INSTRUCTIONS FOR USING REMOTE LEARNING PROJECTS

These materials were developed with the intention of easing the transition between in-class and temporary remote learning. Learning experiences are aligned with curricular outcomes and assessment tools have been included with each project.

Note:

- 1. The teacher either sends a link to the appropriate project or sends the document itself.
- 2. The teacher ensures that parents/caregivers receive any required school supplies (bin with pencils, markers, paper, etc.).
- 3. The teacher reassures parents/caregivers that communication will be maintained between home and school.
- 4. Parents/caregivers may access additional resources at:
 - My Learning at Home (www.edu.gov.mb.ca/k12/mylearning)
 - My Child in School (www.edu.gov.mb.ca/k12/mychild/index.html)

PROJECT OVERVIEW				
Grade:	7			
Main Subject:	Science			
Big Idea:	Design thinking of city block ensuring that nature is welcomed, and Indigenous cultures are represented.			
Title:	MARKETLANDS SUSTAINABLE CITY BLOCK			
Cluster:	Interactions Within Ecosystems			
Duration:	5 hours			
Materials:	Pencil or computer, a way to research, recycling, paper, coloured pencils, glue, tape etc.			
Short Description:	Students will inquire, research, and design a city block that will consider ways to produce energy, provide inhabitants with food, handle waste efficiently, transport people, while ensuring that nature is welcomed, and Indigenous cultures are represented.			

LEARNING OUTCOMES

Science: www.edu.gov.mb.ca/k12/cur/science/scicurr.html

7-1-01, 7-0-1a, 7-0-1b, 7-0-2a, 7-0-2b, 7-0-2c, 7-1-03, 7-1-05, 7-1-06, 7-1-15, 7-0-2a

Social Studies: <u>https://www.edu.gov.mb.ca/k12/cur/socstud/foundation_gr7</u> 7.2.1, 7.2.2, 7.2.3

Mathematics: <u>www.edu.gov.mb.ca/k12/cur/essentials/docs/glance_kto9_math.pdf</u> 7.SS.2., 7.SS.3., 7.SS.4.

ELA: <u>www.edu.gov.mb.ca/k12/cur/ela/index.html</u>

Language as Sense Making, Language as System, Language as Exploration and Design, Language as Power and Agency

ASSESSMENT													
LANGUAGE ARTS				MA	THEMATIC	CS		SCIENCE	Ξ	SOCIAL STUDIES			
COMP. Listening & Viewing	COMP. Reading	COMM. Speaking & Represent.	COMM. Writing	Critical Thinking	Knowledge and Understanding	Mental Math & Estimation	Problem Solving	Knowledge and Understanding	Scientific Inquiry Process	Design Process & Problem Solving	Knowledge and Understanding	Research and Communication	Critical Thinking and Citizenship
	х	х	х	Х	х			х	х	х	х	х	х

Original concept created by: J. Denolf

LEARNING EXPERIENCES AND ASSESSMENT

Teacher's instructions:

Teachers will need to act as a guide as students work through each section asking probing open-ended questions to help drive inquiry and research. Great care should be taken not to rescue students and just give answers. Teachers should review good research practices and be open to out of the box thinking.

Suggested primer: The Wump World, written and illustrated by Bill Peet https://youtu.be/UQtsys57FRU

Step-by-step instructions for students:

Students will perform research around each of the five topic questions and formulate a plan or solution for your city block/high density living area. Special care will need to be taken during the design process to ensure all of the parts of the design will work together logistically and environmentally. Students will need to provide a written justification for their design in each box.

Extension Options:

- 1. Have student build their city block redesign highlighting each of the five design solutions they formulated. The city block and be built in 3D physically using recycling, paper, glue, crayons, etc. or 3D digitally using tinkercad.ca or similar program.
- 2. Have student draw a map of their city bock taking care to note the five design solutions they have incorporated.
- 3. Have students make an advertisement (flyer, radio, or video) for their new city block to entice people to move there.
- 4. Have student present plans to class in a multimodal format.

