

South Slave Divisional Education Council

SCIENCE GRADE 7

CURRICULUM PACKAGE

June 2012

*Creating
Futures*



2012

CONTENTS

BLOOM'S REVISED TAXONOMY	4
BLOOM'S REVISED TAXONOMY QUESTIONING FRAMEWORK	8
DENE KEDE GRADE 7	11
SCIENCE GRADE 7	18

BLOOM'S REVISED TAXONOMY



Creating

Generating new ideas, products, or ways of viewing things
Designing, constructing, planning, producing, inventing.

Evaluating

Justifying a decision or course of action

Checking, hypothesising, critiquing, experimenting, judging



Analysing

Breaking information into parts to explore understandings and relationships

Comparing, organising, deconstructing, interrogating, finding

Applying

Using information in another familiar situation

Implementing, carrying out, using, executing



Understanding

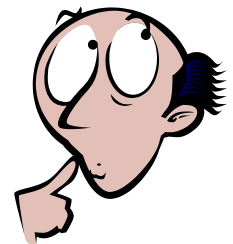
Explaining ideas or concepts

Interpreting, summarising, paraphrasing, classifying, explaining

Remembering

Recalling information

Recognising, listing, describing, retrieving, naming, finding



BLOOM'S REVISED TAXONOMY **COGNITIVE** DOMAIN: VERB LIST

REMEMBERING	UNDERSTANDING	APPLYING	ANALYZING	EVALUATING	CREATING
Cite	Add	Acquire	Analyze	Abstract	Appraise
Define	Approximate	Adapt	Audit	Animate	Assess
Describe	Articulate	Allocate	Blueprint	Arrange	Compare
Draw	Associate	Alphabetize	Breadboard	Assemble	Conclude
Enumerate	Characterize	Apply	Break down	Budget	Construct
Identify	Clarify	Ascertain	Characterize	Categorize	Contrast
Index	Classify	Assign	Classify	Check	Counsel
Indicate	Compare	Attain	Compare	Code	Criticize
Label	Compute	Avoid	Confirm	Combine	Critique
List	Contrast	Back up	Contrast	Compile	Defend
Match	Convert	Calculate	Correlate	Compose	Determine
Meet	Defend	Capture	Deconstruct	Construct	Design
Name	Describe	Carry out	Detect	Cope	Discriminate
Outline	Detail	Change	Diagnose	Correspond	Estimate
Point	Differentiate	Classify	Diagram	Create	Evaluate
Quote	Discuss	Complete	Differentiate	Critique	Explain
Read	Distinguish	Compute	Discriminate	Cultivate	Grade
Recall	Elaborate	Construct	Dissect	Debug	Hire
Recite	Estimate	Customize	Distinguish	Depict	Interpret
Recognize	Example	Demonstrate	Document	Design	Invent
Record	Explain	Depreciate	Ensure	Develop	Judge
Repeat	Express	Derive	Examine	Devise	Justify
Reproduce	Extend	Determine	Explain	Dictate	Measure
Review	Extrapolate	Diminish	Explore	Enhance	Plan
Select	Factor	Discover	Figure out	Experiment	Predict
State	Generalize	Draw	File	Explain	Prescribe
Study	Give	Employ	Find	Facilitate	Produce
Tabulate	Infer	Examine	Group	Format	Rank
Trace	Interact	Exercise	Identify	Formulate	Rate
Write	Interpolate	Execute	Illustrate	Generalize	Recommend
	Interpret	Explore	Infer	Generate	Release
	Observe	Expose	Interrupt	Handle	Select
	Paraphrase	Express	Inventory	Hypothesize	Summarize
	Picture graphically	Factor	Investigate	Import	Support
	Predict	Figure	Layout	Improve	Test
	Review	Graph	Manage	Incorporate	Validate
	Rewrite	Handle	Maximize	Integrate	Verify
	Subtract	Illustrate	Minimize	Interface	
	Summarize	Implement	Optimize	Join	
	Translate	Interconvert	Order	Judge	
	Visualize	Investigate	Organize	Lecture	
		Manipulate	Outline	Model	
		Modify	Point out	Modify	
		Operate	Prioritize	Network	

BLOOM'S REVISED TAXONOMY **COGNITIVE** DOMAIN: VERB LIST

REMEMBERING	UNDERSTANDING	APPLYING	ANALYZING	EVALUATING	CREATING
		Personalize	Proofread	Organize	
		Plot	Query	Outline	
		Practice	Relate	Overhaul	
		Predict	Select	Plan	
		Prepare	Separate	Portray	
		Price	Size p	Prepare	
		Process	Subdivide	Prescribe	
		Produce	Train	Produce	
		Project	Transform	Program	
		Provide		Rearrange	
		Relate		Reconstruct	
		Round off		Relate	
		Sequence		Reorganize	
		Show		Revise	
		Simulate		Rewrite	
		Sketch		Specify	
		Solve		Summarize	
		Subscribe		Write	
		Tabulate			
		Transcribe			
		Translate			
		Use			

BLOOM'S REVISED TAXONOMY **AFFECTIVE** DOMAIN: VERB LIST

Receiving	Responding	Valuing	Organization	Internalizing
Ask	Accept responsibility	Associate with	Adhere to	Act
Choose	Answer	Assume responsibility	After	Change behavior
Follow	Assist	Believe in	Arrange	Develop behaviour code
Give	Comply	Be convinced	Classify	Develop philosophy
Hold	Conform	Complete	Combine	Influence
Select	Enjoy	Describe	Defend	Judge problem/issue
Show interest	Greet	Differentiate	Establish	Listen
	Help	Have faith in	Form judgments	Propose
	Obey	Initiate	Identify with	Qualify
	Perform	Invite	Integrate	Question
	Practice	Join	Organize	Serve
	Present	Justify	Weigh alternatives	Show mature attitude
	Report	Participate		Solve
	Select	Propose		Verify
	Tell	Select		
		Share		
		Subscribe to		
		Work		

