Active and Sustainable School Transportation
Lesson Plans for the Ontario Curriculum

Prepared for Piloting Phase – January 31, 2017

Grade 1 – Science and Technology

Contents

Definition of "ASST"

What is Active and Sustainable School Transportation (ASST)?

Active Transportation refers to any mode of human-powered transportation, including but not limited to:

- Walking/running
- Cycling
- Scootering
- Skateboarding
- In-line skating
- Snowshoeing
- Skiing
- Travel with the use of mobility aids, including motorized wheelchairs and other power-assisted devices moving at comparable speed

Sustainable Transportation refers to modes of transportation of people or goods that meet the needs of the present without compromising the ability of future generations to meet their needs. All modes of active transportation are sustainable. Sustainable transportation also includes mechanized modes of transportation which use energy efficiently:

- School bus
- Carpooling
- Public transportation (bus, subway, light rail, etc.)

Other terms

School boards, public health departments and community advocates have long promoted Active and Sustainable School Transportation through various programs. Terms and phrases commonly associated with such programs include:

- Active and Safe Routes to School
- Active School Travel
- School Travel Planning
- Walk to School, Bike to School
- Micro-mobility

Grade 1 – Science and Technology

BIG IDEA: Humans need to be responsible for the way in which we use energy.

Science and Technology:
Understanding Matter and Energy - Energy in our Lives

Overall Expectations – By the end of Grade 1, students will:

1. assess uses of energy at home, at school, and in the community, and suggest ways to use less energy;
2. investigate how different types of energy are used in daily life.

Specific expectations:

1.1 describe their own and their family's uses of energy *(e.g., to operate lights, video games, cars, computers)*; identify ways in which these uses are efficient or wasteful, taking different points of view into consideration *(e.g., the point of view of a parent, a sibling, a member of their extended family)*; suggest ways to reduce personal energy consumption; and explain why it is important for people to make these choices;

3.1 demonstrate an understanding that energy is what makes the things they do or see happen;

3.4 identify everyday uses of various sources of energy *(e.g. food to help animals, including humans, survive and move; natural gas to heat homes and schools; petroleum to power cars and buses; electricity to power lights; batteries to power toys);*

2.8 use of variety of forms *(e.g. oral, written, graphic, multimedia)* to communicate with different audiences and for a variety of purposes *(e.g. use labelled diagrams to show what happens when plants were grown in different light conditions)*;

3.5 demonstrate an understanding that humans get the energy resources they need from the world around them *(e.g. the wood, oil, and gas to heat our homes and cook our food)* and that the supply of many of these resources is limited so care needs to be taken in how we use them.

Science and Technology:
Understanding Life Systems - Needs and Characteristics of Living Things

Overall Expectations – By the end of Grade 1, students will:

1. assess the role of humans in maintaining a healthy environment

Specific expectations:

1.2 identify personal action that they themselves can take to help maintain a healthy environment for living things, including humans *(e.g. walk to school instead of being driven in a car, be careful of what they put down the drain at home; practice cleanliness to reduce the spread of germs when helping in the kitchen; show care and concerns for all living things);*

3.4 describe the characteristics of a healthy environment, including clean air and water and nutritious food, and explain why it is important for all living things to have a healthy environment.

These lesson plans also address curricular expectations related to Mathematics and Language.

Mathematics: Data Management and Probability

Overall Expectations – By the end of Grade 1, students will:

1. collect and organize categorical primary data and display the data using concrete graphs and pictographs, without regard to the order of labels on the horizontal axis;
2. read and describe primary data presented in concrete graphs and pictographs.

Specific expectations:

- read primary data presented in concrete graphs and pictographs, and describe the data using comparative language (e.g., more students chose summer than winter as their single favourite season);
- pose and answer questions about collected data (Sample problem: What was the most popular fruit chosen by the students in your class?).

Language: Media Literacy

Overall Expectations – By the end of Grade 1, students will:

1. Create a variety of media texts for different purposes and audiences, using appropriate forms, conventions, and techniques.

Specific expectations:

3.1 identify the topic, purpose, and audience for the media text they plan to create *(e.g. a media text to explain the importance of hand-washing to a Kindergarten class, or to tell the story of a class trip to parents or visitors);*

3.2 identify an appropriate form to suit the purpose and audience for a media text they plan to create;

3.4 produce some short media texts for specific purposes and audiences *(e.g. a tape-recorded soundtrack for a story; a sequence of pictures and/or photographs that tells a story; a sign or poster for their classroom or the school; a selection of images downloaded from the Internet to accompany a science project; a collage of images a story character might enjoy or own; an enactment of a scene about a character from a favourite movie).*

Lesson #1: What is Energy?

Overview
Students will be able to describe different ways energy is used throughout their school.
Students will begin to understand the terms renewable and non-renewable energy.

