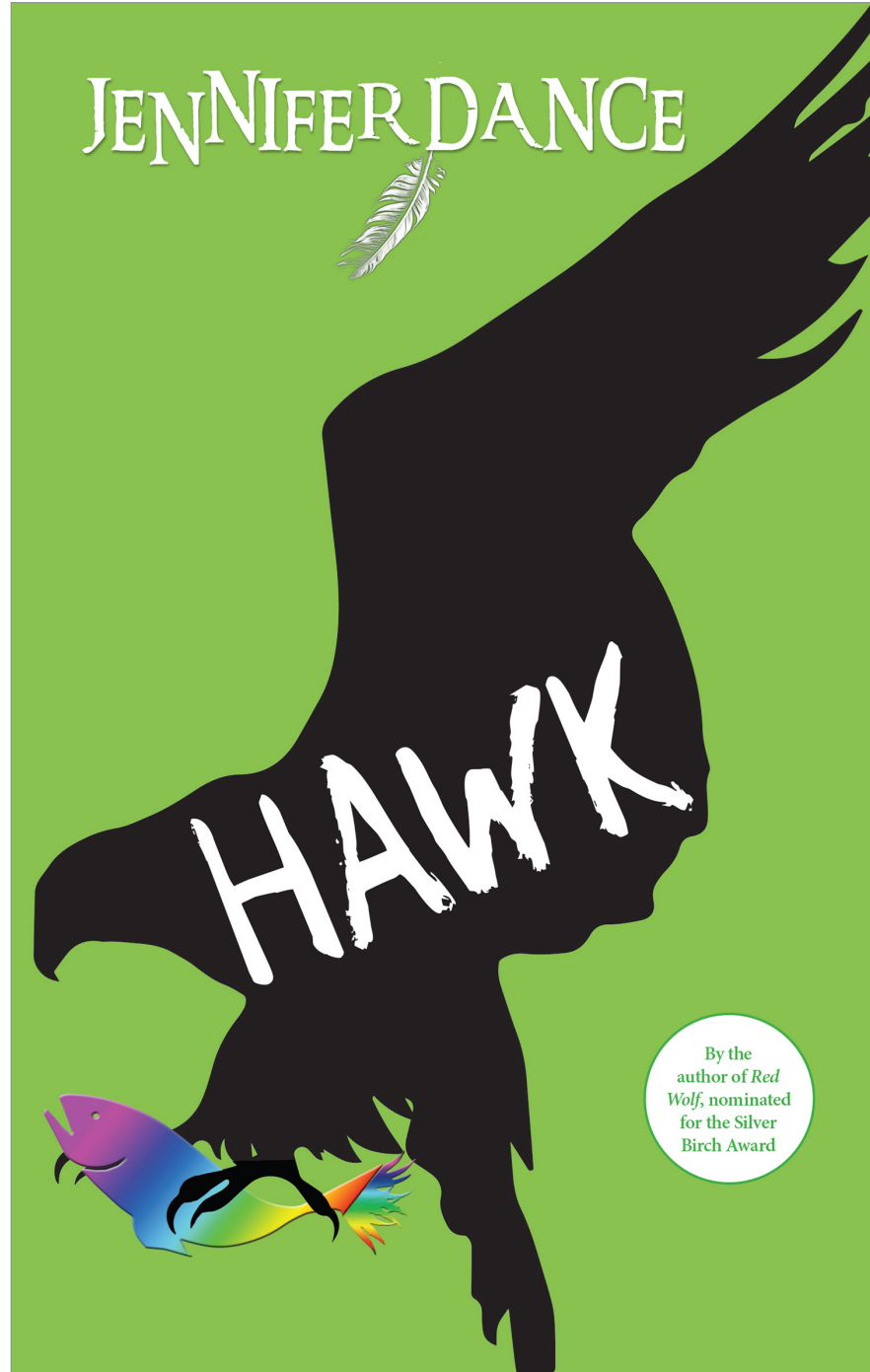


TEACHERS' GUIDE



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AUTHOR'S NOTE TO STUDENTS AND TEACHERS

In the spring of 2015, I travelled to Northern Alberta to research *Hawk*. I spent time in Fort McMurray, flew over the oil sands in a small plane, and then on up to the community of Fort Chipewyan where my imaginary protagonist grew up. I saw first-hand the scale of the environmental and human impact of the oil sands industry on the boreal forest and its people. As a scientist, I had hoped to find a balance between the industry and opposing views, but I discovered families, just like Hawk's, trapped between earning a living and losing their health and traditional lifestyle.