BLOOM'S REVISED TAXONOMY QUESTIONING FRAMEWORK

	BLOOM'S REVISED ORDER	ACTIONS	EXAMPLES FOR: INTENTIONAL QUESTIONING-PROMPTING FOR HIGHER LEVEL/ORDER THINKING	
HIGHER-ORDER THINKING	<p><u>Creating</u></p> <p>(Putting together ideas or elements to develop an original idea or engage in creative thinking).</p>	Designing Constructing Planning Producing Inventing Devising Making	<ul style="list-style-type: none"> • What would you do differently next time? • Why? • What could you do next? Why? 	<ul style="list-style-type: none"> • What would you do differently next time? • Why? • What could you do next? Why?
	<p><u>Evaluating</u></p> <p>(Judging the value of ideas, materials and methods by developing and applying standards and criteria).</p>	Checking Hypothesising Critiquing Experimenting Judging Testing Detecting Monitoring	What do you think is really good about what you are: <ul style="list-style-type: none"> • Building • Exploring • Cooking • Serving • Making • Inventing • Planning 	Look at what you are _____, <ul style="list-style-type: none"> • What do you think could be a problem with the way it is made? • Why do you think that? • What do you think will work really well? • Explain why you think so
	<p><u>Analyzing</u></p> <p>(Breaking information down into its component elements).</p>	Comparing Organising Deconstructing Attributing Outlining Structuring Integrating	<ul style="list-style-type: none"> • Do you see anything that is the same/different from _____? • How could you put this together in a different way? What would happen? 	<ul style="list-style-type: none"> • How would your _____ change if you didn't have _____? • What could you use instead? • Why do you think it would work?
LOWER-ORDER THINKING	<p><u>Applying</u></p> <p>(Using strategies, concepts, principles and theories in new situations).</p>	Implementing Carrying out Using Executing	What other uses does _____ have? <ul style="list-style-type: none"> • New Context • Different Purpose • Combine new context & new purpose 	What if you wanted to use what you are (making/cooking etc.) for a new/different purpose. What would you: <ul style="list-style-type: none"> • Add? • Remove? • Change?
	<p><u>Understanding</u></p> <p>(Understanding of given information).</p>	Interpreting Exemplifying Summarising Inferring Paraphrasing Classifying Comparing Explaining	What is important about what you are: <ul style="list-style-type: none"> • Building • Exploring • Cooking • Serving • Making • Inventing • Planning 	<ul style="list-style-type: none"> • Explain how this (item/ingredient/part/amount etc.) is important to what you are doing.
	<p><u>Remembering</u></p> <p>(Recall or recognition of specific information).</p>	Recognising Listing Describing Identifying Retrieving Naming Locating Finding	Describe what you are: <ul style="list-style-type: none"> • Building • Exploring • Cooking • Serving • Making • Inventing • Planning 	Tell me what you are using to: <ul style="list-style-type: none"> • Cook • Build • Investigate • Serve • Examine • Fix • Copy

DENE KEDE

DENE KEDE, the culture-based curriculum of the NWT, serves as the heart of the NWT Curriculum. DENE KEDE was developed under the guidance of Dene elders and shares, through its teachings, the knowledge, skills, and values of the Dene. These cultural understandings serve as the underpinnings for all learning in all content areas and it is expected that the teachings and knowledge contained within DENE KEDE shall be woven into all lessons. In this manner our students will become more capable, more successful and better able to *walk in two worlds*.

DENE KEDE GRADE 7

Passage to Womanhood

Outcomes	Achievement Indicators – Measurable outcomes
<i>It is expected that students will:</i>	<i>The following set of indicators may be used to assess student achievement for each related specific learning outcome. Students who have fully met the specific learning outcomes are able to:</i>
Major Cultural Understanding: With the onset of menstruation, girls were often put through special "rites of passage".	
Describe/discuss the rites of passage for girls and what they consisted of	<ul style="list-style-type: none"> • Once menstruation began for a girl, she would be separated from others, especially from men and boys. • Most Dene tribes practiced rites of passage where, once the girl began her menstruation, she would be set out in a shelter to live alone in the bush, away from her family. • The time spent away from others varied from a few weeks to a few months. • During this time, the girl was given challenges. The challenges, which were different from tribe to tribe, included meagre food and water, the tying of fingers together and being left alone for long periods of time to survive on her own.
Major Cultural Understanding: In times past, the Dene believed that young people gained spiritual power as they became adolescents.	
Provide ways in which spirituality was experienced by adolescents	<ul style="list-style-type: none"> • Adolescent girls and boys were seen to be ready to receive spiritual powers and were prepared for that. • Girls who had begun menstruating were seen to have powers that could negatively affect the power of men, especially their hunting activities. • During adolescence, boys often experienced dreams which gave them an understanding of their own personal medicine powers. • During adolescence, girls could also receive messages about their medicine powers. • Though it was at this age that people began having spiritual experiences, not all young people were able to have them. It was believed that special powers were given only to those who were especially good.
Major Cultural Understanding: The purpose of the rites of passage was to make it known to the girl and the community that the girl had come into the age of womanhood.	
Identify and discuss the purpose of the rites	<ul style="list-style-type: none"> • During this time, the girl would receive counselling and training from her mother, aunts and women Elders. • She would be told about how to care for her things and how to behave around others, now that she had the special powers that came to women who were menstruating. There were rules such as keeping your things organized and together, not walking over the legs of men or their hunting equipment, and not talking to men. • The challenges were meant to develop and test her stamina, strength, courage, resourcefulness and other character traits needed to be an adult woman, upon whom others could depend. • She learned the homemaking and caretaking skills which were considered crucial to the well-being of families.