Curriculum Expectations

Science and Technology: Understanding Matter and Energy - Energy in our Lives
Overall Expectations – By the end of Grade 1, students will:

1. assess uses of energy at home, at school, and in the community, and suggest ways to use less energy;
2. investigate how different types of energy are used in daily life.

Specific Expectations: 3.1, 3.4

Materials Provided in Lesson	**Materials Provided by Teacher**
Website and video links	Clipboard Paper Pencils Camera

Teacher Notes
Students may need instruction about using the camera.
If possible, make prints of photographs for use in Lesson #2.

Additional Information

Lesson #1: What is Energy

MINDS ON – QUESTION FOR STUDENTS	Time
What is "energy"? **Video: "What is Energy?"** 25SDA (Speed Drawing Animation), 1:41 min https://youtu.be/wyVF6R9e6xE	10 min
ACTIVITY	
Take the students on an "Energy Walk", a tour of the inside and outside of the school. Ask students to take pictures and make notes on different things that use energy in and around the building.	30 min
CONSOLIDATION	
In the classroom, discuss with students what they discovered on their "Energy Walk". Introduce the distinction between **renewable** and **non-renewable** energy.	10 min
EXTENSIONS	

Lesson #2: Sources of Energy

Overview
Students will be able to describe sources and energy, and how they, their class, and their families use energy, with a focus on transportation. Students will be able to describe ways to reduce personal energy consumption and explain why it is important for people to make those choices.

Curriculum Expectations

Science and Technology: Understanding Matter and Energy - Energy in our Lives
Overall Expectations – By the end of Grade 1, students will:

1. assess uses of energy at home, at school, and in the community, and suggest ways to use less energy;
2. investigate how different types of energy are used in daily life.

Specific Expectations: 1.1, 3.5

Mathematics: Data Management and Probability
Overall Expectations – By the end of Grade 1, students will:

1. collect and organize categorical primary data and display the data using concrete graphs and pictographs, without regard to the order of labels on the horizontal axis;
2. read and describe primary data presented in concrete graphs and pictographs.

Materials Provided in Lesson	**Materials Provided by Teacher**
BLM - Grade 1, Lesson #2 – Energy Sources	Chart paper Blank paper Coloured markers

Teacher Notes
As an alternative to using *BLM - Grade 1, Lesson #2 – Energy Sources*, students can be asked to sort printed photographs from the Energy Walk activity in Lesson #1.

Students may need some guidance reading and interpreting a graph.

Additional Information

Video – "Ways to Save Energy at Home and School"
2:56 min
https://www.youtube.com/watch?v=VA3W5G7BLPI

Video – "Kids Learning - How to save Energy"
7:00 min
https://www.youtube.com/watch?v=MOvo_OtIwpU

Lesson #2: Sources of Energy

MINDS ON – QUESTION FOR STUDENTS	Time
"What are ways we use energy efficiently in our homes and in our class?"	5 min
EXPLICIT INSTRUCTION	
Explain to students that humans get the energy resources they need from the world around them (*e.g., wood, oil, and gas to heat our homes, cook our food, power our cars).* Explain to them that the supply of many of these resources is limited so care needs to be taken in how we use them.	10 min
INDEPENDENT WORK	
Ask students to complete "BLM Grade 1, Lesson #2 - Energy Sources".	10 min
GUIDED PRACTICE / INTERACTIVE MODELING	
Divide the students into groups of 3 or 4. Ask them to brainstorm about ways they could use energy efficiently. After a few minutes, brainstorm together about ways to conserve energy. Record ideas on the board. Focus on the idea of conserving energy when travelling to school. Ask students how they traveled to school. Record the information in graph or chart form.	15 min
CONSOLIDATION	
Tell students that in an upcoming lesson, they will create a challenge for the class or the school, to reduce energy consumption on the trip to school.	10 min

Name: _____ Date: _____

Energy Sources

What source of energy makes the thing in each picture work? (One of the sources is used twice).

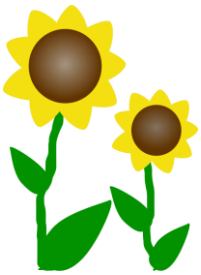
electricity	wind	sun	gasoline	muscle

_____

_____

_____

_____



Cut out the pictures. Match them to the source of energy.
Glue them in place.

Electricity	Sun	Wind

Gasoline	Muscle

Lesson #3: Class Energy Conservation Goal

Overview
Students will be able to describe the characteristics of a healthy environment. Students will be able to identify a personal or class action that they can take to maintain a healthy environment around the idea of Active and Sustainable School Transportation.

