Lesson 1- What is Recycling?

Students will learn to identify products that are recyclable, enabling them to make better choices when purchasing items. They will teach others about recycling through the arts.

Something to Note:

Recycling is the process of making or manufacturing new products from a product that has originally served its purpose. If these used products are disposed of in an appropriate, environmentally friendly way, the process of recycling has been set in motion.

Concepts & Vocabulary

- Recycling, recyclable
- Climate change and recycling
- Benefits of a recycled environment
- Expression in the arts

Recycling Connections for Grades K - 1 – 2

What do you recycle?

Get students to make connections to their own lives and discuss what they recycle at their own houses. Bring in a bag of trash (with a variety of recyclable items and non-recyclable ones) that you have prepared, to sort through with the students. Have a volunteer student put on a glove and reach into the bag and pull out an item, then as a group, decide what it is made out of and if it can be recycled. When the sort is done make a label for each pile (Recycling/Not recycling). Have volunteers sort some of the items in the recycle pile into a group and see if the other students can guess the sorting rule, (e.g. pop cans, juice boxes, paper, glass, food waste, plastic) look at the group of non-recyclables…could any of these items be repurposed for something else?

Recycling Logo

Discuss the recycling logo and look for it on the items they pick out in the above activity. Create a collage of items on a giant recycling logo. See the photo of the one Sarcan had made for its plant.

SARCAN Math

Use the example tally sheets for Students to figure out the total amount of cash owed.

SARCAN Depot Play Centre

Students role play taking the bag of recycling to the Sarcan Depot and have other student 'employees' count and sort the recycling (be sure to clean the containers well with soapy water for health reasons). The customers need to count as well to make sure they are getting the correct amount of $ for their returns. Younger students may need an older student or volunteer to help with the money part. Use play money from your schools' Math manipulatives and the wipe off 'Sarcan Tally sheets' from the Sarcan Educational Kit

Sorting Game

Computer lab or as a centre in the one computer classroom, let the students play the Sorting game: http://thinkcans.net/games-centre/can-i-recycle-it

Recycle a Tune! Create a song that conveys a message regarding the 3 R's: Reduce, Reuse, and Recycle using familiar tunes - Appendix # 1 and/or use the examples on this site: http://www.calrecycle.ca.gov/Education/curriculum/ctl/K3Module/Unit2/Lesson5.pdf

Home Connection

Ask each student to use recycled items from home to create a Recycled Craft. Bring to class to share with others when finished. Share with class. Display in a showcase or in the library with books about recycling for others to see your Recycled Craft Show.

Recycled Art Centre

In your classroom, create a Recycled Art Centre, where students/volunteers can bring donations. A cart on wheels with lots of drawers helps to keep it organized. Ask for donations of recycled materials for students to use to create as well as for other subject area projects.

Three R's song

Learn the 3 R's Song by Jack Johnson, make instruments from found materials to use with the song. Or, create a song that conveys a message regarding the 3 R's: Reduce, Reuse, and Recycle using familiar tunes - Appendix # 1 and/or use the examples on this site… http://www.calrecycle.ca.gov/Education/curriculum/ctl/K3Module/Unit2/Lesson5.pdf

Help Anita

Play the online game 'I Don't Want to Clean My Room!' Help Anita clean her room and learn about how to reuse and recycle objects around the house.

Something to Think/Talk About

Imagine a world where 90% or more of the manufacturing was made out of recycled material. How would that change the products that you enjoy and buy? How would that change the quality of materials, or would it?

Resources

- Recycle a Tune lesson
  http://www.deq.state.or.us/lq/pubs/docs/sw/curriculum/RRPart0217.pdf
- Write a 'recycled' song to a familiar tune http://thinkcans.net/games-centre/can-i-recycle-it
- SARCAN Recycling Logo Art Poster – art piece from Processing Plant in Saskatoon
- 3 R's Song with Jack Johnson – YouTube Video
  https://www.youtube.com/watch?v=uSM2riAEX4U, Song Lyrics for Jack Johnson 3 R's song
- Eco Kids online game 'I Don't Want To Clean My Room!'
  http://www.ecokids.ca/PUB/eco_info/topics/waste/clean_room/index.cfm
- Example SARCAN Tally sheets and blank SARCAN tally sheets for role play, calculator activities
- Kindergarten computer centre smart board idea:
  http://www.bbc.co.uk/schools/barnabybear/games/recycle.swf

SaskEd Curriculum Connections

Kindergarten

CPK.3 CPK.4, CRK.1, CRK.2, CCK.3, CCK.4, ARK.2, USCK.1, NK.1 NK.3 NK.5 MOK.1 SSK.2 RWK.2

Grade 1

CP1.6, CP1.8, CR1.1 CR1.2, CR1.3 CC1.1, CC1.4, N1.1 N1.9 SS1.2 OM1.1 OM1.2 RW1.2

Grade 2

CR2.1 **CC2.1** **CC2.2** **CC2.4** **N2.1** **N2.2** **IN2.1** **PA2.3** **RW2.3**

What is Consumerism?

The message in these lessons is to buy less stuff! Students reflect on their own buying habits and consider REUSE as an alternative to buying new.

Something to Note

Since 1950 Canadians have consumed (used up) as much as all the people who have lived on Earth before us combined. Wonder out loud "What will happen to our future generations, perhaps your children, or their children if we continue to consume as much as we do now?" For the purpose of this study, the word consume will refer to the consumption of goods and services.

Concepts & Vocabulary

- Consumerism, consumption
- Poetry, artistic expression
- Eco Footprint
- Reuse- Secondhand cool

Recycling Connections for Grades K - 1 – 2

Consumers and Producers

We are Consumers and Producers students can participate in the Interactive Activity 1 and Interactive Activity 2

Garbage Analysis

Discuss all the stuff they have thrown away in the last day. Are there ways that the trash could have been dealt with differently, or ways you could have avoided having that trash in the first place? If all the other people on the Earth used as much "stuff" as we do in North America, there would need to be three to five times more space just to hold and sustain everybody.... WOW! So buy only what you need and use all of what you buy. Or make sure that when you are through with something, you recycle it or you pass it along to other people who can continue to put it to good use. This is especially important when it comes to things that can be dangerous to our environment, such as paint and chemicals.