DENE KEDE GRADE 7

Passage to Womanhood

Outcomes	Achievement Indicators – Measurable outcomes
<i>It is expected that students will:</i>	<i>The following set of indicators may be used to assess student achievement for each related specific learning outcome. Students who have fully met the specific learning outcomes are able to:</i>
Identify and discuss the purpose of the rites (continued)	<ul style="list-style-type: none"> • It was believed that how a young person dealt with this time was an indication of how he or she would be in the future. This was the time when young men and women acquired new characters. • For this reason, the young women were strictly controlled and carefully scrutinized, not only during their time alone, but also when they returned to their families and until they were wed.
Major Cultural Understanding: Adolescence was a time of intense training for adulthood.	
Clarify and discuss the kind of training that the young women would receive	<ul style="list-style-type: none"> • Preparing hides for various uses • Sewing functional hide clothing that was warm, long-lasting and beautiful • Preparing food - butchering, cleaning, drying, cooking meat and fish, and gathering edible roots and berries • Packing loads and travelling, finding their way on the land and setting camp • Caring for young children • Hunting and snaring small game
Major Cultural Understanding: The basic traditional Dene methods and values of dealing with adolescents can be useful in preparing young girls to become women, even today.	
Explain how and why rites of passage can be a useful experience to young women today	<ul style="list-style-type: none"> • Rites of passage provide a time to learn about and reflect on what it means to be a woman: <ul style="list-style-type: none"> ○ Experiencing bodily changes ○ Dealing with feelings of fear and inadequacy ○ Developing attitudes of courage, patience, humility and determination ○ Developing a new role and learning new responsibilities ○ Becoming aware of her choices as she develops. • Having the attention and guidance of caring adult women during this time can help young women to deal with issues concerning their development. • The rites can be an opportunity for girls to focus on how their bodies and roles are changing. They are away from other people and distractions of the community.
Major Cultural Understanding: To know and understand about past ways and to experience them, even in a small way, helps one to feel a part of one's culture.	
Explain how these experiences will create a sense of identity for a woman	<ul style="list-style-type: none"> • To actually experience something that was experienced by our Dene women ancestors may help one to accept the value of the way things were done in the past. • Such an experience may help young girls to understand the feelings of the Elders. • Knowing about one's culture and understanding it enables young people to choose the things they feel are important to carry on with as Dene.

DENE KEDE GRADE 7

Fish Camp

Outcomes	Achievement Indicators – Measurable outcomes
<i>It is expected that students will:</i>	<i>The following set of indicators may be used to assess student achievement for each related specific learning outcome. Students who have fully met the specific learning outcomes are able to:</i>
Major Cultural Understanding: Fishing locations	
<i>Note: Teachers should research and provide information specific to the fish camps used by the community.</i>	
Learn the specific information regarding fishing locations.	<ul style="list-style-type: none"> • Fish species that are caught in the area • Seasonal uses of fishing areas by community • Familiarity with maps and finding popular fishing sites • Distance from the community • Route landmarks and Dene names • Lakes, rivers, creeks and spiritual sites along the way • Dangerous areas by season • Historical land use information
Major Cultural Understanding: Fishing knowledge and skills	
Describe locations of various species and skills needed for successful fishing of these	<ul style="list-style-type: none"> • Life cycles, including spawning habits • Where fish tend to be found; different times of the day & seasons • How best to catch fish, based on knowledge of their habits • Fishing techniques: net with and without a canoe, rod, • Poling, fish dam
Major Cultural Understanding: Required equipment and supplies	
Identify and describe what is needed for equipment and supplies	<ul style="list-style-type: none"> • Fishing equipment • Camping equipment • Supplies and personal effects
Major Cultural Understanding: Canoe maintenance and handling	
Describe/demonstrate good canoe maintenance and handling	<ul style="list-style-type: none"> • Mixing gas • Starting an outboard • Dealing with flooding and spark plugs • Maneuvering in a storm • Dealing with overturned canoes • Using life vests • Maneuvering while net setting • Landing a canoe
Major Cultural Understanding: Handling fish	
Describe and demonstrate proper handling of fish	<ul style="list-style-type: none"> • Removing from a net • Cleaning and preparing • Making drying racks • Making dryfish and split fish • Making fish caches or stages in the fall
Major Cultural Understanding: Camping skills and attitudes	
Identify and demonstrate correct camping and skills and attitudes	<ul style="list-style-type: none"> • Tent location: near wood and water • Spruce bough floor • Campfire: location, finding wood and starting fire quickly • Cooking and washing facilities • Bed rolls and personal hygiene areas • Movement within the tent • Rules for eating • Doing chores and doing one's share • Finding ways to be helpful

DENE KEDE GRADE 7

Fish Camp

Outcomes	Achievement Indicators – Measurable outcomes
<i>It is expected that students will:</i>	<i>The following set of indicators may be used to assess student achievement for each related specific learning outcome. Students who have fully met the specific learning outcomes are able to:</i>
Major Cultural Understanding: Dene laws and spirituality	
Explain the Dene laws and their relationship to fishing	<ul style="list-style-type: none"> • The need to listen to and obey instructors and Elders • Honouring the water, land and fire • Handling fish and equipment with respect • Sharing with the community
Major Cultural Understanding :Land safety and survival	
Demonstrate and explain land safety and its relationship to survival	<ul style="list-style-type: none"> • Caring for dangerous or hazardous items: guns, fuel, axes, etc. • Water safety • Starting a fire in the rain • First aid for burns, cuts and broken bones • Bear hazards • Appropriate dress • Buddy system • Distress calls • Staying in one place when lost • Temporary shelters • Using smoke for repellent • Drinking water safety: boiling and moving water • Direction and orientation • Fishing with wires and hooks
Major Cultural Understanding: Economic value of fishing	
Identify and discuss the economical value of fishing	<ul style="list-style-type: none"> • Nutritional value compared to store bought foods • Comparing cost of local fish to imported meats
Oral Tradition	
Major Cultural Understanding: The Dene have used the oral tradition as a way of passing knowledge from one generation to the next	
<i>Note: Teachers should research and provide information specific to the fish camps used by the community.</i>	
Describe ways that illustrate that the oral tradition is about communication and culture	<ul style="list-style-type: none"> • Without a body of knowledge, there is no culture. Knowledge must be passed from generation to generation in order for a culture to continue. • In the oral tradition, knowledge is passed from person to person orally, rather than in written form. • The knowledge that is passed down can include information, facts, wisdom, beliefs, customs and moral teachings. • Elders were usually the ones to pass on the oral knowledge. Therefore they became known as the teachers of the Dene culture. • Knowledge was often presented in the form of stories and legends. • The oral tradition requires very good listening and memory skills.

