **Big Ideas** What do we want students to remember 40 years from now? | | | | | |
| Why does MATTER matter? | | | | | |
| **Goals** | | | | | |
| ***Construct scientific knowledge***  **Scientific Inquiry**   * **Processes of**:   + Designing, planning, and implementing investigations   + Collecting, analyzing, and interpreting data   + Proposing explanations and making new predictions   + Communicating results (scientific paper, lab report, visual presentation)   **K-5 Units of Study**   |  |  |  |  | | --- | --- | --- | --- | |  | Life science | Physical science | Earth and Space science | | K | Exploring the world with our senses | | | | 1 | Needs and characteristics of living things | - Properties of objects and materials  - Materials and our senses | - Daily and seasonal changes | | 2 | Animal growth and changes | - Liquids and solids  - Relative position and motion | - Air in water in the environment | | 3 | Plant growth and changes | - Materials and structures  - Invisible forces | - Exploring soils | | 4 | Habitats and communities | - Light  - Sound | - Rocks, minerals, and eroision | | 5 | Meeting basic needs and maintaining a healthy body | - Properties and changes of materals  - Forces and simple machines | - Weather | | ***Understand the nature of science and Science-Technology-Society-Environment (STSE) interrelationships***  **Technological Problem Solving (TPS) uses** iterative design processes:   * + Proposing, creating, testing prototypes   + Analyzing and interpreting results   + Communicating methods and results (design report) | | | | ***Develop scientific and technological skills and attitudes that support scientific habits of mind***  **STSE Decision Making:**   * + Clarifying an issue, identifying stakeholders viewpoints, evaluating available research   + Generating, implementing, and evaluating position statements or courses of action   + Identifying results of decision / action   + Communicating and/or taking action (research project, position paper, role play, deliberative dialogue, debate, case study, action plan)  Cultural and Indigenous Perspectives  * Indigenous ways of knowing include:   + Experiential learning – listening, observing, intuitive awareness, participating, and experiencing   + Place-based knowledge to solve practical problems   + Honouring protocols for obtaining this knowledge from a knowledge keeper, and taking responsibility for knowing it.   + Interrelatedness, connectedness, spirituality |
| **Outcomes** Circle the verbs or skills, underline the qualifiers | | | | | |
| **LS 2.1 Investigate observable physical properties of familiar liquids and solids.**  **LS 2.2 Assess results of combining liquids and solids, including technologies based on understanding these interactions.** | | | | | |
| **Understandings** What do we hope students will come to understand as a result of learning? Think: Students will understand that… | | **Essential Questions** Questions for deeper understanding that invite deep thinking about the ideas and issues throughout the unit. | | | |
| 1. Solids are matter that keeps their shape unless purposefully manipulated. 2. Liquid matter may be poured and always takes the shape of the container it is in. 3. We need liquids to survive every day, as well as the mixtures they create, 4. Matter has different properties that help distinguish between each. 5. A property describes matter and can help to the difference between various types of matter. 6. When matter is mixed it changes some of its properties. 7. Some solids will dissolve in liquids and “disappear” in the spaces between the molecules. 8. Objects that float have to meet specific criteria. 9. Liquids and solids interact with one another which in turn create a number of technologies to create a clean and healthy environment. | | 1. What do solid and liquid objects have in common? 2. Why do liquids take the shape of the container they are in? 3. Are all solids and liquids safe? 4. What is matter? 5. How does a scientist describe matter? 6. How can we change the original properties of an object? 7. What happens when I combine matter? 8. Why do solids sometimes disappear in water? 9. Are liquids all the same? 10. How does a solid soak up a liquid? 11. Why does a boat float? | | | |
| **Students need to know:** What is essential knowledge for students to have in order to demonstrate their understanding of the outcomes? | | **And be able to do:** What should they eventually be able to do as a result of their learning experiences in order to achieve the outcome? Should reference the indicators. Think: verb. | | | |
| 1. What is a liquid? Solid? 2. How to classify. 3. Properties of matter. 4. WHMIS symbols 5. Safe use of tools 6. Consumer chemical hazard symbols 7. Matter takes up space and has mass. 8. Safely use liquids and solids 9. Record scientific observations 10. Vocabulary – mass, odour, texture, transparency, buoyancy, dissolve, mixture, molecules, viscosity, absorb 11. States of matter. 12. Sinking and floating objects 13. Graphing results from observations 14. Places and effective ways to conduct research (inquiry) 15. Steps of scientific experimentation | | | 1. Classify objects as liquids and solids. 2. Identify liquids that are used within our home, school and community. 3. Distinguish between properties of familiar liquids and solids. 4. Interpret safety symbols and labels used on solid and liquid containers. 5. Select and safely use materials and tools. 6. Demonstrate that liquids and solids are matter. 7. Explore observable physical properties of liquids and solids and group objects according to properties. 8. Compare and group physical properties of objects 9. Predict and test changes of characteristics of liquids when they change state. 10. Investigate the changes of solids and liquids when mixed together. 11. Describe examples of objects that are created around them by combining liquids and solids. 12. Distinguish between solids that dissolve in water and those that do not. 13. Investigate the viscosity of different liquids. 14. Investigate the rate and ability of various materials to absorb liquids and the use they then have. 15. Gather information about sinking and floating. 16. Build an object that will float, be stable and carry a load. 17. Assess ways people use knowledge of solids and liquids to maintain a clean and healthy environment. 18. Ask questions to stimulate inquiry. | | |
| **Stage Two – Critical Evidence of Understanding** | | | | | |
| **Formative Assessment** Through what multiple sources of evidence will students demonstrate their understanding on a daily basis. | | | | **Summative Assessment** Is an assessment of what students know and can do according to the outcomes. It is a snapshot in time, used for reporting. | |
| 1. Pre-assessment – My book of liquids and solids. 2. What is a property? – worksheet 3. Jigsaw activity- liquids around us. 4. Safety symbols game. 5. Grouping activity – oral assessment 6. Materials that absorb liquids activity sheet 7. Sinking and floating record chart 8. Sinking and floating workbook | | | | 1. LS 2.1 Assessment of liquids and solids in a picture and description on the properties of one of these pieces of matter. 2. Float and Sink assessment - assessed with rubric. 3. LS 2.2 Assessment - oral assessment of knowledge using pictures and guided questions. | |
| **Stage Three – Learning Plan** | | | | | |
| The Learning Plan should guide your day-to-day operations based on the natural order of learning experiences necessary to achieve the outcomes by **all** students. | | | | | |
| See Teacher’s learning plan binder | | | | | |
| **Reflection** | | | | | |
| How did each student experience the learning through the unit? How did my plan transfer to practice? | | | | | |
| 1. Added activity sheets to LS 2.1 (k). This activity needed a student reflection sheet to show learning and can now be used as an assessment tool. 2. Make LS 2.1 assessment an oral assessment rather than a written for time management. Therefore, I need to add one teacher selected picture for students to use in their assessment, 3. Overall this was a great unit. I used a lot of guided inquiry in which the students were able to discover many of the outcomes on their own. At the beginning of this unit I did not have a unit rubric. With the addition of this tool, all formative and summative assessments will be able to be recorded on the student sheet. It will be a great asset in recording students’ daily observations as a formative assessment. | | | | | |