Story of Stuff

View the video, 'Story of Stuff' http://www.youtube.com/watch?v=9GorqroigqM

Make sure they understand we are all consumers. Do you see yourself and your family in this chain of consumerism?

- REUSE things to keep them out of the landfill! This link takes you to a poster that talks about what you can do with a glass jar. http://www.epa.gov/waste/education/kids_activities.htm scroll down to link 'What Can You Do With a Jelly Jar?

- Your Human Footprint is the mark you make on the Earth. Read the National Geopgraphic book 'Human Footprint' in the SARCAN Educational kit to discuss what consumption means. Do some math problems for your grade level using the data in the book. Calculators for the younger ones!

- Read the poem "Hungry, Mungry" by Shel Silverstein. In what ways can you connect Silverstein poetry to the reality of today's North American world.

- Buy Less Stuff - Introduce students to a puppet you got second hand, call him 'Second Hand Sam' - Sam will encourage students to REUSE by buying second hand…Discuss the advantages of 'hand-me-downs!' for example, Let's say you need a pair of jeans, it's better for the environment to ask your parents to take you to a second hand shop to get them. WHY IT HELPS: It takes an estimated 1,500 gallons of water to make a pair of jeans! Buy a used pair and you save enough water to provide eight people with drinking water for a year. Students can share stories with Sam of cool stuff they received 2nd hand from a family member, friend, garage sale or second hand shop. Sam can ask if they have ever been involved in a garage sale.

Home Connection

Ask students and parents to send items for a class garage sale with money raised going towards an environmental project. Get Parent volunteers and/or Care Partners to help with this worthwhile project.

Something to Think/Talk About

If people continue to over-populate and consume manufactured products at a high rate, do you think there might be a point of collision??

Resources

- K-2 Lesson Plan for 'We Are Consumers and Producers" 'Students are consumers and producers. So are their families. In this lesson students learn how they and family members fulfill these roles at home and in their community.' http://www.econedlink.org/lessons/index.php?lid=457&type=educator

- View the video, 'Story of Stuff' http://www.youtube.com/watch?v=9GorqroigqM
- Read more: http://www.businessdictionary.com/definition/consumption.html#ixzz37q0Em6f5
- Hungry Mungry Poem online
- Planet Protectors Create less Waste in the First Place http://www.epa.gov/waste/education/kids_activities.htm scroll down to link 'What Can You Do With a Jelly Jar?'

SaskEd Curriculum Connections

Kindergarten

CPK.1 CRK.1 CRK.2 CRK.4, CCK.3, NK.1 NK.3 SSK.2 RWK.2

Grade 1

CP1.3 CR1.2 CR1.4, N1.1 N1.9 SS1.1 OM1.1

Grade 2

CR2.2 CC2.2 N2.1 N2.2 PA2.3 RW2.3

What is Sustainability?

We need to live in harmony with nature in order to keep the earth healthy. Students will find ways to make a difference for the environment in their own lives.

Something to Note

Sustainability is based on a simple principle: Everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment. When living sustainably, humans and nature can exist in productive harmony. Sustainability is important to making sure that we have and will continue to have, the water, materials, and resources to protect human health and our environment.

Concepts & Vocabulary

- Sustainability, economy, social order
- Recognize the difference between needs and wants
- Re-using or re-purposing products

Recycling Connections for Grades K - 1 – 2

Where does your food come from?

You will need to bring in a bag of groceries and together look at the items and decide what was involved in making it, where it came from and if it can be recycled. How can we live more sustainably when buying food? One way that might be suggested is to grow your own. Design posters encouraging others to adopt sustainable ways to get your food. (Buy local, grow your own, walk to the nearest grocery, use cloth bags etc.)

Home Gardens

Ask the students if they have a garden at home and what they grow in it. Plant some lettuce seeds in Paper tube planters. Demonstrate you don't always have to go out and buy plastic plant pots. Make your own Toilet Paper Tube Planters, fill with soil and plant your own seeds for your garden. Use a plastic tray under these. Sustainable Gardens Tips on how to have a sustainable garden. Students can take their planters home to plant in a pot or the ground no need to move it out of the paper tube as it will decompose!

Home can you be more sustainable

View photo slideshow 'What Is This?' and discuss. Last link on the page.
How can we live more sustainably in all parts of our lives? Discuss needs and wants.
http://your.caerphilly.gov.uk/sustainable/content/sustainable-living

T.O.T.E. Day – (Tote your Own Trash Everywhere) Carrying the Burden

Ask staff and students to attach a plastic bag to their belts for a day. Use a piece of string for those without a belt. Everyone puts their waste into their own personal garbage bag. Make sure that the school's garbage and recycling bins are turned over for that day. Investigate the trash at the end of the day and develop a personal action plan with goals to reduce, reuse and recycle personal garbage. In math class, students can weigh the garbage collected by each classroom, recording it and ordering them from lightest to heaviest. Give feedback to the classes to see if they can reduce that number when the next random T.O.T.E. day is called.

Something to Think/Talk About

Living sustainably is about living within the means of our natural systems (environment) and ensuring that our lifestyle doesn't harm other people (society and culture). It's a big idea to get your head around, for all of us. It's really about thinking about where your food, clothes, energy and other products come from and deciding whether you should buy and consume these things. For example, you can buy timber imported from other countries to use in your home, but do you know enough about the rules in place in those countries to prevent animals from being harmed during the timber harvesting process, or if the local indigenous people support the harvesting, or how much they get paid?
http://www.landlearnnsw.org.au/sustainability/what-is-sustainability

Resources

- **http://wemakecoolthings.blogspot.ca/2011/03/toilet-paper-tube-planters.html**
Paper tube planters

- 'What is This?' Slideshow to get them thinking. Last link on this page
http://olc.spsd.sk.ca/de/resources/conservation08/blank version/

- **http://your.caerphilly.gov.uk/sustainable/content/sustainable-living** "Sustainable Development isn't just about large projects and plans. We can contribute by making small but significant changes in the way we live and work."

SaskEd Curriculm Connections

Kindergarten

CCK.4 CCK.3, RWK.2 DRK.1 CPK.4 CRK.2 SSK.1

Grade 1

CC1.1 OM1.1 IN1.3 CP1.8 CR1.2 SS1.1 DR1.3

Grade 2

CC2.2 PA2.3 RW2.3 CP2.7 CR2.4 N2.1

72 in 64

Students will gain awareness as to how many depots SARCAN has across Saskatchewan, where they are on the map, as well as where Saskatchewan is located on the globe.