DENE KEDE GRADE 7

Oral Tradition

Outcomes	Achievement Indicators – Measurable outcomes
<i>It is expected that students will:</i>	<i>The following set of indicators may be used to assess student achievement for each related specific learning outcome. Students who have fully met the specific learning outcomes are able to:</i>
Major Cultural Understanding: The oral tradition has enabled the Dene culture to continue.	
Describe how the Dene oral tradition has many cultural purposes	<ul style="list-style-type: none"> • It is used to teach skills and knowledge concerning survival. • It is a way of teaching morals, beliefs and customs. • It can be used to counsel & guide individuals in their life decisions. • It is a form of entertainment. • It is a way to pay tribute to the Creator, the land or to certain individuals.
Major Cultural Understanding: Legends are the most important part of the Dene oral tradition	
Identify the reasons that make legends so important to the Dene	<ul style="list-style-type: none"> • They are very old stories which have come down from the first people. • With some variations, they are basically the same story told generation after generation. They are what generations of Dene have in common and what binds them together. • They contain Dene historical information. • They provide gentle moral guidance. • They are rich with Dene beliefs, explanations about life and customs. • They are a good source of entertainment. • They are rich in language.
Major Cultural Understanding: There are Dene customs that are followed when learning from an Elder.	
Describe how the Dene customs and learning from an Elder are related	<ul style="list-style-type: none"> • Stories from Elders are given in exchange for a gift. Local customs vary and should be followed. • In the presence of Elders, good listening skills are essential. • In the presence of Elders, respectful behaviour is required. • Local customs vary and should be followed.
Major Cultural Understanding: The youth of today have a crucial role to play in preserving the oral knowledge of the Dene.	
Express how the role that must be played by the youth of today, is crucial to preserve the oral Dene knowledge	<ul style="list-style-type: none"> • They must develop good listening and memory skills so they can pass on the knowledge of the Dene. • They must spend time on the land and with Elders in order to hear and understand their words.
My People, My Identity	
Major Cultural Understanding: The Dene are a family made up of First Nations tribes in the Mackenzie Valley who have similar languages, cultures, histories and perspectives on life.	
<i>Note: Teachers should research and provide information specific to the fish camps used by the community.</i>	
Identify the tribes belonging to the Dene family	<ul style="list-style-type: none"> • Chipewyan • Dogrib • Gwich'in • North Slavey • South Slavey
Describe ways in which the Dene groups are a family	<ul style="list-style-type: none"> • They share similar beliefs, values and a basic perspective on life. • They all speak variations of the Athapaskan language. • They were the first people to inhabit and live in the Mackenzie valley and delta. • They all had similar patterns of life and land use (see resource 2).

DENE KEDE GRADE 7

My People, My Identity

Outcomes	Achievement Indicators – Measurable outcomes
<i>It is expected that students will:</i>	<i>The following set of indicators may be used to assess student achievement for each related specific learning outcome. Students who have fully met the specific learning outcomes are able to:</i>
Major Cultural Understanding: As a Dene, I must know my family identity.	
Clarify why I must know my family identity	<ul style="list-style-type: none"> • I will know who I am related to so I can have a place to belong and will know how I fit into a larger family. • It will allow me to know my tribal and band identity(s).
Major Cultural Understanding: The Dene tribe to which I belong has its own distinct language, culture and history.	
Describe ways that my tribe is distinct	<ul style="list-style-type: none"> • We have our own territory and trails for hunting. • Our distinct territory causes us to have our own patterns of life and land use (see Resources 2 to 6). • We have our own dialect and sub-dialects of the Athapaskan language. • Since the time of contact with the non-Dene, we have our own history and resulting effects on our traditional way of life.
Major Cultural Understanding: The relationship between Dene tribes has varied historically	
Identify the different relationships that Dene Tribes had with each other	<ul style="list-style-type: none"> • Bands of Dene who moved around in order to survive travelled freely into neighbouring tribal territories. There were no marked boundaries, but people were aware of who tended to live in a certain territory. • When bands of people from different tribes would meet each other while travelling the land, initial contact was with some apprehension and caution. Past experiences taught that such contact was not always free of conflict. Often, the bands would exchange gifts (which was seen as trade by Europeans) as a symbol of goodwill. • Bands of people who were considered friendly were treated with feasts, drum dancing and games. • Relationships between some of the tribes were historically filled with conflict in the form of abductions, war parties and violent chance encounters. This was particularly true for a period of time between the Yellowknives (a band of Chipewyan people) and the Dogrib. • Though each tribe negotiates its own land claim, we still feel we are a part of a bigger identity - the nation of Dene people.
Major Cultural Understanding: My Dene identity can be strengthened by learning the history of my people	
Describe ways in which I can strengthen my Dene identity	<ul style="list-style-type: none"> • Learn what tribes are in the Dene family and what makes them a family • Find out my family, band and tribal identity • Learn the story of my tribe and band • Learn and live the values held by my people • Learn, practice and use the language of my people
Major Cultural Understanding: The values of my people remain to guide us in our lives and to provide us with a sense of identity.	
Identify Dene values that can be used to guide our lives and to give us a sense of identity in various contexts	<ul style="list-style-type: none"> • Values which guide us in the way we interact with one another: • We value coming together to celebrate our unity or to support one another in troubled times.

