**Safety Planning in Science and Technology (S&T) Workshop**

Intended Audience: All elementary teachers who teach science and technology.

Time: 90 – 120 min

STAO's elementary workshops are designed using the 5-step safety planning framework, which was first introduced in the STAO safety reference text 'Safety in Elementary Science and Technology'.


This workshop is a continuation of STAO's 'Assessing Hazard & Risk in Elementary Science & Technology workshop. It assumes that participants have a working knowledge of hazard and risk (steps 1 and 2 in the framework). This workshop makes a brief reference to safety planning for fieldtrips. A more thorough treatment of this topic is provided in STAO's 'Classroom Management" workshop. Feel free to transfer that content to this workshop if appropriate.

The Safety Planning in Science and Technology (S&T) workshop focuses on steps 3 and 4 – "Make Safety Plans" and "Act Safely" and is designed to be used on its own or in conjunction with the STAO online Safety Mindedness program modules 5-8.

**Note:** There is a considerable amount of content in this presentation. Plan to customize the content to meet the needs of the participants. Be careful not to overwhelm participants with a long list of safety concerns. After all, we don't want to scare them off of conducting investigations. Structure the presentation and its conclusion so that participants leave the session with a positive "Yes, I can" experience.

Some participants may find the preparation for conducting investigations overwhelming. Hence, it is important that the facilitator is sensitive to these feelings should they arise, reassure the participants and bolster their confidence when necessary.

**Recommended Preparation:**

It is assumed that participants have completed either:

- STAO's online Elementary Safety Mindedness modules 2 and 3 or
- STAO's "Assessing Hazard and Risk in Science and Technology Activities" workshop.

**Materials Required:**

- 5 copies of 'Safety in Elementary Science and Technology'
- Data projector
- Internet connection (optional). It is recommended that all videos in this presentation be downloaded and run off the presentation computer to avoid Internet connection issues.
- GFCI receptacle for electrical safety slides (optional)
- A sample of nitrile gloves

**Slide deck:**

- Safety Planning for Elementary Science and Technology

**Speaker outline and Slide notes:**

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| Slide 1 | **Safety Planning for Elementary Science & Technology**<br><br>**Facilitator:**<br>Welcome the participants.<br>Conduct an ice-breaker activity of your choice if you feel it is appropriate.<br><br>Remind participants that the recommended preparation for this workshop is either the STAO 'Assessing Hazards and Risk' workshop or modules 2 and 3 of STAO's online Safety Mindedness Teacher Safety training program. "Identify the Hazards" (red light), and "Assess the Risks" (amber light) were covered in these resources.<br><br>**Notes:**<br>This workshop is based on "Making Safety Plans" (green light). The content of the workshop summarizes the "what, when, and why" of what teachers do to ensure a safe learning environment for S&T students during investigations. This helps teachers address their due diligence for safety in their preparation.<br><br>The content of this workshop is also covered in modules 5, 6, 7 and 8 of STAO's online Safety Mindedness Teacher Safety training program. |
| Slide 2 | **Learning Goals**<br><br>**Facilitator:**<br>Introduce the learning goals. |
| Slide 3 | **References**<br><br>**Facilitator:**<br>Introduce the references. Allow participants 5 – 10 minutes to examine the Safety Mindedness resource online. Encourage them to bookmark the resource. It can be accessed directly from the STAO website, or from STAO's blog.<br><br>Have a few copies of 'Safety in Elementary Science and Technology' available for participants to examine. |

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| Slide 4 | **Who is STAO?**<br><br>**Facilitator:**<br>Provide an overview of STAO and our role in promoting science education in Ontario<br>Stress membership benefits: high quality resources, many vetted by S&T and safety knowledgeable teachers<br>STAO offers for individual and school memberships. The elementary school membership at the time of writing was only $56.50. This permits all teachers in an elementary school to be STAO members. |
| Slide 5 | **Join the STAO team…**<br><br>**Facilitator:**<br>Stress the importance of our role as teachers helping other teachers. Encourage participation and the satisfaction that comes with giving back to the profession. |
| Slide 6 | **Facilitator:**<br>Review the 5 steps of the cycle, providing examples to illustrate each step.<br><br>**Notes:**<br>STAO elementary workshops follow the 5-step safety planning framework which is outlined in detail in Section 3 of 'Safety in Elementary Science and Technology', STAO's elementary safety publication.<br><br>Applying this framework in your safety planning is an effective way to promote the safety of both students and staff. |
| Slide 7 | **STAO Safety Planning Framework**<br><br>**Facilitator:**<br>Although this workshop does not cover Step 5 'Reflect, Revise and Report', stress the importance of this phase with examples from your experience.<br><br>**Notes:**<br>Steps 1 and 2 were covered in the Assessing Hazards and Risk workshop. This workshop deals primarily with 3 Make Safety Plans, and 4 Act Safely. |