Something to Note

With 72 depots in 64 communities, SARCAN serves all of Saskatchewan. Thanks to the people of Saskatchewan and their dedication to recycling, Saskatchewan can boast the highest return rates in all of Canada. Not only is this bragging rights, but it means an incredible amount of waste has been kept out of our landfills!

Concepts & Vocabulary

- Geographic, location and mapping awareness of the province of Saskatchewan
- Understanding of community identities
- SARCAN depots, towns or cities names

Recycling Connections for Grades K - 1 – 2

Saskatchewan's Map Placements

Using globes and Saskatchewan maps, discuss where in the world we live. Try to identify their community's relative position in the globe after locating it on the map of SK. After completing the hands on look use Google Earth or Google Maps on your computer and data projector to show this digitally to the whole class as well. Try this Smartboard activity, which is intended for older students but is fun for the younger ones to explore too!

In small cooperative groups, using the Earth balls provided in the kit, play a catch and throw game where they try to find SK on the ball as fast as they can before passing it on. The challenge is to do this as quickly as you can as a team and improve your time from the last round. This can be done as an alternative space activity for Phys. Ed.

Earth Day Fun

To show they care about the Earth and Recycling as much as SARCAN, students can make their own interpretations of the globe using play dough or modeling clay. If it's in your budget, they can make Earth necklaces/key chains for themselves or for a fundraiser for an Environmental project. See K-1-2 Appendix #2 for directions. Using recycled materials collected over a period of time, they can make Earth Medals or buttons that cost next to nothing for supplies and you are reusing things that might otherwise get thrown away!

Working with Words

Activities using the SK SARCAN Depot Cards: distribute cards amongst groups of students, find the town or cities they receive on a map of SK; find as many different ways to sort the cards in your group, share your ways with the class when all come together for discussion. (e.g. alphabetically, number of letters, rhyming, etc.) Use a pocket chart to organize a handful at a time.

Something to Think/Talk About

Should the Recycling Depots be privately owned – or operated, as opposed to being organized by an organization such as SARCAN? What are the benefits of being community run organization?

Resources

- Google Earth http://www.google.com/earth
- Google Maps https://maps.google.ca/
- Sets of Depot Name cards
- 72 in 64 (K-1-2/3-4-5) Appendix #2 – for directions to make Earth Day Medals, Pins, Necklaces, Key chains or Zipper pulls
- If your school has a SMART board, this one is meant for older students but is fun for the young ones to see too! http://www.digitalweek.info/education/mapping_our_world/mapping_our_world/index.htm

SaskEd Curriculum Connections

Kindergarten

CPK.4 CCK.3 NK.1 RWK.2

Grade 1

CP1.8 CR1.3 CC1.2 N1.1 N1.9 OM1.2 DR1.4

Grade 2

CP2.8 CC2.2 N2.1 N2.2 DR2.3 RW2.3

Reflective Road Paint

Recycled glass that doesn't make the cut for new glass containers is made into other things including tiny glass spheres that help with safety on the roads at night. Hands on science activities explore why and how this works.

Something to Note.

Any recycled glass that does not meet the standards for manufacture into new glass containers or fiberglass insulation (due to contamination) can be used for a wide array of other applications. These include countertops and floors, landscaping, tile, abrasives, filtration and as an ingredient in roadway products – tiny glass spheres that are added to road paint to create the reflection you see while driving.

Concepts & Vocabulary

- Properties of light including reflection and refraction
- Exploring alternatives uses for recycled glass beads
- Critical thinking about community safety
- Sphere, reflection, refraction, reflective glass beads

Recycling Connections for Grades K - 1 – 2

Reflection Composition Centre

Reflection Composition Centre: Students will visit in small groups to explore ways to reflect, catch and compose with light using a variety of materials that have reflective surfaces set up near a window using natural sunlight when possible or the light from a projector or lamp (e.g. tinfoil pie/muffin plates, old CD's, mirrors, prisms, marbles, clear glass containers of various shapes etc.) Take photos of compositions.

Refraction Centre

Set up a large tub with clear plastic glasses filled ½ with water and have containers with pencils colourful straws stir sticks in a basket for them to learn about how refraction bends the light so the object inserted is distorted Learn about refraction at play, as light travels through the water appearing to 'bend' the object inserted into a clear glass of water.

Roadway Centre

Create a darkened area in a corner of the classroom for use with this activity. Using the SARCAN Roadway Mat and toy cars/trucks that are in the SARCAN Learning kit and flashlights and if possible, a camera with a flash, to see the effective properties of the Reflective Road Paint. Discuss the elements of safety afforded by the road paint.

Reflective 'Backpack Patch' Centre

Students cut a patch in the shape of their choice using templates provided by the teacher or one of their own creations drawn on cereal box cardboard, then traced onto the Recycled pieces of denim. Students place patch on a recycled Styrofoam tray and proceed to the paint station to create a design on their patch using white glue or fabric paint bottles with adult or care-partner guidance, it should be squeezed out in lines thick enough for the beads to adhere to. With adult supervision, sprinkle with glass beads, pouring excess beads back for use with other students. Allow to dry overnight. Safety pin badges to backpacks, check them out in a dark room with a flash light!

Safety Note: Students must be reminded to be careful when handling the mirrors, which can break easily, and students should not shine or reflect light into someone's eyes. Follow safe work procedures in all investigations (e.g., direct mirrors away from the sun to ensure that the sun's rays are not reflected into their eyes or the eyes of others).

Something to Think/Talk About

What are other ways these reflective beads could be used?

Resources

- http://www.midpac.edu/elementary/art_pk/2011/10/what-does-learn.php Reflection composition activity
- http://www.colebrothers.com/articles/glassbeads.html example photo of glass beads on highway strips
- Large Glass recycling plant video… (8:18) May need to fast forward through parts for younger students) Watch the end for the big piles of glass product just like at SARCAN plants! https://www.youtube.com/watch?v=4txgjLDbxds SARCAN will create a video of their plant…coming soon!
- Small Glass recycling machine in Gibson, BC (3:41) shows the sound it makes. https://www.youtube.com/watch?v=0xx-80If9XE

SaskEd Curriculum Connections

Kindergarten

CPK.4 CRK.2 CRK.4 CCK.3 ARK.2 FEK.1

Grade 1

CR1.2 CP1.8 OM1.1 OM1.2

Grade 2

CP2.8 CR2.1 CR2.2 LS2.2 IN2.1

Plastic… 450 Years Later

Students will learn that when plastics end up in the landfill or oceans, they take hundreds of years to break down. They need to take action to stop plastics from going in the garbage.