A photo journal of my trip, including videos, can be found on the *Hawk* page of my website at <http://www.jenniferdance.ca/hawk.html>

Follow along and share my amazing journey.

I hope that this guide increases your understanding of the complex issues at play in the oil sands, and that Hawk's story increases your awareness of our endangered environment. Whether you are in favour of the oil sands industry or opposed to it, I hope that together we can safeguard our people, our animals, our land, and our water.

Jennifer Dance

Note: This guide was created based on expectations for the Grade 7-8 Ontario curriculum for language, visual arts, science, geography and history. However, it will be useful for all curricula across Canada, and students of all ages around the world.

LANGUAGE

MEDIA LITERACY

Overall expectation 3: Create a variety of media texts for different purposes and audiences using appropriate forms, conventions and techniques.

Specific expectation 3.4: Produce a variety of media texts of some technical complexity for specific purposes and audiences, using appropriate forms, conventions and techniques.

- *Using technology - PIXTON or POWTOON - retell Hawk's story from your own perspective in graphic story form. Students may Google images to support their ideas, or import the author's photos from <http://www.jenniferdance.ca/hawk.html>*

ORAL COMMUNICATION

Overall expectation 2: Use speaking skills and strategies appropriately to communicate with different audiences for a variety of purposes.

Specific expectation 2.7: Use a variety of appropriate visual aids to support and enhance oral presentations.

- *Using Google Presentation or Microsoft PowerPoint, compare and contrast photographs of the boreal forest near Fort McMurray found in the photo journal, with those obtained from the internet that show the devastation of the 2016 forest fires. In your presentation to the class, take one of these two stands:
 - a) *The Fort McMurray forest fire was a consequence of global warming boosted in part by society's dependence on oil.*
 - b) *The fire was a natural part of life in the boreal forest.**

WRITING

Overall expectation 1: Generate, gather, and organize ideas and information to write for an intended purpose and audience.

Specific expectation 2.2: Establish a distinct voice in the writing appropriate to the subject and audience.

- If you were a friend of Hawk before he got leukemia and if you hadn't seen him for a while (like Gemma), what would you say to him? Write a letter to Hawk, using the correct format for a friendly letter.

VISUAL ARTS

Overall expectation 1: Creating and presenting — apply the creative process to produce artworks in a variety of traditional, two dimensional forms that communicate feelings, ideas and understanding.

Specific expectation 1.3: Use elements of design in art works to communicate ideas, messages, and understandings for a specific audience and purpose.

View Jennifer Dance's video entitled "The Oil Sands — a bird's-eye view"

<https://youtu.be/o6BRSUBnlzo>

Then...

- *Imagine you are White Chest or Three Talons — one of the ospreys in the story. Fly over your school and surrounding area. Draw what you see, then recreate it as a map. Or:*
- *Create a bird's-eye view of the Athabasca River, or the site of the Alberta oil sands industry.*

Or view Jennifer Dance's video entitled "A day at work in the Oil Sands — Driving a 797-haulage truck"

<https://youtu.be/urO-ulsjn0>

Then...

- *Imagine you are Frank. Draw a representation of his working day in the open-pit mine, keeping the images of the machinery and landscape to scale.*

SCIENCE

Overall expectation 1: Assess the personal, social and/or environmental impacts of a system and evaluate improvements and/or alternative ways of meeting the same needs.

Specific expectation 1.2: Assess the impact on individuals, society and the environment of alternative ways of meeting needs that are currently met by existing system, taking different points of view into consideration.

• Using the inquiry method, investigate the probable causes of Hawk's leukemia by compiling evidence from the novel and information from alternate sources (internet, books, medical journals, newspaper articles, etc). Present your evidence using a variety of visuals (charts, diagrams, tables, graphs).

Options for discussing your evidence

- 1. Regarding the potential toxic contamination of the Athabasca River by the oil industry, recommend specific warnings that could have been provided to Hawk's family and other First Nations downstream.*
- 2. How would these warnings have protected them against possible health hazards in their immediate environment as a result of the oil sands mining?*
- 3. Why do you think that this critical information was not readily available?*
- 4. Do you think that this information would have been made public if the Athabasca River flowed in the opposite direction, taking potential toxins to the large cities of Edmonton and Calgary? Why or why not?*

Overall expectation 2: Investigate interactions within the environment and identify factors that affect the balance between different components of an ecosystem.