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| Slide 8 | **Hazard vs. Risk**<br><br>**Facilitator:**<br>The next slides are from the Assessing Hazard and Risk workshop, which is recommended preparation for this workshop. Take a moment to review the difference between hazard and risk. Since these terms are used frequently in this workshop, it is important that participants understand how hazard and risk differ.<br><br>Introduce the basic definitions of hazard and risk. Stress that hazards are an inherent part of the task and hence, cannot be eliminated. An obvious hazard of the saw blade in this image is that it is sharp.<br><br>Ask participants to identify others (e.g., sawdust is combustible, wood splinters could injure skin, broken saw blades can result in cuts).<br><br>Ask participants to share the hazards and risk of other common tasks or investigations they conduct. (Optional)<br><br>**Notes:**<br>Although you cannot eliminate the hazards in a task, risk can be kept to an appropriate minimum by using appropriate precautions (e.g., small saws appropriate for young students, thin blocks of wood, securing the wood, proper training and use of appropriate personal protective equipment, PPE ). |
| Slide 9 | **Hazard vs. Risk**<br><br>**Facilitator:**<br>Stress that all safety planning starts with an analysis of the hazards and the precautions required to keep their risk to an acceptable minimum. For example, the corrosiveness of some chemicals is a hazard.<br><br>In this slide, the teacher has provided the students with PPEs (goggles and gloves) to minimize the risk associated with breakage, fluid splashes into the eyes and irritability of the fluid on skin. |
| Slide 10 | **General Considerations for Safety Planning:**<br><br>**Facilitator:**<br>This slide provides some general considerations for safety planning. For example, good classroom management is essential to the operation of the classroom. Hence, safety planning cannot happen effectively unless good classroom management practices are in place, e.g., routines for forming groups, discussions, etc. Provide examples from your experience.<br><br>**Notes:**<br>It is recommended that routines be practiced until they become automatic. Above all, it is critical that the teacher models and sets the tone for safety in the classroom, e.g., teachers must wear eye protection if their expectation is that students wear eye protection during activities. |

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| Slide 11 | **Safety Policies and Protocols**<br><br>**Facilitator:**<br>Stress the importance of following these protocols or policies. If teachers aren't sure, they need to contact either their principal, board consultant or health and safety personnel.<br><br>**Notes:**<br>An important first step in planning for safety is being aware of the school, board and legislated protocols that must be followed. For example, your school may have specific procedures for waste disposal and pickup or the storage of equipment. Boards may also have specific equipment use policies such as no glass equipment until grade 6, or power tools can only be used by students under the direct supervision of an appropriately trained teacher.<br><br>It is recommended practice for teachers to document the safety training they provide for their students. This includes the content and any assessments used to check understanding of knowledge and skills. This information is further evidence of the teacher's due diligence in maintaining a safe learning environment. These assessments can also form part of your evidence for learning skills and be used in the thinking category. (safety skills, like participation marks in Health and Physical Education). |
| Slide 12 | **Safety Standards or Certifications**<br><br>**Notes:**<br>This slide summarises some legislated standards or certifications that schools and hence, teachers, must follow which comply with Canadian safety regulations.<br><br>ESA (Electric Safety Authority), CSA (Canadian Standards Association) and UL (Underwriters Laboratory) are often involved with electrical and other equipment in schools and S&T studies. If something were to happen with equipment that did not have one of these designations, there would be consequences for the teacher if they purchased/brought it in. This is why purchasing equipment on line from the US can be a problem.<br>The lower portion of this slide shows the WHMIS 2015 hazardous product pictograms. By law, all hazardous products in schools have to be WHMIS 2015 compliant by December 2018.<br><br>This link provides a useful summary of WHMIS 2015<br><br>**Facilitator:**<br>STAO's online Safety Mindedness program provides a useful summary of WHM2015 in module 6, including review questions. Encourage participants to do the module 6 if time permits. |