Something to Note

While it takes petroleum-based plastics like PET about 450 years to decompose once they end up in the landfill, they can instead be recycled into a variety of useful products and materials. Recycled PET typically becomes polyester carpeting, fiber fill in winter jackets and sleeping bags and a variation of material for clothing including polyester fleece as discussed in PET lessons. Recycled plastic bottles are also transformed into new plastic products – everything from lawn furniture to the plastic scoop that comes with your laundry detergent.

Concepts & Vocabulary

- Decomposition
- What is a landfill?
- Compare composting and the life of plastic
- Social responsibility to leave a healthy planet for future generations
- Which products can be recycled into new useful products

Recycling Connections for Grades K - 1 – 2

Landfills

- What is a landfill? Interactive model to use with data projector.
- Landfill in a bottle experiment – Science Centre – reuse some plastic bottles for these fun activities.
- Try some of these composting activities with your young students. Turning Rotten into Right
- Discovery Bottles – Reuse some plastic bottle for a fun centre!

Home Connection

Look for other products in your house that may have been made from recycled plastic, if you can, bring it to share with other students, if it's too large, ask if you can take a photo of it and send it to the teacher. Share these items as they come in, make a display with a student-made signs to teach others about the value of recycling your plastic! Learn ti identify which types of plastic can be recycled. What can you do with the ones that can't be recycled, what could they

be reused for?

Using the 'Information On Plastic' link below gather the different types of plastic for students to use at a sink or tub of water and find the answers to does it float? What would happen to plastic that isn't recycled properly if it gets in our oceans, lakes and rivers?

Just For Fun!

Create a recycled water bottle game for alternate space Phys. Ed. See ideas on these sites, or this Ice Bowling game for a June Play Day activity

Something to Think/Talk About

What might happen if the planet runs out of room for the landfills? Where might the garbage go?

Resources

- What is a landfill? http://techalive.mtu.edu/meec/module15/Landfills.htm interactive model of a modern landfill
- http://pre-schoolplay.blogspot.ca/2011/09/discovery-bottles.html Discovery Bottles
- Turning Rotten into Right – A kindergarten study of decomposition http://greenteacher.com/turning-rotten-into-right-a-kindergarten-study-of-decomposition/
- Plastic Codes 1-7 http://www.ecy.wa.gov/programs/swfa/kidsPage/plastic.html
- Water Bottle Bowling Pins http://www.canadianfamily.ca/activities/crafts/diy-boredom-buster-water-bottle-bowling-pins/
- Ice Bowling using Plastic Bottles http://www.learnplayimagine.com/2013/04/gross-motor-games-ice-bowling.html
- Landfill in a Bottle experiment – do as a group or in small groups http://teams.lacoe.edu/documentation/classrooms/gary/plants/activities/articles/composting.html

SaskEd Curriculum Connections

Kindergarten **CCK.3** **ARK.2** **CRK.2** **CRK.3** **CCK.4** **PEK.4** **FEK.1** **RWK.2**

Grade 1 CR1.2 CR1.3 CR1.4 CC1.2 PE1.5 AW2.2 OM1.1

Grade 2 CR2.1 CR2.3 CR2.4 CC2.2 PE2.5 PA2.3 LS2.2

PET (Polyethylene terephthalate)

The name says it all. What is it, how do you say it and how is it processed into new products

Something to Note.

Plastic containers are squashed and then shredded into plastic flakes which make new bottles, buckets and pails. It is also used to create polyester fiber to use in fleece clothing and high grade carpet. Your jacket or carpet could be made from the bottle you drank from.

Concepts & Vocabulary

- Research plastic to identify what makes it "extremely versatile, extremely important and extremely recyclable"
- Polyethylene terephthalate
- Polyester fibre
- Discover what products are made from PET

Recycling Connections for Grades K - 1 – 2

How do you say it?

Recycled soda and water bottles are made from PET plastic. PET is short for Polyethylene Terephthalate (pol-y-'Eth-yl-lene ter-'Eph-tha-late). Practice saying the scientific term for plastic – Polyethylene terephthalate. Record the students attempts to say it like a tongue twister 3 times fast! Play back for students… they love listening to the bloopers!

Samples

Pass the samples of the PET in its different stages; flakes, fiber, fabric samples, carpet samples. Look to see if anyone in the class is wearing fleece and compare it to the samples. Plastic is extremely versatile, extremely important and extremely recyclable, 100%!

Process

Get students to predict what the process would involve to break down the plastic to be used for polyester fiber. Watch the videos listed in "Resources" to learn more about the process of changing plastic bottles into fibre! Give students a chance to examine the samples provided in the kit. Ask students to write describing words on sticky notes using black felt pen so they can be seen from afar, and put on Chart paper. Together come up with a poem about PET.

Magical Makeover

Kids click on an item and it shows what it could be made into. Also tells how many bottle to make 1 of the items. Good for math problems! http://www.kidsrecyclingzone.com.

Home Connection

Look for items of clothing made from fleece (dad's vest, mom's scarf, your zip up, a hat etc) to bring and show at the 'PET Fashion Show' in the classroom the next day. Put on some music and let students who brought stuff, or those who want to volunteer to wear the items brought, ham it up down the 'runway' desk aisles in their pop bottle gear. Student narrators could ad lib the show.

Something to Think/Talk About

If your plastic water bottle can become your favourite sweater, what possibilities do you imagine for your future purchases?