Specific expectation 2.3: Use scientific inquiry/research skills to investigate occurrences that affect the balance within a local ecosystem.



In Alberta's boreal forest, an estimated 80% of the bitumen deposits are too deep underground to be reached by surface / open-pit mining. The oil companies clear the forest in a large grid formation of highway-sized trails, known as seismic lines. The square pads seen in the photo house the equipment needed to boil water which is then injected into the soil under the grid lines, melting the bitumen and allowing it to be brought to the surface as a liquid and pipe-lined away. This is called in-situ mining. It causes less destruction to the boreal forest and appears to be less devastating than open-pit mining, which can be seen from space.

- *Investigate the benefits of seismic lines to the oil industry.*
- *Investigate the detrimental effects of the seismic lines on animal habitat, and on the biodiversity of the area, specifically the following populations:*

Woodland caribou

Wolves

Woodland bison

Overall expectation 3: Demonstrate an understanding of interactions between and among biotic and abiotic elements in the environment.

Specific expectation 3.9: Describe Aboriginal perspectives on sustainability and describe ways in which they can be used in habitat and wildlife management.

The Indigenous people in northern Alberta (Cree, Dene-Chipewyan and Métis) have lived in harmony with the ecosystems for countless generations. Their way of life has disappeared.

- *Based on the information given by Hawk's grandfather, and using technology to provide the images, complete an ecosystem diagram. Feature the species that provided food, clothing, shelter and transportation for Grandfather's generation and those before him. (Water plants, water fowl, fish, fur-bearing mammals, and game animals)*
- *Then, using the table on the next page, or one similar, compare the resources from your ecosystem diagram with those available in the Fort Chipewyan area today.*

RESOURCES	TRADITIONAL	MODERN DAY	DETAILS
Food			
Shelter			
Clothing			
Transportation			

What is your conclusion about the current state of the boreal forest, regarding sustainability and wildlife management?

GEOGRAPHY

Overall expectation A 3: Understanding Geographic Context:

Demonstrate an understanding of significant patterns in Earth's physical features and of some natural processes and human activities that create and change those features.

Specific expectation A 3.5: Describe some key natural processes and human activities that create and change water bodies and systems.

1. *Print the map on P.14: "Oil sand deposits in Alberta". Using other sources, locate and place the following on the map:*

- *Athabasca River*
- *Peace River*
- *Peace-Athabasca Delta*
- *Wood Buffalo National Park*
- *Slave River*
- *Mackenzie River*
- *Fort Chipewyan*
- *The geographic area which has been mined to date. Use the following link:
https://commons.wikimedia.org/wiki/File:Athabasca_oil_sand_mining_map_2011.jpg*

2. *The Peace-Athabasca Delta is an UNESCO World Heritage site.*

- *What does this mean?*
- *Why has this inland delta received the distinction?*
- *Investigate the significance of this wetland to the surrounding environment with special regard to migrating birds and biodiversity.*

3. As of 2016, crude bitumen production (from both open-pit mining and in-situ mining) totaled 2.5 million barrels per day (Source: Alberta Energy Regulator report). It takes approximately four barrels of water to make one barrel of oil.

- *Discuss the effect this extensive use of water might have on the level of water downstream, the Peace-Athabasca Delta and Lake Athabasca.*

- *Based on the current production, estimate how much contaminated water is pumped daily into tailing ponds.*
- *Estimate the surface area of these ponds today, comparing them to an area with which you are familiar e.g. three hockey arenas, ten Olympic swimming pools, or the town you live in.*
- *The tailings in these ponds are open to the air and contained only by banks of packed clay. Suggest ways that toxins might get into the environment.*

4. *Follow the Athabasca River from its source through the heart of the oil sands to the Peace-Athabasca Delta and Lake Athabasca.*

- *Identify the final destination of water in this system (Hint: follow the Slave River).*
- *What risks do leaking tailings ponds present on the river systems and ecology of the north?*

5. The following link shows the growth of the oil sands industry from 1984 to 2011, as seen from space.
<https://svs.gsfc.nasa.gov/10838>