DENE KEDE GRADE 7

My People, My Identity

Outcomes	Achievement Indicators – Measurable outcomes
<i>It is expected that students will:</i>	<i>The following set of indicators may be used to assess student achievement for each related specific learning outcome. Students who have fully met the specific learning outcomes are able to:</i>
Identify Dene values that can be used to guide our lives and to give us a sense of identity in various contexts (Continued)	<ul style="list-style-type: none"> • We value participating in group efforts which benefit the whole community • We value our birthright - the right to belong to a group by virtue of our birth parents. • We value education through our Elders, learning not simply about the past, but valuing the wisdom of age and experience. • We value caring for and sharing with one another. • We value the right of one another to make our own decisions. • We value the talents and strengths that individuals bring to our people as a whole. • We value the friendships which help to make us complete. <p>Values which guide us as individuals:</p> <ul style="list-style-type: none"> • We value becoming capable and able to support others in need. • We value being humble. • We value being non-interfering and mindful of our own affairs. <p>Values which guide our relationship with the land:</p> <ul style="list-style-type: none"> • We honour and care for the land because it is our spiritual source and because it sustains us. • We value our Dene laws, which were given to help us in our relationship with the land. • We value our time on the land because it is the heart of our culture. • We value the Dene skills and knowledge for living on the land.
Developing Dene Skills	
Major Cultural Understanding: Basic Dene skills have enabled the Dene to survive as a people.	
Describe skills that are basic to the Dene culture	<ul style="list-style-type: none"> • Enable Dene people to enjoy, support and work with one another • Enable the Dene to live from the land and be healthy in body • Provide strength of spirit
Major Cultural Understanding: Basic Dene skills are valuable for the young Dene of today.	
Identify valuable basic Dene skills and describe in relation to how they help current young Dene people	<ul style="list-style-type: none"> • Enjoy, use and protect the land • Make a living • Create a healthy family and community • Become healthy in mind, body and spirit • Carry on the culture of the Dene
Major Cultural Understanding: Certain attitudes are helpful in learning and developing basic Dene skills	
Describe the attitudes required for development of basic Dene skills are and how they are helpful	<ul style="list-style-type: none"> • Willingness to take risks and to try something, even though the results may not be perfect • Willingness to persevere at practicing and not become frustrated • Willingness to choose to practice and learn, rather than to engage in self-destructive Or wasteful activities • Attentiveness while listening and watching
Major Cultural Understanding: Talented and capable Dene have found certain techniques useful for learning skills and developing talents. •	
The techniques used by talented and capable Dene include	<ul style="list-style-type: none"> • Setting small goals for oneself• • Imagining what the finished product will look like • Promising small rewards for oneself along the way as one makes progress • Reminding oneself that perfection only comes with practice • Reminding oneself of why one wants to develop the skill • Finding people with the particular skills you wish to learn (often a parent or a relative) and being attentive at listening and watching them

SCIENCE GRADE 7

Attitude Outcomes: common to all units

Outcomes	Achievement Indicators – Measurable outcomes
<i>It is expected that students will:</i>	<i>The following set of indicators may be used to assess student achievement for each related specific learning outcome. Students who have fully met the specific learning outcomes are able to:</i>
Interest in Science: Students will be encouraged to develop enthusiasm and continuing interest in the study of science.	<ul style="list-style-type: none"> • Show interest in science-related questions and issues, and pursue personal interests and career possibilities within science-related fields.
Mutual Respect: Students will be encouraged to appreciate that scientific understanding evolves from the interaction of ideas involving people with different views and backgrounds.	<ul style="list-style-type: none"> • Appreciate that scientific understanding evolves from the interaction of ideas involving people with different views and backgrounds
Scientific Inquiry: Students will be encouraged to develop attitudes that support active inquiry, problem solving and decision making.	<ul style="list-style-type: none"> • Seek and apply evidence when evaluating alternative approaches to investigations, problems and issues.
Collaboration: Students will be encouraged to develop attitudes that support collaborative activity.	<ul style="list-style-type: none"> • Work collaboratively in carrying out investigations and in generating and evaluating ideas.
Stewardship: Students will be encouraged to develop responsibility in the application of science and technology in relation to society and the natural environment.	<ul style="list-style-type: none"> • Demonstrate sensitivity and responsibility in pursuing a balance between the needs of humans and a sustainable environment.
Safety: Students will be encouraged to demonstrate a concern for safety in science and technology contexts	<ul style="list-style-type: none"> • Show concern for safety in planning, carrying out and reviewing activities
<p>LIFE SYSTEMS: Interactions and Ecosystems (Social and Environmental Emphasis) Essential Questions: How do human activities affect ecosystems? What methods can we use to observe and monitor changes in ecosystems, and assess the impacts of our actions?</p>	
Investigate and describe relationships between humans and their environments, and identify related issues and scientific questions	<ul style="list-style-type: none"> • Illustrate how life-supporting environments meet the needs of living things for nutrients, energy sources, moisture, suitable habitat, and exchange of gases • Describe examples of interaction and interdependency within an ecosystem • Identify examples of human impacts on ecosystems, and investigate and analyze the link between these impacts and the human wants and needs that give rise to them • Analyze personal and public decisions that involve consideration of environmental impacts, and identify needs for scientific knowledge that can inform those decisions
Trace and interpret the flow of energy and materials within an ecosystem	<ul style="list-style-type: none"> • Analyze an ecosystem to identify biotic and abiotic components, and describe interactions among these components • Analyze ecosystems to identify producers, consumers and decomposers; and describe how energy is supplied to and flows through a food web, by: <ul style="list-style-type: none"> ○ Describing and giving examples of energy and nutrient storage in plants and animals ○ Describing how matter is recycled in an ecosystem through interactions among plants, animals, fungi, bacteria and other microorganisms ○ Interpreting food webs, and predicting the effects of changes to any part of a web • Describe the process of cycling carbon and water through an ecosystem • Identify mechanisms by which pollutants enter and move through the environment, and can become concentrated in some organisms

SCIENCE GRADE 7

LIFE SYSTEMS Interactions and Ecosystems (Social and Environmental Emphasis) (Continued)