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| Slide 13 | **Standards**<br><br>**Notes:**<br>This slide lists the hazardous household hazard symbols (HHPS) found on consumer products. HHPS is good for students to know as part of their general safety mindedness and safety literacy to take home from school. Each symbol consists of two parts – a border and a hazard symbol. It is recommended that these products remain in their original containers so that safety information on the product label is clearly visible. If the product is decanted into another container, a proper workplace label should be added to the contained.<br><br>The triangle is to indicate the container is dangerous, the octagon indicates the contents are dangerous. The Household Chemical Safety website from the Government of Canada provides more detailed information about HHPS. |
| Slide 14 | **Making Safety Plans**<br><br>**Notes:**<br>Once the hazards are understood and the risk assessment concludes that risk can be kept to an acceptable minimum, proceed to testing the investigation prior to conducting it with your students. It's good practice to conduct this test with a colleague so that you can learn from each other and another person is present in case something goes wrong. The test may also provide new insights in how best to conduct the investigation with your students.<br><br>This is important to emphasize as too often with the plethora of ideas available on the internet – educators may choose an investigation that 'sounds good', has the materials and equipment they can access and have students do it without trying it first to see where issues may arise.<br><br>Another good strategy to see where issues might come up is to conduct a dry run of an investigation with your students especially if it is with materials and tools they have not used before. The dry run would involve clearing their desk or work space, getting the equipment and the materials needed and then setting up the investigation, but not actually running it. After students return the equipment and materials conduct a debrief with them to identify possible problems and areas for improvement. |

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| Slide 15 | **Personal Protective Equipment (PPE)**<br><br>**Facilitator:**<br>Ask participants to share their board's requirements for the use of these PPE items. Gloves for example, protect hands when handling potentially hazardous materials (e.g., household cleaning products) and unknown substances (e.g., material collected outdoors). Latex gloves should not be used due to the potential of an allergic reaction. Use nitrile gloves instead. Nitrile gloves are readily available from local hardware stores or online. Their price varies depending on quantities purchased, e.g., a box of 100 may cost $20 or less depending on the vendor. Be sure to buy gloves appropriately sized for you or your students.<br><br>**Notes:**<br>Gloves should not be used if flames are present because they could adhere to skin if they melt. Size is another important consideration, especially if kids are wearing the gloves. If the gloves don't fit properly you create another hazard from the lack of dexterity.<br>Aprons and lab coats are intended to protect clothing from spills, not necessarily to protect from heat sources, especially flames and hot liquid spills unless designed for that purpose.<br><br>Suggest that protective sun wear for outside activities is a safer solution for sunburn protection than topically applied sunscreens.<br><br>Consult p 35 in 'Safety in Elementary Science and Technology' for more background. |
| Slide 16 | **When Should Goggles be Worn?**<br><br>**Facilitator:**<br>This slide summarizes when safety goggles should be worn.<br>Provide school-based examples of situations in which safety goggles should be worn to minimize the risk of injury. In each example, ask participants to identify the hazard for which goggles provide protection.<br><br>**Notes:**<br>The Chemistry Rocket video shows a pop bottle rocket activity. In this case, goggles are necessary to protect against flying pressurized debris. |
| Slide 17 | **Common Eye Protection Issues**<br><br>**Notes:**<br>This slide shows two commonly used forms of eye protection – (upper left) impact-resistant safety glasses with side protection and (lower left) chemical splash goggles. Safety glasses protect from projectiles. Chemical splash goggles protect against projectiles, splashing liquids, dust, and corrosive vapour because they form a complete seal around the eyes. Please note that prescription glasses (right) do not provide adequate protection, particularly from the side. Hence, goggles must be worn over prescription glasses.<br><br>When eye protection is required it should be worn by everyone in the room, including the teacher, until everyone has completed the task. PPE (personal protective equipment) includes glasses and are intended to provide eye protection from possible flying objects and projectiles, but not liquid splashes. |