- *Has the industry continued to grow since 2011? Debate possible further growth.*
- *Will the industry continue to expand? Whether you answer yes or no, give reasons for your choice.*
- *Should the industry continue to expand? Whether you answer yes or no, give reasons for your choice.*

6. *Peace River: Research the existing dams on this river system.*

- *Why were they built?*
- *What effect they have had on the level of water in the Peace-Athabasca Delta, and therefore on the environment and its biodiversity, paying particular attention to beaver, muskrat, fish, water plants?*

7. B.C. is currently proposing a new hydro electric dam on the Peace River at a cost of \$9-billion (B.C.'s Site C Dam.)

- *How will this project shape the physical environment? Look at the pros and cons.*
<https://theglobeandmail.com/news/british-columbia/why-construction-of-bcs-site-c-dam-should-be-scrapped/article34431665>

OIL SAND DEPOSITS IN ALBERTA

Note: This shows the potential for industrial oil extraction, not the current mining.



HISTORY

On July 1, 2017, Canada celebrated its 150th birthday. Some Indigenous people protested during the Ottawa celebration, others refused to recognize this milestone anniversary of Confederation.

Write an essay to:

- *Explore the reasons many Indigenous people and their supporters decided to boycott the celebration.*
- *Explain why or why not these protests/feelings were justified?*
- *Connect this with Treaty 8 signed by Hawk's ancestors in 1899. (Ch.6, P.40)*

Or write a short story, imagining that your family's home was expropriated for a fraction of its value. Use analogies that make the historic treaties meaningful to today's youth.

ENVIRONMENTAL IMPACT

FOREST FIRES

In 2016, a year after Jennifer Dance was in Fort McMurray researching *Hawk*, a devastating wild fire blew into the city, necessitating the evacuation of all 88,000 residents, destroying 2,400 homes and buildings, and impacting the oil sands industry. In 2017 many other fires burned out of control throughout British Columbia, Saskatchewan and Manitoba, as well as in the United States.

Fire is part of the life cycle in the boreal forest, but recently these events are more frequent and more severe. Higher than normal temperatures, lower than normal rainfalls and a longer “fire season” are blamed for these forest fires.

All over the world, it seems that the environment is under stress.

As a class, discuss the following:

- *How does the environment communicate that stress to us?*
- *Have humans contributed to these problems, and how?*
- *Have you experienced any negative environmental effects in your community or heard about them on the world news?*
- *Discuss ways we can stop harming the planet.*
- *What can you do personally?*
- *How can you make others aware?*

THE PEACE-ATHABASCA DELTA

Research the environmental significance and value of this UNESCO World Heritage site.

There is no oil under the delta so it will never be mined. Answer the following questions, prepared to justify your opinions

- *Is the Peace-Athabasca Delta at risk? Why?*
- *What can you do personally?*
- *How can you make others aware?*

THE CLEAN-UP

All forms of mining produce waste, often called tailings.

The mines are bound under contract to clean up and reclaim the mined land before returning it to the province at the end of the lease period.

- *Investigate methods of disposing of tailings in the oil sands, both past and present. Has a good solution been found?*
- *Investigate methods of land reclamation, both past and present.*
- *In what ways will the reclaimed land differ from the original landscape?*
- *Is safe clean-up of all the land an economic proposition for the oil companies?*
- *What happens when the oil industry does not clean up the land? Who funds the final cleanup?*
- *Give examples of other industries in either Canada or the U.S. where clean up has been successful, or unsuccessful.*

MAKE A DIFFERENCE

WHAT CAN YOU DO?

“It strikes me that now is the time to start making ripples. I plan to make some big ones, so that after I am gone they will still remain.”

—*Hawk*, page 257

1. Hawk’s experience with leukemia changed his life and his goals for the future.

Write an essay which shows:

- *How Hawk made a difference in his own life, that of his family, his community and people around the world.*
- *In the absence of a perfect solution for providing energy for our world today, how can you make a difference?*

2. Identify areas in your life that are dependent on oil. Think outside the box, e.g: The involvement of oil in raising and growing the food we eat; the manufacture of clothing, and electronic devices; the disposal of these items when they are no longer useful to us; how they biodegrade.