Outcomes	Achievement Indicators – Measurable outcomes
<i>It is expected that students will:</i>	<i>The following set of indicators may be used to assess student achievement for each related specific learning outcome. Students who have fully met the specific learning outcomes are able to:</i>
Monitor a local environment, and assess the impacts of environmental factors on the growth, health and reproduction of organisms in that environment	<ul style="list-style-type: none"> • Investigate a variety of habitats, and describe and interpret distribution patterns of living things found in those habitats • Investigate and interpret evidence of interaction and change • Identify signs of ecological succession in local ecosystems
Describe the relationships among knowledge, decisions and actions in maintaining life-supporting environments	<ul style="list-style-type: none"> • Identify intended and unintended consequences of human activities within local and global environments • Describe and interpret examples of scientific investigations that serve to inform environmental decision making • Illustrate, through examples, the limits of scientific and technological knowledge in making decisions about life-supporting environments • Analyze a local environmental issue or problem based on evidence from a variety of sources, and • Identify possible actions and consequences
Skills Outcomes	
Ask questions about the relationships between and among observable variables, and plan investigations to address those questions	<ul style="list-style-type: none"> • Identify science-related issues • Identify questions to investigate arising from practical problems and issues • State a prediction and a hypothesis based on background information or an observed pattern of • Select appropriate methods and tools for collecting data and information
Conduct investigations into the relationships between and among observations, and gather and record qualitative and quantitative data	<ul style="list-style-type: none"> • Research information relevant to a given problem or issue • Select and integrate information from various print and electronic sources or from several parts of the same source • Use tools and apparatus effectively and accurately for collecting data • Estimate measurements
Analyze qualitative and quantitative data, and develop and assess possible explanations	<ul style="list-style-type: none"> • Identify strengths and weaknesses of different methods of collecting and displaying data (e.g., • Compile and display data, by hand or computer, in a variety of formats, including diagrams, flow charts, tables, bar graphs and line graphs • Classify organisms found in a study plot
Work collaboratively on problems; and use appropriate language and formats to communicate ideas, procedures and results	<ul style="list-style-type: none"> • Communicate questions, ideas, intentions, plans and results, using lists, notes in point form, sentences, data tables, graphs, drawings, oral language and other means • Evaluate individual and group processes used in planning, problem solving, decision making and completing a task • Defend a given position on an issue, based on their findings

SCIENCE GRADE 7

Plants for Food and Fibre (Science and Technology Emphasis)

Essential Question: How do we produce useful plant products? What techniques do we use, what knowledge are these techniques based on, and how do we apply these techniques in a sustainable way?

Outcomes	Achievement Indicators – Measurable outcomes
<i>It is expected that students will:</i>	<i>The following set of indicators may be used to assess student achievement for each related specific learning outcome. Students who have fully met the specific learning outcomes are able to:</i>
Investigate plant uses; and identify links among needs, technologies, products and impacts	<ul style="list-style-type: none"> • Illustrate and explain the essential role of plants within the environment • Describe human uses of plants as sources of food and raw materials, and give examples of other uses • Investigate trends in land use from natural environments (e.g., forests, grasslands) to managed environments (e.g., farms, gardens, greenhouses) and describe changes • Investigate practical problems and issues in maintaining productive plants within sustainable environments, and identify questions for further study
Investigate life processes and structures of plants, and interpret related characteristics and needs of plants in a local environment	<ul style="list-style-type: none"> • Describe the general structure and functions of seed plants • Investigate and interpret variations in plant structure, and relate these to different ways that plants are adapted to their environment • Investigate and interpret variations in needs of different plants and their tolerance for different growing conditions • Describe the processes of diffusion, osmosis, conduction of fluids, transpiration, photosynthesis and gas exchange in plants • Describe life cycles of seed plants, and identify example methods used to ensure their germination, growth and reproduction
Analyze plant environments, and identify impacts of specific factors and controls	<ul style="list-style-type: none"> • Describe methods used to increase yields, through modifying the environment and by creating artificial environments • Investigate and describe characteristics of different soils and their major component • Identify practices that may enhance or degrade soils in particular applications • Describe and interpret the consequences of using herbicides, pesticides and biological controls in agriculture and forestry
Identify and interpret relationships among human needs, technologies, environments, and the culture and use of living things as sources of food and fibre	<ul style="list-style-type: none"> • Investigate and describe the development of plant varieties through selective breeding, and identify related needs and problems • Investigate and identify intended and unintended consequences of environmental management practices • Identify the effects of different practices on the sustainability of agriculture and environmental resources
Skills Outcomes	
Initiating and Planning: Ask questions about the relationships between and among observable variables, and plan investigations to address those questions	<ul style="list-style-type: none"> • Define practical problems • Identify questions to investigate arising from practical problems and issues • Rephrase questions in a testable form, and clearly define practical problems • State a prediction and a hypothesis based on background information or an observed pattern of events • Formulate operational definitions

SCIENCE GRADE 7

Plants for Food and Fibre (Science and Technology Emphasis) - (Continued)

Outcomes	Achievement Indicators – Measurable outcomes
<i>It is expected that students will:</i>	<i>The following set of indicators may be used to assess student achievement for each related specific learning outcome. Students who have fully met the specific learning outcomes are able to:</i>
Performing and Recording: Conduct investigations into the relationships between and among observations, and gather and record qualitative and quantitative data	<ul style="list-style-type: none"> • Research information relevant to a given problem • Construct and test a prototype design to achieve a specific purpose • Observe and record data, and create simple line drawings • Estimate measurements
Analyzing and Interpreting: Analyze qualitative and quantitative data, and develop and assess possible explanations	<ul style="list-style-type: none"> • Identify strengths and weaknesses of different methods of collecting and displaying data (e.g., use and/or construct a classification key) • Compile and display data, by hand or computer, in a variety of formats, including diagrams, flow charts, tables, bar graphs and line graphs • Identify new questions and problems that arise from what was learned
Communication and Teamwork: Work collaboratively on problems; and use appropriate language and formats to communicate ideas, procedures and results	<ul style="list-style-type: none"> • Receive, understand and act on the ideas of others • Communicate questions, ideas, intentions, plans and results, using lists, notes in point form, sentences, data tables, graphs, drawings, oral language and other means • Evaluate individual and group processes used in planning, problem solving, decision making and completing a task
Heat and Temperature (Social and Environmental Emphasis) Essential Question: What heat-related technologies do we use to meet human needs? Upon what scientific principles are these technologies based? What implications do these technologies have for sustainable use of resources?	
Illustrate and explain how human needs have led to technologies for obtaining and controlling thermal energy and to increased use of energy resources	<ul style="list-style-type: none"> • Investigate and interpret examples of heat-related technologies and energy use in the past • Trace linkages between human purposes and the development of heat-related materials and technologies • Identify and explain uses of devices and systems to generate, transfer, control or remove thermal energy • Identify examples of personal and societal choices in using energy resources and technology
Describe the nature of thermal energy and its effects on different forms of matter, using informal observations, experimental evidence and models	<ul style="list-style-type: none"> • Compare heat transmission in different materials • Explain how heat is transmitted by conduction, convection and radiation in solids, liquids and gases • Describe the effect of heat on the motion of particles; and explain changes of state, using the particle model of matter • Distinguish between heat and temperature; and explain temperature, using the concept of kinetic energy and the particle model of matter • Investigate and describe the effects of heating and cooling on the volume of different materials, and identify applications of these effects