Resources

- Pronunciation of polyethylene https://www.youtube.com/watch?v=a_Pqw5pKu5U
- Pronunciation of terephthalate https://www.youtube.com/watch?v=y-cRR18LNks
- Magical Makeover http://www.kidsrecyclingzone.com-
- Plastic Recycling process poster Page 20 http://www.energyquest.ca.gov/saving_energy/RECYCLINGFactsGamesCrafts02.PDF
- PET flakes process https://www.youtube.com/watch?v=pZSw9BH3L8U
- How Fleece is Made https://www.youtube.com/watch?v=YHHqFwDhGTM

SaskEd Curriculum Connections

Kindergarten **CPK.1** **CHK.1** **CP1.6**, CRK.2 CC1.4

Grade 1 **CP1.3** **CP1.8** CR1.2 CR1.3 CR1.4 **OM1.1**

Grade 2 **CP2.3** **CP2.8** CR2.4 CC2.2 CC2.4 **LS2.1**

Historically Speaking

Students will learn what SARC stands for and the history of SARCAN in Saskatchewan

Something to Note.

In May of 1988, SARC was awarded the exclusive contract to collect and recycle non-refillable beverage containers in Saskatchewan. Previously, only refillable containers were allowed in the province, such as glass. Thanks to the residents of Saskatchewan and their dedication to recycling, Saskatchewan can boast the highest return rates in all of Canada.

Concepts & Vocabulary

- Saskatchewan leadership in Canada
- History of recycling in Saskatchewan and Canada
- History of SARCAN

Recycling Connections for Grades K - 1 – 2

Acronym

Introduce the word acronym and see which ones they know the meanings of or if they can think of some they know and what they mean (e.g. LOL, Q&A, AC, OJ etc.). Discuss with the students the history of SARCAN and how it was a division of SARC, get them to make predictions about what the letters stand for (Sask Association of Rehabilitation Centres). SARC was seeking contracts and employment opportunities for people with disabilities. What do you think the connection to recycling was?

Math Curse

Math Curse: Jon Scieszka (Author), Lane Smith (Illustrator) – After reading this book, read the history of SARC (see lesson building a caring community to learn more about SARC), Say that makes me think of a Math problem. How many years ago did SARCAN begin recycling non-refillable containers in our province? Younger students can make suggestions and work as a group to figure it out. You can walk them through it if necessary. Challenge the grade twos to work together in small groups to figure it out. Share what strategies your group used with entire class after completed.

History of SARCAN

As you read the History of SARCAN on their website, have students put up their hand every time they hear a year mentioned. Write the date on a sticky note of one colour and the event

that happened on another colour. When finished, construct a timeline on the whiteboard based on the history of SARCAN. SARCAN is leading North America in its recycling success story!

Thank You

Write a thank you letter (individual for the older students and a group one for the K's & 1's) to your local SARCAN Depot thanking them for the things they do for the people of Saskatchewan and for the environment! Encourage them to give specific examples.

Something to Think/Talk About

Is it important for a region or province to show leadership within their country?

Resources

- http://www.enchamtedlearning/acronyms/ Acronyms for kids
- http://www.sarcan.ca/pages/history History of SARCAN
- Math Curse by Jon Scieszka and Lane Smith, Reading Rainbow episode on Vimeo or read the book from the library

SaskEd Curriculum Connections

Kindergarten

CRK.1, CRK.2, CRK.3 CRK.4, CCK.3, ARK.2 NK.5

Grade 1

CR1.1 CR1.3 CR1.4, CC1.2 N1.9 IN1.3

Grade 2

CR2.1 CR2.4 CC2.2 CC2.4 N2.1 N2.2 IN2.1 PA2.3 RW2.3

High Quality Pulp, High Quality Paper!

Hydrapulping turns juice boxes into highly desirable paper pulp. Learn how this is done on a smaller scale in the classroom.

Something to Note

The aseptic containers (also known as TetraPak) that come into SARCAN are shipped to Cheboygan, Michigan. Once they arrive at their destination, these containers are submitted to a process called hydrapulping. This process separates the layers of paper, plastic and aluminum that make up the beverage container. This is done in lukewarm, slightly alkaline water for about 30 minutes. The high quality paper pulp, which comprises about 70% of the container, is then made into cardboard corrugate, napkins, facial tissue and high grade paper. This resulting paper is highly desirable, clean and bright.

Concepts & Vocabulary

- Hydrapulping
- Process of making pulp into paper
- Art project of decorating paper
- Life cycle of a juice box

Recycling Connections for Grades K - 1 – 2

How They Make It

- Watch How They Make It… TetraPak https://www.youtube.com/watch?v=5IlrOxRPy0U
- Clean, rinse and cut juice boxes in ½ distribute to partners to try to take it apart. Discuss what you see how easy was it to separate?
- The aseptic containers (also known as TetraPak) that come into SARCAN are shipped off to Cheboygan, Michgan. Find Michigan on the globe. Once there, they go through a process called Hydrapulping to separate it. Watch or do this demonstration to see/show students how hydrapulping works https://www.youtube.com/watch?v=hEzDWc30p9s
- Make your own pulp from paper scraps from art projects, bulletin boards. Use it to make your own paper following the steps on High Quality Pulp, High Quality Paper Attachment #4 Coffee Can Papermaking Directions
- Create a drama of the lifecycle of the juice box, use props and signs showing how recycling them creates new paper based products such as, corrugated cardboard, paper napkins, high quality paper and facial tissue. The Other 30% (see video from Mumbai India to show products made) is made up of 6% aluminum and 24% plastic and is used for things like roofing, fences, decks and flowerpots!

- For fun, watch this young man's way to reuse a tetrapak. Cradle-to-cradle – Entry to the TetraPak "Design For Good" competition – very creative! https://www.youtube.com/watch?v=vfV-D8VRpcg

Something to Think/Talk About

The residual plastic (24%) and aluminum (6%) gleaned from the hydrapulping process is used for fences, decks and flowerpots. That's a lot of recycled use out of any material!

Resources

- http://www.sarcan.ca/whre_does_it_go for more infor about TetraPaks
- https://www.youtube.com/watch?v=5IlrOxRPy0U How It's Made… TetraPak
- High Quality Pulp, High Quality POaper (K-1-2) Coffee Can Papermaking Directions – Attachement #4
- https://www.youtube.com/watch?v=vfV-D8VRpcg TetraPak "Design For Good" competition – creative way to reuse/recycle a tetrapak!
- TetraPak use and recycling in Mumbai, India shows the hydrapulper used, as ewll as what the poly-aluminum residue is used for, shows the way it is made into corrugated roofing materials https://www.youtube.com/watch?v=Pzp2tscuNGI_-_t=244

SaskEd Curriculum Connections

Kindergarten

CPK.1 CPK.4 CRK.1 CRK.2 CRK.4 CCK.4 FEK.1 RWK.2

Grade 1

CP1.8 CC1.1 CC1.2 CR1.1 CR1.2 CR1.3 SS1.1 OM1.2 CP1.3 CP1.1

Grade 2

CP2.8 CR2.1 CC2.1 N2.1 SP2.1 LS2.1 LS2.2 DR2.3 RW2.3

Building A Caring Community

Students will learn about different types of disabilities. Through the activities they will see how all people have similar needs and wants and how SARCAN helps people if disabilities meet those needs.