APPENDIX (PRINTABLE SUPPORT MATERIALS INCLUDING ASSESSMENT)

Student Booklet and Assessment Rubrics

Marketlands Sustainable City Block

Introduction

As the world's population increases and more people live in urban areas, there are some real challenges ahead for city planners and architects. The Director of the United Nations has said that "managing urban areas has become one of the most important development challenges of the 21st century". If we fail to build cities that are sustainable all our futures are at risk.

Key facts

- Over 7.8 billion people live on Earth, with the population due to increase to a whopping 9.8 billion by 2050 (<u>https://interactives.prb.org/2020-wpds/</u>).
- Land will be become increasingly expensive and limited in cities due to the increase in population.
- Many people are working towards trying to make cities and high density living areas more sustainable. A sustainable city uses resources to offer a good quality of life to the people that currently live there whilst ensuring that there are enough resources are available for future generations.

How can you build a sustainable city block?

Grade 7s are exploring geometry and sustainable land development through creating "blueprints"/maps of students' ideas for the Marketlands city block.

Each student proposal will consider ways to produce energy, provide inhabitants with food, handle waste efficiently, transport people, while ensuring that nature is welcomed, and Indigenous cultures are represented.

1. Energy

People expect higher standards of living and the latest devices gobble up energy. We still use a lot of fossil fuels, like oil, coal and gas. In the past 200 years we have used over two thirds of the world's resources already and need to use more renewable energy.

How will you power your city block?

2. Food

We all need to eat but in a world with more and more people, where will it all come from? Transporting food from far away is expensive and pollutes the environment. We also waste a lot of food; about 30 % of all food gets thrown in the trash!

How and where will you grow food in your city block? What will you grow?

3. Nature

We need to remember that humans are not the only living things on the planet and we need plants and animals to be able to survive. As you plan your city block remember to include green areas. It may be some plants on the edge of a road, or even a public garden. Flowering plants help encourage pollinators in to your city; these will help your vegetables grow and increase your crop of food. It has also been proven that if people can see nature every day, and not just buildings, they are much happier and healthier.

How will you make sure nature is encouraged into your city?

4. Transport

The way your population moves around the city is crucial for city living. Movement in a place where so many people live and work is tricky so this needs to be carefully designed.

How will you encourage sustainable transportation?

5. Waste

Throughout the world we dump over 2 billion tonnes of waste every year. A lot of this rubbish doesn't rot away and finding somewhere to put all is a serious problem. We waste more energy by not recycling. For example: cans of drink are made from aluminium, 95% more energy is needed to make a new aluminium can compared to one made from recycling other cans.

How will you encourage people from your city to recycle more and reduce their waste?

Assessment Rubrics:

Outcomes Addressed	Limited	Basic	Good	Very good to Excellent
Science	Requires considerable, ongoing teacher support to • apply strategies to solve practical problems and to explain reasoning • use scientific vocabulary • use criteria or constraints to define a problem and evaluate the chosen solution • recognize when changes need to be made to a plan • work collaboratively with peers	Requires occasional teacher or peer support to • apply strategies to solve practical problems and to explain reasoning • use scientific vocabulary • use criteria or constraints to define a problem and evaluate the chosen solution • recognize when changes need to be made to a plan • work collaboratively with peers	Applies appropriate strategies to solve practical problems; requires occasional prompting to recognize when changes need to be made to a plan. Explains and justifies reasoning using appropriate science vocabulary, and generalizes to similar contexts; requires occasional prompting for clarification. Collaborates effectively with peers.	Demonstrates flexibility, resilience, and creativity when solving practical problems; critically analyzes results and makes any necessary changes to a plan. Explains and justifies reasoning clearly using appropriate science vocabulary and generalizes to other contexts. Collaborates effectively with peers, often taking a key role in group work.
7-1-01 Use appropriate vocabulary related to their investigations of interactions within ecosystems.				
7-0-1a Formulate specific questions that lead to investigations. Include: rephrase questions to a testable form; focus research questions. GLO: A1, C2 (ELA Grade				