SCIENCE GRADE 7

Heat and Temperature (Social and Environmental Emphasis)- (Continued)

Outcomes	Achievement Indicators – Measurable outcomes
<i>It is expected that students will:</i>	<i>The following set of indicators may be used to assess student achievement for each related specific learning outcome. Students who have fully met the specific learning outcomes are able to:</i>
Apply an understanding of heat and temperature in interpreting natural phenomena and technological devices	<ul style="list-style-type: none"> • Describe ways in which thermal energy is produced naturally • Describe examples of passive and active solar heating, and explain the principles that underlie them • Compare and evaluate materials and designs that maximize or minimize heat energy transfer • Explain the operation of technological devices and systems that respond to temperature change • Describe and interpret the function of household devices and systems for generating, transferring, controlling or removing thermal energy • Investigate and describe practical problems in controlling and using thermal energy
Analyze issues related to the selection and use of thermal technologies, and explain decisions in terms of advantages and disadvantages for sustainability	<ul style="list-style-type: none"> • Identify and evaluate different sources of heat and the environmental impacts of their use • Compare the energy consumption of alternative technologies for heat production and use, and identify related questions and issues • Identify positive & negative consequences of energy use, & describe examples of energy conservation in home or community
Skills Outcomes	
Initiating and Planning: Ask questions about the relationships between and among observable variables, and plan investigations to address those questions	<ul style="list-style-type: none"> • Identify science-related issues • Identify questions to investigate arising from a problem or issue • Phrase questions in a testable form; clearly define practical problems • Design an experiment, and control the major variables
Performing and Recording: Conduct investigations into the relationships between and among observations, and gather and record qualitative and quantitative data	<ul style="list-style-type: none"> • Identify data and information that are relevant to a given problem or issue • Select and integrate information from various print and electronic sources or from several parts of the same source (e.g., describe current solar energy applications in Canada, based on information from a variety of print and electronic sources) • Use instruments effectively and accurately for collecting data and information (e.g., accurately read temperature scales and use a variety of thermometers; demonstrate skill in downloading text, images, and audio and video files on methods of solar heating) • Carry out procedures, controlling the major variables (e.g., show appropriate attention to controls in investigations of the insulative properties of different materials)
Analyzing and Interpreting: Analyze qualitative and quantitative data, and develop and assess possible explanations	<ul style="list-style-type: none"> • Compile and display data, by hand or computer, in a variety of formats, including diagrams, flow charts, tables, bar graphs and line graphs • Identify, and suggest explanations for, discrepancies in data • Identify and evaluate potential applications of findings • Test the design of a constructed device or system

SCIENCE GRADE 7

Skills Outcomes (Continued)

Outcomes	Achievement Indicators – Measurable outcomes
<i>It is expected that students will:</i>	<i>The following set of indicators may be used to assess student achievement for each related specific learning outcome. Students who have fully met the specific learning outcomes are able to:</i>
Communication and Teamwork Students will: Work collaboratively on problems; and use appropriate language and formats to communicate ideas, procedures and results	<ul style="list-style-type: none"> • Communicate questions, ideas, intentions, plans and results, using lists, notes in point form, sentences, data tables, graphs, drawings, oral language and other means • Defend a given position on an issue, based on their findings
<p>Structures and Forces (Science and Technology Emphasis) Essential Question: How do structures stand up under load? What forces act on structures, and what materials and design characteristics contribute to structural strength and stability?</p>	
Describe and interpret different types of structures encountered in everyday objects, buildings, plants and animals; and identify materials from which they are made	<ul style="list-style-type: none"> • Recognize and classify structural forms and materials used in construction • Interpret examples of variation in design of structures that share a common function, and evaluate the effectiveness of the designs • Describe and compare example structures developed by different cultures and at different times; and interpret differences in functions, materials and aesthetics • Describe and interpret natural structures, including the structure of living things and structures created by animals • Identify points of failure and modes of failure in natural and built structures
Investigate and analyze forces within structures, and forces applied to them	<ul style="list-style-type: none"> • Recognize and use units of force and mass, and identify and measure forces and loads • Identify examples of frictional forces and their use in structures • Identify tension, compression, shearing and bending forces within a structure; and describe how these forces can cause the structure to fail • Analyze a design, and identify properties of materials that are important to individual parts of the structure • Infer how the stability of a model structure will be affected by changes in the distribution of mass within the structure and by changes in the design of its foundation
Investigate and analyze the properties of materials used in structures	<ul style="list-style-type: none"> • Devise and use methods of testing the strength and flexibility of materials used in a structure • Identify points in a structure where flexible or fixed joints are required, and evaluate the appropriateness of different types of joints for the particular application • Compare structural properties of different materials, including natural materials and synthetics • Investigate and describe the role of different materials found in plant and animal structures
Demonstrate and describe processes used in developing, evaluating and improving structures that will meet human needs with a margin of safety	<ul style="list-style-type: none"> • Demonstrate and describe methods to increase the strength of materials through changes in design • Identify environmental factors that may affect the stability and safety of a structure, and describe how these factors are taken into account • Analyze and evaluate a technological design or process on the basis of identified criteria, such as costs, benefits, safety and potential impact on the environment