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| Slide 18 | **Common Eye Protection Issues**<br><br>**Facilitator:**<br><br>Discuss why these students should be wearing goggles. Ask participants to share any challenges they have experienced in ensuring students consistently wear eye protection and to share successful strategies.<br><br>Some reasons that students are reluctant to wear eye protection include hygiene, improper fit, and scratched lenses. |
| Slide 19 | **Common Eye Protection Issues**<br><br>**Facilitator:**<br>Ask participants to identify the goggles use issue in this photo.<br><br>Answer:<br>This slide shows a student wearing goggles that are too large for her. Proper fit, especially for younger students, is essential. The gloves also are too large which reduces her dexterity and increases the likelihood of spills. Offer suggestions on where appropriately-sized goggles for younger students may be purchased. |
| Slide 20 | **Common Eye Protection Issues**<br><br>**Facilitator:**<br>Ask participants to identify the goggles use issue in this photo.<br><br>Answer:<br>Splash goggles are preferred over safety glasses when conducting tasks involving chemicals by forming a complete tight seal around the eyes. |
| Slide 21 | **Storage and Cleaning**<br><br>**Facilitator:**<br>Discuss the need to properly clean and store goggles.<br><br>Ask participants to brainstorm organized storage solutions that are simple and inexpensive, e.g., zip-locked bag for each goggle, a shoe tree, cardboard box with dividers.<br><br>**Notes:**<br>Goggles must be carefully stored (image on the right) to minimize the risk of scratching the lenses. Goggles should also be cleaned regularly by washing with a disinfectant (e.g., a detergent). Goggles should also be checked regularly for damage and replaced as needed. Badly scratched lenses obscure vision and improper fit are two of the most common reasons that students are sometimes reluctant to wear them. |

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| Slide 22 | **Types of Hazards**<br><br>**Notes:**<br>This slide summarizes the types of hazards S&T teachers may encounter as they plan activities.<br>▪ Chemical, elephant paste is good fun for a range of grades under different strands or the frame building glue investigation<br>▪ Thermal, collapsing can could be used in grade 3, 5, and 8 forces, grade 7 heat<br>▪ Electrical, battery driven toy car for grade 2, 4, 5, 6 and 8 (any maker space activities?)<br>▪ Mechanical, mousetrap car or Rube-Goldberg machine making, and maker space activities.<br>▪ Biological, local pond studies, local park biodiversity studies. |
| Slide 23 | **Chemical Hazards**<br><br>**Facilitator:**<br>Ask participants to identify the hazard and recommend precautions required to minimize the risk of injury.<br><br>This slide lists the two important steps when considering the appropriateness of a chemical in an investigation – consult the SDS and assess risk.<br><br>**Notes:**<br>This pictogram is from the SDS for a 3% hydrogen peroxide solution. This is the same solution sold at the drug store used to disinfect cuts.<br><br>Most science equipment suppliers provide online access to the SDS's of their products. However, having print copies of the chemicals you use in the classroom is recommended and shows you have done your due diligence in understanding the hazards of the substance. |
| Slide 24 | **Chemical Hazards**<br><br>**Notes:**<br>Don't forget to consult board chemical use policies when selecting chemicals. Your board may have restrictions on specific substances. For example, chlorine bleaches and drain cleaners are not allowed by many boards in Ontario. If you don't know, do you know who to ask? Boards are responsible for training you as a worker under WHMIS. |

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| Slide 25 | **Chemical Hazards**<br><br>**Facilitator:**<br>Here are several precautions for minimizing the risk of working with chemicals. See STAO's 'Safety in Elementary Science and Technology' for more details.<br><br>Ask participants to identify their current issues with using chemicals.<br><br>Many boards have strict limitations on what chemicals, including consumer products, may be brought into the school/classroom. Always check board protocols when selecting chemicals suitable for your class. Stress that common chemicals such as baking soda, vinegar, and the different kinds of salts you can get from the drug store must be labelled appropriately when in use or in storage.<br><br>Some household cleaning products are a particular concern because they may be poisonous or incompatible with other substances. The use of chlorine bleach, for example, has been banned by some boards because it reacts with some cleaners to produce a poisonous gas. Other consumer products, like detergent pods are so brightly coloured that some students may think they are candy.<br><br>If time permits, brainstorm solutions. Some solutions may be simple and can be implemented immediately. Others may require more time and resources. |
| Slide 26 | **Design Investigations to Minimize Risk**<br><br>**Notes:**<br>The STAO safety triangle summarizes three ways in which tasks involving chemicals can be designed for safety:<br>• Use the smallest possible quantities, e.g., use dropping bottles and spot plates rather than beakers and test tubes. This reduces the severity of spills.<br>• Reduce the concentration, e.g., the video uses 3% hydrogen peroxide. The same demo is commonly done with more concentrated solutions which have greater risk of skin irritation.<br>• Use safer alternatives, e.g., why use hydrochloric acid if vinegar produces the same result but slower.<br><br>The video in this slide shows a chemical reaction in which a 3% hydrogen peroxide solution is decomposed into oxygen gas and water. The reaction is normally very slow but can occur much faster if a catalyst is used. In this case, a mixture of yeast and warm water is used. |

