UDL Unit Planning for: Plant Growth and Changes (Grade 4 Science)

Teach this unit during fall or spring!!!

Learner Profiles: A classroom containing 23 students		Accommodations:
Student Names	Profile	Support Tools and Strategies
1-18 19 20 21-22 23	- Average (at grade level) - Gifted - English Language Learner (ELL) from Columbia - Speech Impediment and Reading Disorder - Attention Deficit Hyperactive Disorder (ADHD)	- Visual instructions (diagrams, games, videos, websites, dual language books) - Group and individual assignments - Hands-on activities - One-on-one supports - Presentations applying oral, written and technological skills (These support tools apply for all students depending on the activity and ability - differentiation)

Management:	Safety:
Issues may arise during this unit plan due to students' concentration, patience and ability to understand. Know the content very well in order to be prepared to improvise and change lessons on the spot.	The activities conducted during this unit plan may represent a risk for some students. A field study, using a knife and glassware will take place during this unit. These concerns must be addressed with students by giving them a proper oral and written instructions. There may be a need for a safety lesson. Parents will receive a letter stating the unit procedures and risks.

Essential Questions:

Big Idea: Plant Life Cycle

Over-Arching Question: How plants help humans stay alive (oxygen and food source)? (By answering this question students will understand the importance of learning about plants and their growth/changes.)

The over-arching questions, as a rationale, will trigger students to question and examine this topic further. This is a perfect set up for discussions to occur where the coupled inquiry process will allow observation, examination, and analysis to take over this unit. This unit is designed for specific group of students however, changes will occur. Throughout the learning activities students are expected to drive the unit as their learning process develops. Some of the questions that may arise are: How can a cactus live without water? Why do some trees lose their leaves while others don't? Why is the grass green?

Real-World Application: Growing plants in the classroom (example: Beans)

The real-world application will allow students to be critical as they apply problem-solving skills in order to achieve general and specific outcomes. These outcomes are specifically outline below.

Cross-Curricular Connections: Language Arts: Writing and Oral Skills, Mathematics: 3D objects and 2D shapes, Social Studies: A Sense of a Land, Physical Education: Developing an active lifestyle.

Desired Outcomes:

General Learning Expectations (GLE): Students will be able to demonstrate their knowledge, interpretation, propagation and enhancement of plant growth by growing, analyzing and questioning plants life cycle.

Specific Learning Expectations (SLE) for Science: Students will:
Describe the importance of plants to humans and the environment.
Identify the general purpose of plants roots, stems, leaves and flowers.
Describe common and special need plants.
Explain the plant requirements for growth.
Nurture a plant through one complete life cycle.
Recognize plants that have common life cycle and produce new plants that are similar.
Describe the care and growth of a plant.
Describe different ways that seeds are distributed.
Develop skills such as investigation of natural things and purposeful action leading to inferences and observations.
Develop attitudes such as creating a positive and responsible environment.

Pre-Assessment	Ongoing Assessment	Post-Assessment: List summative tasks and evaluation strategies
Diagnostic Assessment: Questioning student's prior knowledge and misconceptions. As the unit is introduced find out: What do you know about plants? What would you like to learn about plants? Have students engage in an activity (example: Ask students to draw a picture or use describing words to show a tree, the	Continuous Assessment: Student's progress throughout the unit. Students will be completing mini projects, such as bean germination and 3D plant life cycle, to represent their current understanding and progress. These projects will demonstrate any changes that need to be made and addressed. Besides the projects observing and analyzing students development will be the focus of every lesson.	Final Assessment: Plant Scavenge Hunt Students GLEs and SLEs will be tested as they are involved in a scavenge hunt. In order to succeed in this exercise you need to know objectives and topics that have been addressed during this unit. Students will keep their own score as they are engaged in this activity. They will not only be developing active skills but also self-assessment skills.