SCIENCE GRADE 7

Structures and Forces (Science and Technology Emphasis) -(Continued)

Outcomes	Achievement Indicators – Measurable outcomes
<i>It is expected that students will:</i>	<i>The following set of indicators may be used to assess student achievement for each related specific learning outcome. Students who have fully met the specific learning outcomes are able to:</i>
Communication and Teamwork Students will: Work collaboratively on problems; and use appropriate language and formats to communicate ideas, procedures and results	<ul style="list-style-type: none"> • Communicate questions, ideas, intentions, plans and results, using lists, notes in point form, sentences, data tables, graphs, drawings, oral language and other means • Defend a given position on an issue, based on their findings
Skills Outcomes	
Initiating and Planning: Ask questions about the relationships between and among observable variables, and plan investigations to address those questions	<ul style="list-style-type: none"> • Identify practical problems) • Propose alternative solutions to a practical problem, select one, and develop a plan • Select appropriate methods and tools for collecting data to solve problems • Formulate operational definitions of major variables and other aspects of their investigations
Performing and Recording: Conduct investigations into the relationships between and among observations, and gather and record qualitative and quantitative data	<ul style="list-style-type: none"> • Research information relevant to a given problem • Organize data, using a format that is appropriate to the task or experiment • Carry out procedures, controlling the major variables • Use tools and apparatus safely
Analyzing and Interpreting: Analyze qualitative and quantitative data, and develop and assess possible explanations	<ul style="list-style-type: none"> • Compile and display data, by hand or computer, in a variety of formats, including diagrams, flow charts, tables, bar graphs, line graphs and scatterplots • Identify and evaluate potential applications of findings • Test the design of a constructed device or system • Evaluate designs and prototypes in terms of function, reliability, safety, efficiency, use of materials and impact on the environment • Identify and correct practical problems in the way a prototype or constructed device functions
Communication and Teamwork: Work collaboratively on problems; and use appropriate language and formats to communicate ideas, procedures and results	<ul style="list-style-type: none"> • Communicate questions, ideas, intentions, plans and results, using lists, notes in point form, sentences, data tables, graphs, drawings, oral language and other means • Work cooperatively with team
Planet Earth (Nature of Science Emphasis)	
Essential Questions: What do we know about Earth—about its surface and what lies below? What evidence do we have, and how do we use this evidence in developing an understanding of Earth and its changes?	
Describe and demonstrate methods used in the scientific study of Earth and in observing and interpreting its component materials	<ul style="list-style-type: none"> • Investigate and interpret evidence that Earth’s surface undergoes both gradual and sudden change • Interpret models that show a layered structure for Earth’s interior; and describe, in general terms, evidence for such models • Identify and explain the purpose of different tools and techniques used in the study of Earth • Explain the need for common terminology and conventions in describing rocks and minerals, and apply suitable terms and conventions in describing sample materials

SCIENCE GRADE 7

Planet Earth (Nature of Science Emphasis) – (Continued)

Outcomes	Achievement Indicators – Measurable outcomes
<i>It is expected that students will:</i>	<i>The following set of indicators may be used to assess student achievement for each related specific learning outcome. Students who have fully met the specific learning outcomes are able to:</i>
Identify evidence for the rock cycle, and use the rock cycle concept to interpret and explain the characteristics of particular rocks	<ul style="list-style-type: none"> • Distinguish between rocks and minerals • Describe characteristics of the three main classes of rocks—igneous, sedimentary and metamorphic—and describe evidence of their formation • Describe local rocks and sediments, and interpret ways they may have formed • Investigate and interpret examples of weathering, erosion and sedimentation
Investigate and interpret evidence of major changes in landforms and the rock layers that underlie them	<ul style="list-style-type: none"> • Investigate and interpret patterns in the structure and distribution of mountain formations • Interpret the structure and development of fold and fault mountains • Describe evidence for crustal movement, and identify and interpret patterns in these movements • Identify and interpret examples of gradual/incremental change, and predict the results of those changes over extended periods of time
Describe, interpret and evaluate evidence from the fossil record	<ul style="list-style-type: none"> • Describe the nature of different kinds of fossils, and identify hypotheses about their formation • Explain and apply methods used to interpret fossils • Describe patterns in the appearance of different life forms, as indicated by the fossil record • Identify uncertainties in interpreting individual items of fossil evidence; and explain the role of accumulated evidence in developing accepted scientific ideas, theories and explanations
Skills Outcomes	
Initiating and Planning: Ask questions about the relationships between and among observable variables, and plan investigations to address those questions	<ul style="list-style-type: none"> • Identify questions to investigate • Define and delimit questions to facilitate investigation • State a prediction and a hypothesis based on background information or an observed pattern of events • Formulate operational definitions of major variables and other aspects of their investigations
Performing and Recording: Conduct investigations into the relationships between and among observations, and gather and record qualitative and quantitative data	<ul style="list-style-type: none"> • Carry out procedures, controlling the major variables • Estimate measurements • Research information relevant to a given question • Select and integrate information from various print and electronic sources or from several parts of the same source • Organize data, using a format that is appropriate to the task or experiment

SCIENCE GRADE 7

Skills Outcomes – (Continued)

Outcomes	Achievement Indicators – Measurable outcomes
<i>It is expected that students will:</i>	<i>The following set of indicators may be used to assess student achievement for each related specific learning outcome. Students who have fully met the specific learning outcomes are able to:</i>
Analyzing and Interpreting: Analyze qualitative and quantitative data, and develop and assess possible explanations	<ul style="list-style-type: none"> • Use or construct a classification key • Interpret patterns and trends in data, and infer and explain relationships among the variables • Predict the value of a variable, by interpolating or extrapolating from data • Identify and suggest explanations for discrepancies in data • Identify new questions and problems that arise from what was learned
Communication and Teamwork: Work collaboratively on problems; and use appropriate language and formats to communicate ideas, procedures and results	<ul style="list-style-type: none"> • Work cooperatively with team members to develop and carry out a plan, and troubleshoot problems as they arise • Evaluate individual and group processes used in planning, problem solving, decision making and completing a task