Something to Note

SARCAN Recycling (formed in 1988) is a division of the Saskatchewan Association of Rehabilitation Centres (SARC). SARC was established in 1968. It began as an association with a core membership of eight Member Agencies providing service for persons with disabilities. The association was set up to provide one common voice with which to lobby government, secure major contracts for workshop production, conduct continuing educational programs, and research new employment opportunities for people with disabilities. Today, SARC has over 80 Member Agencies providing developmental, residential, and employment services for thousands of individuals with disabilities across the province.

Concepts & Vocabulary

- People with disabilities and varying abilities
- Non-profit associations
- Rehabilitation

Recycling Connections for Grades K - 1 – 2

What does it mean to be disabled?

- SARCAN employs disabled people at its depots around the province. Discuss: What does it mean to be disabled? Have students turn and share what they think with another student or group of students.
- Read one of the children's books in the kit about disabilities or one of your choosing from your school library. Follow up discussion, what are some different types of disabilities that were mentioned in the books? Turn and share with another student or group of students.
- Try some of the Building Awareness of Disabilities activities on this site. Sameness & Differences : http://www.brighthubeducation.com/lesson-plans-grades-1-2/12936-building-awareness-of-disabilities/

Something to Think/Talk About

Imagine the world if all was governed by love and a caring attitude, what a wonderful world it would be. Do you think it is possible?

Resources

- Acronyms for kids http://www.enchantedlearning.com/acronyms/
- Books from SARCAN Educational Kit
- Building Awareness of Disabilities Activities http://www.brighthubeducation.com/lesson-plans-grades-1-2/12936-building-awareness-of-disabilities/

SaskEd Curriculum Connections

Kindergarten

CRK.1 CRK.3 CRK.4 ARK.2

Grade 1

CR1.1 CR1.2 CR1.3 N1.3 RW1.2

Grade 2

CR2.1 CR2.4 IN2.1 PA2.3

Is Your Glass Half Empty, Is Your Glass Half Full?

Glass bottles and jars are 100% recyclable, learn about the recycling process for glass. We need to teach others to keep glass out of our landfills!

Something to Note.

The clear glass that customers bring into SARCAN goes to Potter's Industries Inc. in Moose Jaw, Saskatchewan, whole the coloured glass is shipped to Vitreous Environmental Group in Airdrie, Alberta. From there, it is manufactured primarily into new glass bottles and jars, It is also made into fiberglass insulation, a very highly sought after product.

Concepts & Vocabulary

- Research and describe the process of recycling glass
- Tally marks, adding up bottle totals
- Reviewing shapes, in what shapes would you want to produce/portray a bottle
- 3D drawing

Recycling Connections for Grades K - 1 – 2

Glass Bottles and Jars

Glass bottles and jars are 100% recyclable and can be recycled endlessly without any loss in purity or quality. After watching the glass recycling video(s), in small groups, describe the process of recycling glass in your own words, have a care partner/volunteer scribe for each group and write down what happens step-by-step. Students draw pictures to go with each step. Share with other groups. Use pictures in a bulletin board display to encourage others to recycle glass! Research the number of bottles being recycled at your local depot on a given day. Check out the counter on the SARCAN website during business hours. Look at the example tally sheets and present a graph indicating the statistics of bottles recycled on those tally sheets.

Home Connection

With permission and proper wrapping, bring a bottle of an interesting shape, and/or colour from home. *If you are not successful getting a variety of bottles from your class, you could contact your nearest SARCAN depot and put in a request. Share bottles brought from home/SARCAN with the class. Note the shape differences, where the light reflects off the glass, the shadows created from different angles of the same bottle. Display in small groupings at each table; add a light source to see reflections. Using chalk pastels on coloured paper, draw the shape of the bottle(s) you most like.

Something to Think/Talk About

Over a ton of natural resources are saved for every ton of glass recycled. Why wouldn't everyone recycle glass jars and bottles?

Resources

- How to draw a bottle http://www.instructables.com/id/How-to-draw-a-bottle/
- Students will learn the classic method of drawing, on toned paper with charcoal or black pencil, heightened with white. http://kinderart.com/drawing/classicstilllife.shtml
- Large glass recycling plant video (8:18) You may need to fast forward through some of it, but at the end it shows the large piles of glass just like at the SARCAN plant in Saskatoon & Regina. https://www.youtube.com/watch?v=4txgjLDxds SARCAN will create a video of their plant, coming soon!
- This one in Gibson, B.C. is a smaller machine and shorter in length (3:41), it shows the noise it makes. https://www.youtube.com/watch?v=0xx-80lf9XE
- Glass Recycling process printable (pg 16) https://www.energyquest.ca.gov/saving_energy/RECYCLINGFactsGamesCrafts02.PDF
- Example tally sheets from SARCAN depot Educational Kit.
- SARCAN Website counter http://www.sarcan.ca/

SaskEd Curriculum Connections

Kindergarten

CPK.4 CRK.1 CRK.2 CRK.4 CCK.4 ARK.2 **RWK.2**

Grade 1

CP1.8 CR1.2 CR1.1 CR1.3 CC1.1 CC1.2 **IN1.3**

Grade 2

CP2.8 CR2.1 CR2.4 CC2.1 **IN2.1** **PA2.3** **RW2.3**

Closed Loop Aluminum

The students will learn about the closed loop cycle of Aluminum and the importance of getting everyone to recycle their cans so they can be reused for new, useful products.

Something to Note.

Aluminum cans most typically become – you guessed it – more aluminum cans. In fact, the recycling of aluminum is incredibly efficient: when you drop off an aluminum can at your local SARCAN depot, it can be back on the shelves as a new can in as little as 60 days!