temperature, and clothing appropriate for each season)		
Vocabulary:		Resources and Materials:
1. Life Cycle 2. Seeds 3. Roots 4. Stems 5. Leaves 6. Flower 7. Air 8. Oxygen 9. Carbon Dioxide 10. Light Energy 11. Water 12. Temperature 13. Humidity 14. Seed Coat 15. Micropyle 16. Helium 17. Germination 18. Sprouting 19. Pollination 20. Fertilization	- Science Glossaries and Journals - Graphs/Diagrams - Word Wall - Videos and Games - Review Sheets	Resources <u>Books:</u> Curious George Plants a Seed (Spanish and English) Paco and the Giant Chili Plant (Spanish and English) From Seed to Pumpkin How Apples Grow Fun With Nature Look What I Did With a Leaf <u>Websites:</u> 1. http://www.turtlediary.com/kids-science-experiments/plant-growth-experiment.html 2. http://urbanext.illinois.edu/gpe/case1/c1brief.html (Spanish and English) <u>Videos:</u> 1. http://www.teachersdomain.org/resource/tdc02.sci.life.stru.germinator/ 2. http://www.youtube.com/watch?v=2fmrgsp9oEA&feature=related 3. http://www.youtube.com/watch?v=06H27-OaC44&feature=related 4. http://www.youtube.com/watch?v=MOKB6B6ROZE <u>Diagrams:</u> Seed Components:

		http://www.saburchill.com/questions/c47q01.html Photosynthesis: http://masterman535.hubpages.com/hub/A-Simple-Diagram-of-Photosynthesis Plant Structure: http://www.biologycorner.com/worksheets/germination_inhibitors.html <u>Online Games:</u> 1. http://www.sciencekids.co.nz/gamesactivities/plantsgrow.html 2. http://www.scholastic.com/play/root.htm <u>Field Study:</u> Devonian Gardens Materials Beans seeds, ruler, paper towel, water, plastic bag, tape, apple, orange, peach, paper plates, plastic knives, pot, soil, water, cardboard, real beans seeds, various textured materials, glue, spoon, clear glass, food coloring, celery stalk, school play ground, questions (computer and internet access necessary for every lesson)
Learning Activities:		
Specific Learner Outcomes	Learning Activities (This unit will be completed after 11 lesson plans or 16 class periods)	Accommodations for Learners
Science Students will: 1. Describe the importance of plants to	**Lesson 1** (one period)**:** What Do You Know About Plants (inquiry by questioning and experimenting) Sources: Books: Curious George Plants a Seed (Spanish and English)	- Provide instructions verbally with step by step photographs to help students with reading disorder and ELL - Hands-on activities get ADHD student moving and engaged - Allowing gifted student to find alternative ways to

humans and the environment. 2. Identify the general purpose of plants roots, stems, leaves and flowers. 3. Describe common and special need plants. 4. Explain the plant requirements for growth. 5. Nurture a plant through one complete life cycle. 6. Recognize plants that have common life cycle and produce new plants that are similar. 7. Describe the care and growth of a plant. 8. Describe	Paco and the Giant Chili Plant (Spanish and English) From Seed to Pumpkin How Apples Grow Fun With Nature Look What I Did With a Leaf Video 3: http://www.youtube.com/watch?v=06H27-OaC44&feature=related Activity: Seasons and Plants Materials: personal journals, computer with internet (make sure students have access) Subject Outcomes: Science, Language Arts and Social Studies --- **Lesson 2** (one period)**:** Planting Beans - Germination (inquiry by questioning and experimenting, differentiation for ELLs, reading disorder and gifted students) Sources: Video 1: http://www.teachersdomain.org/resource/tdc02.sci.life.stru.germinator/ Activity: Planting Beans (nurture daily) Materials: personal journals, beans, ruler, paper towel, water, plastic bag, tape and computer with internet Subject Outcomes: Science, Language Arts and Social Studies --- **Lesson 3** (one periods)**:** What Plants Have (inquiry by questioning and experimenting, differentiation	complete the activity by researching online and book resources and presenting them to the rest of the class

different ways that seeds are distributed. 9. Develop skills such as investigation of natural things and purposeful action leading to inferences and observations. 10. Develop attitudes such as creating a positive and responsible environment. Language Arts Students will: 1. Listen 2. Write 3. Oral presentations Social Studies Students will: 1. Value natural environmen	for ELLs, reading disorder and gifted students) Sources: Diagram: Plant Structure (some students may require a diagram to be provided while, others may want to use the computer instead of a journal) Website 2: http://urbanext.illinois.edu/gpe/case1/c1brief.html (Spanish and English) Activity: Seeds Materials: personal journals, apple, orange, or peach for each child, paper plates and plastic knives Subject Outcomes: Science, Language Arts and Social Studies --- **Lesson 4** (one periods)**:** What Plants Need (inquiry by questioning and experimenting, differentiation for ELLs, reading disorder and gifted students) Sources: Website 1: http://www.turtlediary.com/kids-science-experiments/plant-growth-experiment.html Games 1 and 2: http://www.sciencekids.co.nz/gamesactivities/plantsgrow.html http://www.scholastic.com/play/root.htm Materials: personal journals, computer with internet (make sure students have access) Subject Outcomes: Science and Social Studies ---	