7, 3.1.2; Math: SP- I.1.7)		
7-0-1b Select and justify a method to be used in finding the answer to a specific question. GLO: C2 (ELA Grade 7, 3.2.3; Math: SP-II.1.7)		
7-0-2b Evaluate the usefulness, currency, and reliability of information, using predetermined criteria. GLO: C6, C8 (ELA Grade 7, 3.2.3; TFS 2.2.2)		
7-0-2c Make notes using headings and subheadings or graphic organizers appropriate to a topic and reference sources. GLO: C6 (ELA Grade 7, 3.3.2)		
7-0-2b Evaluate the usefulness, currency, and reliability of information, using predetermined criteria. GLO: C6, C8 (ELA Grade 7, 3.2.3; TFS 2.2.2)		
7-0-2c Make notes using headings and subheadings or graphic organizers appropriate to a		

topic and reference sources. GLO: C6 (ELA Grade 7, 3.3.2)		
7-1-03 Identify abiotic and biotic components of ecosystems that allow particular organisms to survive.		
7-1-05 Identify and describe positive and negative examples of human interventions that have an impact on ecological succession or the makeup of ecosystems.		
7-1-06 Identify environmental, social, and economic factors that should be considered in the management and preservation of ecosystems.		
7-1-15 Research and describe human food production or preservation techniques that apply a knowledge of micro- organisms.		

Outcomes Addressed	Limited	Basic	Good	Very good to Excellent
Social Studies	Requires considerable, ongoing teacher support to • consider the impacts of human decisions or actions regarding a social issue • recognize and give examples of human interdependence Requires considerable, ongoing teacher support to generate relevant questions.	Requires occasional teacher or peer support to • consider the impacts of human decisions or actions regarding a social issue • recognize and give examples of human interdependence Requires occasional teacher or peer support to generate relevant questions	Considers and questions the actions and decisions undertaken by individuals and groups. Recognizes and understands human interdependence at the local, regional, national, and global levels. Generates clear and relevant questions.	Critically and innovatively analyzes social actions and decisions undertaken by individuals and groups. Purposefully considers human interdependence at the local, regional, national, and global levels when making decisions. Generates clear, relevant, and thought-provoking questions.
 7.2.1 What Is the Good Life? citizenship rights (Canada and elsewhere) Universal Human Rights quality of life (environmental, social, cultural, government factors) 				
 7.2.2 Universal Human Rights mapping (major cities, landforms, bodies of water of a society) ways of life cultural issues indigenous peoples government 				

 economic activities (work and trade) impact of technological change, urbanization, industrialization and westernization 		
within selected society		
7.2.3 Democratic Citizenship and Quality of Life		
 mapping (major cities, landforms, bodies of water of a society) 		
 urbanization 		
•climate change		
 social, political, and cultural issues 		
 historical events 		
•economic activities		
 food production and distribution 		
•sustainable development		
•consumerism		
•student roles as citizens in an interdependent world		

Outcomes Addressed	Limited	Basic	Good	Very good to Excellent
Math	Requires considerable, ongoing teacher support to make connections between math concepts and the applications of appropriate skills apply concepts in similar situations	Requires occasional teacher or peer support to make connections between math concepts and the applications of appropriate skills apply concepts in similar situations	Shows relationships between math concepts and applies appropriate skills. Correctly applies concepts in similar situations	Makes connections, applies relationships and skills efficiently. Consistently and efficiently applies concepts in similar and new situations.
7.SS.2. Develop and apply a formula for determining the area of , triangles , parallelograms , circles [CN, PS, R, V]				
7.SS.3. Perform geometric constructions, including: perpendicular line segments , parallel line segments , perpendicular bisectors , angle bisectors [CN, R, V]				
7.SS.4. Identify and plot points in the four quadrants of a Cartesian plane using ordered pairs. [C, CN, V]				
Measurement Length / Area / Volume (Capacity) / Mass (Weight) / Time / Angles I				
Transformations				