Curriculum Expectations

Science and Technology: Understanding Life Systems - Needs and Characteristics of Living Things
Overall Expectations – By the end of Grade 1, students will:

1. assess the role of humans in maintaining a healthy environment

Specific Expectations: 1.1, 3.4

Mathematics: Data Management & Probability
Overall Expectations – By the end of Grade 1, students will:

1. collect and organize categorical primary data and display the data using concrete graphs and pictographs, without regard to the order of labels on the horizontal axis;
2. read and describe primary data presented in concrete graphs and pictographs.

Materials Provided in Lesson	**Materials Provided by Teacher**
BLM – Grade 1, Lesson #3 - Classroom Travel Survey	Chart paper Blank paper Coloured markers

Teacher Notes
BLM – Grade 1, Lesson #3 - Classroom Travel Survey can be helpful for tracking student participation in the Challenge.

Additional Information
Website: Active and Safe Routes to School (Canada)
http://www.saferoutestoschool.ca/programs
Highlight! *Search for "Greening Tree" on this site, for instructions and templates to create an attractive visual representation of active and sustainable school travel in a class or school.*

Website: Walk Bike to School (United States)
"50+ Event Ideas"
http://www.walkbiketoschool.org/get-set/event-ideas/50-event-ideas

Lesson #3: Energy Conservation Goal

MINDS ON – QUESTION FOR STUDENTS	Time
What are the characteristics of a healthy environment? (Prompts: clean air, clean water, nutritious food.) Discuss the environmental consequences of driving to and from school.	5 min
EXPLICIT INSTRUCTION	
Explain to the students what the term Active Sustainable School Transportation (ASST) means. Review benefits of ASST. Chart on board. **Video: "Stepping It Up"** Smart Commute, 4:13 min https://www.youtube.com/watch?v=r59_rzKuAMA	15 min
GUIDED PRACTICE / INTERACTIVE MODELING	
Review graph or chart of classroom trips to school completed in prior lesson. Divide the students into groups of 3 or 4. Ask them to discuss realistic ways they could actively travel to school in their community. Bring attention to the fact that ASST modes have different requirements depending on the weather. TOGETHER – come up with a class challenge around Active Transportation. Parameters of the challenge to decide on: ● Goal of the Challenge ● Tracking ● Possible reward for meeting goal	15 min
CONSOLIDATION	
Record ideas to use for next lesson. Tell the students that during the next lesson the class will create posters regarding the upcoming class ASST Challenge to inform the rest of the school. Encourage students to discuss the terms of the challenge with their parents at home.	10 min
EXTENSIONS / ENRICHMENT	

Classroom Travel Survey

Classroom #: _____

Teacher name: _____

Date survey begins: _____

Which trip? Check one:

☐ Trip TO School

☐ Trip FROM School

	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Walk (all or partway, at least one block)					
Mobility aid (e.g. wheelchair)					
Bicycle					
Scooter, Skateboard or other					
School Bus					
Public Transportation (e.g. bus, subway, ferry)					
Carpool (more than one family)					
Total ASST (Active and Sustainable School Transportation)					
Car (not including carpooling)					

Lesson #4: Ready, Set, Begin!

Overview

Students will produce a poster which clearly defines ASST, and describes how ASST helps to create and sustain a healthy environment. Students will set the date to begin their ASST Challenge.

Curriculum Expectations

Language: Media Literacy

1. Create a variety of media texts for different purposes and audiences, using appropriate forms, conventions, and techniques

Specific Expectations: 1.1, 1.2, 3.4.

Note: This lesson can be used to address curriculum expectations in the Art area as well.

Materials Provided in Lesson	**Materials Provided by Teacher**
	Chart paper Blank paper Coloured markers

Teacher Notes

- The ASST Challenge will take place outside of the lessons in this learning unit.
- Take into consideration the time of year when the Challenge will take place, and likely weather conditions.
- Students may decide to complete an ASST Challenge more than once throughout the year, and compare participation and success rates.
- Make sure to inform your school's Eco Team and to document your Challenge for your school's EcoSchools portfolio (if applicable).

Additional Information

Lesson #4: Ready, Set, Begin!

MINDS ON – QUESTION FOR STUDENTS	Time
What is ASST? What is our Class ASST Challenge? (Review notes from previous class.)	5 min
EXPLICT INSTRUCTION	
Discuss the components of a good poster: colour, size, information, audience topic, purpose. Clearly list what should be on the poster for the success criteria. Model a poster for the class's upcoming ASST challenge.	10 min
GUIDED PRACTICE / INTERACTIVE MODELING	
Divide the students into groups of 3 or 4. Provide newsprint for a rough copy of the poster the students will create. When the group has completed their rough copy and you can see they have included all the pertinent details, give them a good copy paper. Completing the posters can be finished during either an art lesson, or as free time arises.	30 min
CONSOLIDATION	
Groups present their posters to the rest of the class and then are displayed throughout the school.	10 min
EXTENSIONS / ENRICHMENT	
Students can also create a PA announcement to share the upcoming challenge with the school.	