t 2. Examine and critique physical geography 3. Analyze how they interact with the environment Mathematics Students will: 1. Solve problems 2. Understand 3D objects and 2D shapes Physical Education: Students will: 1. Develop active lifestyle 2. Participate in an activity	**Lesson 5** (one period)**:** How Plants Grow (inquiry by questioning and experimenting) Sources: Diagram: Photosynthesis (some students may require a diagram to be provided while, others may want to use the computer instead of a journal) Video: (2) http://www.youtube.com/watch?v=2fmrgsp9oEA&feature=related Materials: personal journals, computer with internet (make sure students have access), pot, soil and water Subject Outcomes: Science and Language Arts --- **Lessons 6** (three periods)**:** Creating A 3D Plant Life Cycle (Project) Will take up two periods to make the project and one period to present (inquiry by questioning and experimenting, differentiation for ELLs, reading disorder and gifted students) Activity: Creating Germination Model Materials: personal journals, cardboard, real beans seeds, various textured materials, glue and tape Subject Outcomes: Science and Mathematics --- **Lessons 7/8** (two periods)**:** Why Are Plants Important (inquiry by questioning and experimenting) 8: Important To Humans	

	Activity: Grinding Grain (Important to humans) Materials: personal journals, grains (wheat, rice), clean cloth, rolling pen and sieve 9: Important To The Environment Activity: Water traveling up the stem (Important to the environment) Materials: personal journals knife, spoon, clear glass, food coloring, celery stalk Subject Outcomes: Science, Language Arts and Social Studies --- **Lesson 9** (two periods)**:** Review (inquiry by questioning and experimenting, differentiation for ELLs, reading disorder and gifted students) Brainstorming ideas and concepts addressed during this unit Sources: Video: (4) http://www.youtube.com/watch?v=MOKB6B6ROZE Materials: personal journals and computer with internet (make sure students have access) Subject Outcomes: Science, Language Arts and Social Studies --- **Lesson 10** (one period)**:** Assessment (inquiry by questioning and experimenting, differentiation for ELLs, reading disorder and gifted students)	

	Activity: Plant Scavenge Hunt (vocabulary and concept assessment) Materials: school play ground and questions Subject Outcomes: Science, Language Arts, Social Studies, Mathematics and Physical Education --- **Lesson 11** (whole morning or three periods)**:** Field Study - Devonian Garden (inquiry by questioning and experimenting, differentiation for ELLs, reading disorder and gifted students) Activity: A sessions with an expert Subject Outcomes: Science, Language Arts, Social Studies, Mathematics and Physical Education	

Reflections:

Reflect on what worked well and why, and what you could have done differently. Identifying successful and less successful lessons.

References (Resources):

- Altered UDL unit plan format
- Alberta Program of Studies GLEs and SLEs
- Class notes on assessment by Sandy Last
- Learn Alberta ideas for Learning Activities
- Books: Curious George Plants a Seed, Paco and the Giant Chili Plant, From Seed to Pumpkin, How Apples Grow, Fun With Nature, and Look What I Did With a Leaf
- Websites: 1. http://www.turtlediary.com/kids-science-experiments/plant-growth-experiment.html and 2. http://urbanext.illinois.edu/gpe/case1/c1brief.html (Spanish and English)
- Videos: 1. http://www.teachersdomain.org/resource/tdc02.sci.life.stru.germinator/, 2. http://www.youtube.com/watch?v=2fmrgsp9oEA&feature=related, 3. http://www.youtube.com/watch?v=06H27-OaC44&feature=related, and 4. http://www.youtube.com/watch?v=MOKB6B6ROZE
- Diagrams: Seed Components: http://www.saburchill.com/questions/c47q01.html, Photosynthesis: http://masterman535.hubpages.com/hub/A-Simple-Diagram-of-Photosynthesis, and Plant Structure: http://www.biologycorner.com/worksheets/germination_inhibitors.html
- Online Games: 1. http://www.sciencekids.co.nz/gamesactivities/plantsgrow.html, and 2. http://www.scholastic.com/play/root.htm