Concepts & Vocabulary

- Sound discovery working with the 'unmistakable sound when opened' aluminum
- Research the efficiency of the closed loop system
- Compressed weight versus normal weight of cans and the effect on transportation
- Ingot – What are they?

Recycling Connections for Grades K - 1 – 2

Pop Cans

- Record the sound of pop cans opening; brainstorm other instantly recognizable products by sound. Make a soundscape using some or all of these sounds. Play it for the other groups in your class and/or another classroom and see which ones they can pick out!
- Watch the video and follow the words of the Aluminum recycling Loop http://thinkcans.net/flash_game/loop_interactive/preview.html
- Aluminum retains its properties throughout the recycling process, so recycled cans save 95% of the energy. Watch a video of the lifecycle of a pop can. Create a step by step drawing of the process, adding words below to explain the process in their own words in their science journals.
- Read about the role ingots play in the Aluminum Recycling Process. Visit http://www.eschooltoday.com/ click on **Waste Management** from the list at the left-choose **Aluminum Can Recycling** Show examples from the kit as well as on Closed Loop (K-1-2) Appendix #3.

Home Connection

- Ask students to bring in empty pop cans to class. When you have enough to make 2 large bags, count the total and divide evenly. Have kids find ways of crushing the cans sideways, like SARCAN does at their processing plant (NOT from the top like a puck)

from 1 of the bags. Compare the two bags make an observation about the advantage of crushing cans before transport. Watch a video of the can crusher in action and check out what a bale of cans looks like.

- The mass of a bale of cans is 900 lbs. Using a weigh scale, find out your own personal mass and compare. Using an online calculator divide that number into the total mass of the bale to find out how many children of that same weight would it take to equal one bale?

Something to Think/Talk About

Each and every can should be recycled. How do we get people to understand the ease of the solution to a massive problem?

Resources

- Ingots in the Aluminum Can Recycling Process http://www.eschooltoday.com/ click on **Waste Management** from the list at the left side-choose **Aluminum Can Recycling**
- What is an ingot? Closed Loop (K-1-2) Attachment #3
- How It's Made…Aluminum – https://www.youtube.com/watch?v=fa6KEwWY9HU
- American life cycle of a can – https://www.youtube.com/watch?v=V7Y0zAzoggY
- Sesame Street tells the closed loop cycle of a aluminum can. https://www.youtube.com/watch?v=BKpoCzt03B8&list=PL983BF7845BC6C067&index=12
- Aluminum Recycling Loop 6 stages from the UK (pronunciation differences) ***You need to discuss that it is missing the crushing and baling stage that SARCAN does. This results in less trips needed to haul the cans to the processing plants. Less cost, as well as less pollution. http://thinkcans.net/flash_game/loop_interctive/preview.html
- Online SMARTboard calculator http://www.amblesideprimary.com/ambleweb/mentalmaths/BigCalculator.html

SaskEd Curriculum Connections

Kindergarten

CPK.3 CPK.4 CRK.4 , CCK.4 ARK.2 NK.1 RWK.2

Grade 1

CP1.1 CP1.5 CC1.4 N1.1 SS1.1

Grade 2

CP2.5 CC2.2 N2.1 PA2.3 RW2.3

Can You Feel It?

The structure and properties of the 'tin' can is explored through math, art, and culture.

Something to Note…

The more durable steel containers that come into SARCAN end up at the Evraz in Regina, a leading steel manufacturer. At Evraz, they produce a wide range of specialty industrial steel products, such as rail (for trains!), line pipe and coiled plate.

Concepts & Vocabulary

- Magnetic / non-magnetic
- Environmental full circle of life
- Research the properties of 3D objects
- Research and create Cultural Pop Art of Andy Warhol
- Create art and/or poetry on the elements and properties of the sphere
- Importance of recycling

Recycling Connections for Grades K - 1 – 2

Material Breakdown

- How a tin can is made.
- How a tin can is recycled. Shows the process including magnets
- Examine a can discuss the name for this 3D shape, Cylinder. A cylinder has a flat part on the ends what shape is it? Sing or listen to song about circles. Circle Song, All My Life's a Circle…many songs about circles.
- Discuss the importance of the circle to the First Nations people. Start a Talking Circle as a regular addition to your classroom routine. Monday morning is a good time to do one, with many students wanting to share. Traditional respectful listening is expected, you only speak when you have the talking stick.
- Write and print a circle poem sharing what you love about circles!
- Type 'Andy Warhol cans gallery' into your search engine to find examples of his art.

Home Connection

- Have students bring in reused and cleaned, Styrofoam trays from home, for an Andy Warhol Can It! art project. After practicing drawing a 3D cylinder on paper transfer it onto the Styrofoam (sides trimmed off) bottom using a pencil. Printmaking demo using Styrofoam.
- At SARCAN, magnets are used to sort metals. Set up a Magnetic/non-magnetic I Spy Science Center! Gather an "I spy"-like collection of pom poms, dominoes, blocks, paper clips, and a bunch of other toys on a large tray. Students use magnets to sort them. Discover how

magnets could be used by SARCAN for sorting the products and have a bin with some pop cans, juice boxes, plastic bottles, and Styrofoam and paper cups, tin juice cans, etc.

Something to Think/Talk About

Imagine the number of tin cans that make it into the landfill...think of the train rails and the places they could take us!

Resources

- http://thinkcans.net/flash_game/loop_interactive/preview.html Aluminum Recycling Loop 6 Stages from the UK (pronunciation differences) ***missing the crushing and baling stage that SARCAN does.

- Canny Facts from Can History Factsheet http://thinkcans.net/kids-area/canny-facts-can-history - .U87MVSjDOJo

- Pac-Can - A classic game for all ages - use the power of recycling to catch the cans. http://thinkcans.net/flash_game/PackCan.swf

- Create a Circle Poem http://www.readwritethink.org/files/resources/interactives/theme_poems/

- Talking Circle http://www.scs.sk.ca/cyber/elem/learningcommunity/6/1/curr_content/aboriginal_res/supplem.htm - talk

- Steel Appeal 00:38 shows the separation using magnets in UK http://www.ask.com/youtube?q=recycling+steel+video&v=-r1UisuNtHc

- How a tin can is made https://www.youtube.com/watch?v=9QGrTIUuWgg

- Printmaking demo using recycled Styrofoam http://vimeo.com/30564693

SaskEd Curriculum Connections

Kindergarten

CPK.4 CRK.1 CRK.2 CRK.4 CCK.4 ARK.2 NK.1 NK.3 NK.5 SSK.1 RWK.1 RWK.2 FEK.1

Grade 1

CP1.8 CR1.1 CR1.2 CR1.4 CC1.4 N1.1 DR1.2 SS1.1 OM1.1

Grade 2

CP2.8 CR2.1 CR2.2 CR2.4 CC2.2 N2.1 SS2.2 PA2.3 RW2.3

Global Comparisons

Learn about recycling around the world and look at the creative ways some countries' recycle bins are decorated.