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| Slide 27 | **Thermal Hazards: General Precautions**<br><br>**Facilitator:**<br>Stress the importance of adhering to board policies regarding the use of open flames. Some, for example, do not permit the use of ignition sources like lighters or matches.<br><br>**Notes:**<br>This slide provides general precautions for thermal hazards. See STAO's 'Safety in Elementary Science and Technology' and module 7.5 of STAO's online Safety Mindedness resource for more details.<br>Avoid tasks that involve burning. If burning cannot be avoided, be aware of your board's fire emergency protocols. For example, the Toronto District School Board (TDSB) permits only trained teachers to use fire extinguishers. In the event of a fire, teachers who are not trained must first get students out of danger and then contact someone onsite, e.g., a custodian, who is trained. |
| Slide 28 | **Appropriate Sources of Heat**<br><br>**Facilitator:**<br>This slide displays common heat sources: Bunsen burner, microwave oven, candles, hair dryers, kettle, hot plate. Always check with your board protocols for which sources are permitted.<br><br>Ask participants to assess the do's and don'ts for using these devices. See page 89 of STAO's 'Safety in Elementary Science and Technology' for a detailed summary. |
| Slide 29 | **Hot Plates**<br><br>**Notes:**<br>This slide offers hot plate advice. Be sure to set up hot plates in low-risk areas (e.g., no clutter, no trip hazards and minimal traffic or congestion). Check to see if your board has specific requirements for appropriate hot plates, e.g., hot plates with solid surfaces are often required. Hot plates with coil-type heating elements are often not permitted. |
| Slide 30 | **Inappropriate Sources of Heat**<br><br>**Notes:**<br>This slide shows heat sources that are inappropriate for use in schools. Alcohol burners have caused serious accidents in schools resulting either from spills of burning alcohol or accidental ignition when a hot bottle was refilled. |

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| Slide 31 | **Hazards of Electrical Devices**<br><br>**Notes:**<br>This slide outlines several hazards associated with working with electrical equipment. See STAO's 'Safety in Elementary Science and Technology' page 91 for more details.<br>STAO's online 'Safety Mindedness' program also provides a good summary as well as useful advice on building circuits.<br><br>Situations when hazards may arise include:<br>When building circuits beware of short circuits that could lead to hot batteries or hot materials that could burn or start a fire. A 9V battery and fine steel wool is a good example. Show the video on the next slide to illustrate this hazard.<br><br>Nails wrapped with wire to make an electromagnet also get quite hot when connected to a 6V battery or higher. |
| Slide 32 | **Steel Wool and 9V Battery**<br><br>**Facilitator:**<br>This video has no sound. Use these notes to explain what is occurring in the video.<br><br>This video shows why we shouldn't use 9V batteries for elementary projects unless there is some compelling reason. Because both terminals of the 9V battery are on the same surface, the battery could easily be short-circuited by accidentally placing a metal object like a coin or key across the terminals. In this example, strands of steel wool heat up enough to start a fire. Campers sometimes use this property to make a fire. Use AA batteries in series if you need more than 1.5 V. Connecting three 1.5 V batteries in series, for example, increases the overall voltage to about 4.5 V. Never connect more than three batteries in series. Any more in series can create enough heat or shock to cause injury. |
| Slide 33 | **Sources of Electrical Energy**<br><br>**Notes:**<br>Small hand generators are a convenient power source when constructing or troubleshooting circuits and eliminate the waste associated with using batteries. Simple conductivity testers are also useful to detect breaks in the circuit. |
| Slide 34 | **Using Electrical Equipment**<br><br>**Facilitator:**<br>This slide provides some common advice for working with electrical equipment. Note that GFI stands for ground fault interrupt. Have a GFI receptacle available in case some participants are not familiar with this device.<br><br>See STAO's 'Safety in Elementary Science and Technology' for more details. |