Write an article for your school or town newspaper, explaining

- *Why our society needs to be less dependent on oil.*
- *The steps we can all take to stop participating in the cause.*
- *The steps we can all take to contribute toward the solution.*

3. Conflict resolution. A situation can often be seen from several points of view. It is not black and white but instead is many different shades. Hawk’s father and grandfather have opposing views which create conflict. Observe how this conflict changes throughout the story and the reasons why.

- *Write a letter to a family member, or friend with whom you have a strongly differing point of view. Try to address the conflict without damaging the relationship.*

SOLVING THE BIG PROBLEMS

RESEARCH / INQUIRY TOPICS FOR *HAWK*

As a class, in groups, or as individuals, investigate one of the following topics.

Present your findings to the class, or school, using oral presentation skills as well as technology.

Woodland Caribou, Wolves, and Humans

Study the relationship between woodland caribou, humans, and wolves in Alberta, British Columbia, and Saskatchewan. Do you agree with provincial wolf culls? Will these culls save the woodland caribou from extinction? How will the wolf population be affected? Is there a better way? Explain and justify the stand that you have taken in this emotional issue. What can you do to help?

The Alberta Oil-Sands Industry

Study the impact of the oil sands industry on the people of Alberta, economically and socially. Using statistics, compare this to Canada as a whole. Does the economic benefit of the oil industry outweigh the risks to water, land, animals, human health, and global warming?

Justify your stand on this issue.

Indigenous Communities in Northern Alberta

The Canadian government has been accused by some of not doing enough to support and/or protect Indigenous communities in northern Canada. If you agree with this statement, write to the prime minister, using the correct format, giving specific details about what the government should do and why.

TAKING THE STORY FURTHER

TOPICS TO CHAT ABOUT WITH YOUR FRIENDS

Friendship

Discuss the value of friendship.

- *What makes a true friend?*
- *How can you be a true friend to others?*
- *If someone has disappointed you in a friendship, how can you repair that damage?*

Personal Growth

Hard times make some people stronger, but others become bitter. Hawk's personal challenge with health helps him grow as a person and improve his relationships especially with his mother, father, and grandfather, although he doesn't get there straight away.

Discuss the saying, "What doesn't kill you makes you stronger."

- *In your own life, or in the lives of those close to you, have you experienced either strength or bitterness as a reaction to difficult times?*
- *Can we choose which way to react?*
- *Consider becoming stronger/better, without having to go through a near-death experience like Hawk in the story.*

Cost of living for Fort Chipewyan residents

In Fort Chipewyan, there is only one grocery store. Food and drinking water have to be flown in, or trucked in on the ice road during the winter months. The outrageous prices are beyond the reach of many. Yet the traditional lifestyle of hunting, trapping and fishing make you sick.

Brainstorm

- *What choices there are for the Fort Chipewyan residents?*
- *How could their situation be improved?*

THEMES OF THE WHITE FEATHER COLLECTION

Author Jennifer Dance has written three books: *Red Wolf*, *Paint*, and *Hawk*. These three books make up the **White Feather Collection**.

- *What themes are shared by Red Wolf, Paint, and Hawk?*
- *In what ways are the books similar, and how are they different?*

In *Hawk*, some of the characters are still affected by the residential school system that was described in *Red Wolf*.

- *Bearing this in mind, think about the behaviour, character traits, mannerisms, and self-identity of Hawk, his father and grandfather.*
- *The main characters in both Red Wolf and Hawk struggle with identity, i.e., how they think of themselves versus how they think the world sees them. In Paint however, Noisy Horse seems not to have an identity problem. Why?*

In the novel, *Paint*, we see that man's treatment of the soil on the Great Plains led to the Dust Bowl.

- *Is this similar to the environmental damage caused by the oil-sands industry in Hawk?*

Paint and *Hawk* are set approximately a hundred years apart.

- *What have we learned over the years about protecting our environment?*

SUPPORT MATERIAL

Video, Book Trailer for *Hawk*: <https://youtu.be/LAYcxWDdoGs>

Video, Oil Sands — a bird’s eye view: <https://youtu.be/o6BRSUBnlzo>

Video, A day at work in the Oil Sands — Driving a 797-haulage truck: <https://youtu.be/urO-ulsjn0>

General reading: https://en.wikipedia.org/wiki/Athabasca_oil_sands

<http://www.capp.ca/initiatives/canadas-oil-sands>

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