Something to Note…

Top Recycling Countries are; Switzerland - 52%, Austria - 49.7%, Germany - 48%, Netherlands - 46%, Norway - 40%. Denmark has glass recycling down to a science – 98 percent of glass bottles in Denmark are reusable, and of that number, 98 percent are returned to vendors for reuse. **See Background information section for additional facts.**

Concepts & Vocabulary

- World population and waste management
- Percentages and value representation
- Creative recycle bin design
- Leadership in the environmental issues

Recycling Connections for Grades K - 1 – 2

Global Matters

- Mapping Our World Smart board/PC activity. http://www.oxfam.org.uk/education/resources/mapping-our-world, it explores the relationship between maps and globes. Look for North America, Africa, etc. Have real globes in the room as well for comparisons.
- Why do some countries excel at recycling, Denmark, and other countries, such as the United States of America struggle to achieve developing recycling programs? Does the size of the country make a difference? Compare the size of these 2 countries on a map or globe.
- What are ways we could use to encourage people to recycle all of their glass products like Denmark does? Create a poster, make a video, or write a puppet play to encourage others to recycle all of their glass products.
- Recycling around the world - show students (in small groups or with data projector) this website. After reading what they do in their countries for recycling, find the country on a world map or globe. Look through the photo gallery at the different kinds of bins they use around the world and where they are usually located. In small group discuss which ones you like best and why. Discuss your own communities and what they do for recycle bins for public use. Design your recycle bins for your town/city thinking about shape, colours, design, what text to include. For examples of creative messaging used on bins around the world to share with your students visit this site…

- Does creative bin design help people sort their trash? Share your designs and suggestions for recycling with your class. You might also consider sharing them with city/town administrators.

Something to Think/Talk About

Communities in other places in the world that are very poor have no recycling programs at all. Discuss what problems this might create. Should garbage and recycling become the main interest or concern for only the poor with the privileged few not needing to worry about what happens to their landfills? Is that fair?

Resources

- Mapping Our World -This unique interactive website works with maps and globes to transform pupils' understanding of the world. http://www.oxfam.org.uk/education/resources/mapping-our-world

- Environmental effects of poor waste management are explored. http://www.eschooltoday.com/waste-recycling/effects-of-poor-waste-management.html

- Lessons on Waste Management http://www.eschooltoday.com/waste-recycling/effects-of-poor-waste-management.html

- Recycling facts around the world and photos of recycle bins around the world http://www.planetpals.com/recyclingworld.html see also Appendix # 5

- Slideshow of recycle bins around the world http://www.treehugger.com/slideshows/natural-sciences/recycling-bins-from-around-the-world/

- Creative messaging on bins around the world http://www.greenlivingonline.com/slideshow/recycling-around-world?page=5

- Tips for writing a puppet play http://learningtogive.org/lessons/unit183/

- Tips for making a video/audio project http://www.e2management.com/contest/tips.html

- Recycling by the numbers –The Global Face of Recycling https://www.flickr.com/photos/43709718@N03/4554778626/sizes/o/

- World Recycling: How America Stacks Up -compares USA efforts with other countries http://freegreencan.com/wp/tag/global-recycling/

SaskEd Curriculum Connections

Kindergarten

RWK.2 CCK.4 CCK.3 CRK.4 CRK.2 CRK.1 **CPK.4**

Grade 1

DR1.4 CC1.4 CC1.1 CR1.4 CR1.2 CR1.1 CR1.2 **CP1.8**

Grade 2

RW2.2 **RW2.3** **DR2.3** **IN2.1** CC2.2 **CP2.7** CR2.1 CR2.2

Global Comparisons Background Information

Austria comes in at number one, recycling a whopping 60 percent of its total recyclable waste. Switzerland, Germany and the Netherlands all recycle around 50 percent of their waste, and the rest of Europe comes up somewhere in the 35-40 percent range. Currently, America recycles about 28 percent of its total recyclable waste. In Brazil, 50 percent of the trash created daily is recycled, and India manages to recycle 40 percent of their waste.
Amounts of waste are largely determined by two factors: first, the population in any given area, and second, its consumption patterns – which are controlled by the evolution of Gross Domestic Product per Capita (GDP/c). According to the UN, between now and 2025, the world population will increase by 20% to reach 8 billion inhabitants (from 6.5 today). Moreover, by 2050, the total population will be around 9.5 billion, unless specific control measures are broadly adopted. If this becomes a reality then a population of 8-8.5 billion in 2050 may be considered a successful stabilization of numbers. http://www.waste-management-world.com/articles/print/volume-11/issue-2/features/waste-management-2030.html

It is important to note that 97% of this growth will happen in Asia and Africa, which includes some of the poorest countries that have the least capability to absorb it. After 2025 it is expected that Asia will hold more than two thirds of the world's population. This growth also will boost urbanization of the population (urban population is expected to be around 65% of the total one after 2040), and the creation of extended zones of poverty around and inside megacities. The number of inhabitants of slums will be double around 2025 and will reach 1.5 billion.

“There is no formal system of solid waste management in Zanzibar. Solid waste is collected in a large variety of containers such as plastic bags, plastic buckets, large tins, palm leaf baskets and cardboard boxes. This is unhygienic and causes nuisance, animals that scavenge in the waste scatter the solid waste on streets which then gets washed into drains causing blockages. There are clear links between sanitation/solid waste management issues and environmental and health risks. General banning of plastic bags only does not finish the problem of plastic waste management in Zanzibar. As we know that the uses of various forms of plastic materials are very wide and increasing day to day due to the improving of people’s economical and country development.” - http://unhabitat.youthmovements.org/initiatives/solid-waste-management-and-poverty-eradication-plastic-waste-recycling