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| Slide 35 | **Mechanical Hazards**<br><br>**Notes:**<br>This slide provides sample considerations when addressing mechanical hazards.<br><br>The technological problem-solving component of the S&T curriculum may require students to work with hand tools. Some boards permit the use of power tools. In either case, teacher and student training in the use of tools is necessary. Module 7.8 of STAO's online Safety Mindedness program offers useful advice on the safe use of hand tools.<br><br>**Facilitator:** If time permits, show one of the videos on the use of tools from Module 7.8 of STAO's online Safety Mindedness resource.<br><br>Some useful tips for organizing projects involving tool use include:<br>• Use stations for particular tasks, e.g., cutting and drilling at one table and hot gluing or other types of joining at another.<br>• Stagger the planning, drawing and building phases of the project so not all students are building at the same time. Keep work areas free of clutter and trip hazards.<br>• Limit the size of the project so that the product and its plans/drawing fit in a shoe box. |

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| Slide 36 | **Biological Hazards**<br><br>**Notes:**<br>This slide lists common S&T biological hazards.<br>Always consult your board's policies before bringing animals to the classroom.<br>The presence of living things in the classroom has several potential educational benefits including:<br>• Spark curiosity<br>• Build empathy for living things<br>• Initiate ethical discussions about care and respect<br>• Make connections to the natural world, e.g., many inventions derive their inspiration from plants and animals.<br><br>Safety Considerations**:**<br>Care and maintenance of the animal is ultimately the teacher's responsibility. For example, the teacher must supervise all interactions with the animal, organize care during holidays and weekends, and ensure that it is never distressed.<br><br>Bringing personal pets into the classroom is not recommended because the classroom setting can be overwhelming for the pet. This may cause the pet to become defensive and scratch or bite.<br><br>Consider potential allergies and infectious materials carried by the animals that come into the classroom. i.e., turtles and other reptiles can spread salmonella and so you need to be prepared with an animal handling plan.<br><br>Some stinging insects, like bees and wasps can cause anaphylaxis.<br><br>Microorganisms should never be sampled off surfaces like cellphones, computer keyboards, cafeteria tables etc., and cultured in dishes because the sample may contain a disease-causing pathogen. Furthermore, many schools do not have the appropriate equipment or expertise to dispose of these cultures once the activity is complete.<br><br>See these resources for more information<br>• STAO's online Safety Mindedness program (Module 7.10)<br>• Safety in Elementary Science and Technology, pages 50-56 |

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| Slide 37 | **Outdoor Hazards**<br><br>**Notes:**<br>The world outside the classroom is a wonderful place for students to experience the interactions of living things and our world.<br><br>The "outdoor classroom' has unique challenges when planning for safety. This slide lists some hazards that may be encountered. Several other hazards may be encountered depending on the location, e.g., evidence of illicit drug use. Most boards have detailed procedures for outdoor activities and excursions.<br><br>Indigenous education has as one of its pillars, contextual learning in the places where the learning can be found and is needed. Education in the outdoors is often very contextual and location specific, i.e., in teaching living things, nothing is more powerful than animals and plants in various stages of growth, reproduction and habitat for recognizing the variety of forms life can be found in and the connections between those forms and ecosystems.<br><br>Please note that a more thorough discussion of outdoor hazards and planning field trips is in the STAO workshop called 'Classroom Management'. |
| Slide 38 | **Wrapping Up Reflection**<br><br>**Facilitator:**<br>Lead a wrap up discussion of these key points. Feel free to alter to better meet the needs of the group. Lead a robust and positive discussion of question 1 so that participants are left with a positive "Yes I Can!" experience and are encouraged to do more hands-on/minds-on investigations.<br><br>Some participants may be overwhelmed with the safety information provided and feel they 'can't' or don't want to. Be sensitive throughout the workshop to any feeling of being overwhelmed as opposed to being informed and feeling confident to conduct safe learning experiences for their students.<br><br>**Possible Conclusion:**<br>This workshop has suggested strategies to help you conduct hands-on/minds-on investigations safely and engage your students. Investigations are messier than paper and pencil tasks, but with good classroom management, recognition of hazards and judicious use of PPE's to minimize risks, almost anything is possible. Just like we practice fire drills, recess and lunch routines, doing a dry run (or 2 or 3 if needed) with your class is a great way to spot potential issues and mitigate the big issues before they cause problems. Students enjoy investigations and will generally be better behaved if they are engaged with the investigations that are the hallmark of doing good S&T. |