Accessible science and technology
Dynamic • Differentiated • Dependable

Rich STSE connections make science and technology meaningful
✓ Multiple opportunities to Differentiate Instruction
✓ Accessible reading levels promote understanding
✓ Cross-curricular support for literacy and numeracy

www.nelson.com/perspectives
KEY CHANGES TO THE REVISED CURRICULUM

1. **NEW**—Science, Technology, Society, Environment (STSE) emphasis—more prominence in the list of expectations

2. **NEW**—STSE expectations are better articulated with sample issues, problems, and guiding questions

3. **NEW**—Inclusion of Fundamental Concepts and Big Ideas

4. **ENHANCED**—Focus on literacy and numeracy skills

5. **NEW**—Achievement chart category of Thinking and Investigation—unique to science and technology

6. **REDUCED**—From five strands and topics to four—significant change in expectations

*Nelson Science and Technology Perspectives* has been carefully aligned with the final version of the Grades 7 and 8 Ontario Science and Technology curriculum—offering **the best match** to the final curriculum!

NELSON’S RESEARCH FOUNDATION:

*Nelson Science and Technology Perspectives* is a research-informed resource based on current best practices including:

- Student confidence-building strategies
- Linkages between engagement, reading level, and student interest
- Constructivism
- Diagnostic assessment
- Differentiated instruction
- Opportunities for problem-solving and reflection
ONTARIO-BASED AUTHOR TEAM

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DEVELOPMENT TEAM

✓ Over 40 Ontario teacher reviewers
✓ Accuracy reviewers
✓ Assessment consultants
✓ Catholicity reviewers
✓ Combined Grade consultants
✓ Environmental education consultants
✓ ELL/Culture consultant
✓ Literacy consultants
✓ Numeracy consultants
✓ Safety consultants
✓ STSE consultant
✓ Technology/ICT consultants
NELSON SCIENCE AND TECHNOLOGY PERSPECTIVES...

CORE COMPONENTS

Student Resources

Four Soft cover modules OR one Student Book

Grade 7

Grade 8

Teacher's Resource (Print/CD/Web)
Available for each individual topic unit or bundled together to support an entire grade

SUPPLEMENTAL COMPONENTS

Skills Handbook
- Student reference provides support for the skills and processes of science, safety considerations, and communicating in scientific terms (included in Hardcover Student Text)

Student Success Workbook
- For students who need extra support in their reading and understanding of science concepts—ideal for struggling readers and ELL

eSource web centres
- For students and teachers, these fully supported websites offer an extension of learning opportunities

Interactive Toolkit DVD
- Unique teacher-directed DVD that contains a variety of technology tools to assist in creating a dynamic classroom environment

Modifiable Test Bank [ExamView]
- Over 1,800 additional quality modifiable questions with solutions on CD that support chapter content

Combined Grades Strategy Guide
- Offers instructional strategies and extra support material for teachers in a combined grades setting

For more detailed descriptions of each of these components, please visit www.nelson.com/perspectives
Dynamic new technology supports learning through:
- Animations
- PowerPoint and Smartboard lessons
- Lab videos
- Audio readings
- Vocabulary support

Exciting activities, visuals, narratives, and STSE connections promote student engagement

Clean layout and dramatic visuals stimulate student curiosity

Quick and fun Try This activities will motivate learners to get out of their seats and into the science

(Video demo of Try This Activity)
Managing the Transfer of Thermal Energy

**Key Question:** How can we conserve energy loss in buildings?

It is everyone’s job to use Earth’s resources wisely. People should waste less. One way to waste less is to use energy efficiently.

Buildings use a lot of energy. Not all of this energy is used well. Buildings lose energy through windows, walls, and doors (Figure 1). We can control how energy goes in and out of buildings.

Building designers must understand energy transfer. If building designers use the wrong materials or don’t plan well, their buildings will waste energy. Good building designers work to make sure that:

- buildings waste little energy
- people inside the building are comfortable

**Multiple entry points all work to meet the needs and abilities of a range of learners in their preferred learning style**

- Readings, group work, purposeful visuals, activities
- Lower level reading alternatives and scaffolded activity sheets
- Multiple ways vocabulary supports comprehension

**Practical strategies and text forms support cross-curricular literacy and numeracy using familiar strategies:**

- Making Connections
- Making Inferences
- Summarizing
- Synthesizing and Evaluating
- and many more

**Sample from Student Success Workbook**

**Diagnosed assessment tools to inform student readiness**

**Choice of product and process in activities and unit tasks**

**Developed with the understanding that each student comes to the classroom with a different level of readiness, unique interests, and individual learning styles.**
3.6 CONDUCT AN INVESTIGATION

Separating a Solution

Once a solution is dissolved in water, can you get it all back again? In this investigation, you will make a salt-and-water solution using measured quantities of salt and water. Next, you will plan and perform your own procedure to reclaim the salt from the mixture. You will determine whether the quantity of solute changes after it dissolves into a solution.

Testable Question

How is the quantity of salt affected when the salt is reclaimed from a salt-and-water solution?

Hypothesis/Prediction

Make a hypothesis based on the Testable Question. Your hypothesis should include a prediction and a reason for your prediction based on the particle theory.

Experimental Design

In this investigation, you will plan your own procedure to reclaim the salt in a solution made of 5 g of salt and 100 mL of warm water. You will compare the mass of the salt before and after to determine whether or not the amount of salt has changed.

3.10 SOLVE A TECHNOLOGICAL PROBLEM

The Amazing Coffee Keeper

Whether you are designing a building, a winter jacket, or a lunch bag, the choice of materials and their arrangement affect the final function of the product.

Scenario

Every Saturday morning, your dad pours himself a cup of coffee, and then he gets busy around the house. By the time he has a chance to drink his coffee, it is cold. Your dad has asked you to design a device that will keep his coffee warm until he has time to drink it.

Design Brief

You are to build a device that will keep 300 mL of hot water warm for at least 30 min. The device must fit easily on a kitchen table, cannot include any form of heater, and must allow water to be easily poured in and out. Use materials efficiently to keep costs low. All materials must be safe for use in the classroom and home.

1. Write a plan for the materials and construction.
2. Design a prototype and test it.
3. Write a step-by-step plan for creating the device. Ask your teacher to approve both the list of materials and the plan.
4. Once you have approval, build your device.

2.4 PERFORM AN ACTIVITY

Solveability

In this activity, you will compare the solubility of Epsom salt and table salt in both cold and hot water by preparing saturated solutions and taking careful measurements.

Purpose

To explore the relationship between solubility temperature.

Materials and Equipment

Eye protection

5 mL measuring spoon

Beaker

Weighing paper

Stirring rod

Electric kettle

Temperature

Test and Modify

Test how well your device keeps just-boiled water hot for 30 min. How much did the temperature of the water change during that time? Note any problems, and then modify your design to correct these problems. Continue correcting your design until it meets the design criteria.

2.6 EXPLORE AN ISSUE CRITICALLY

Using Compact Fluorescent Light Bulbs

Pure substances and mixtures affect the world around you. Using pure substances and mixtures involves both benefits and costs. A benefit is a good or positive result. A cost is a bad or negative result. Some pure substances are harmful to the environment or to human health. Some mixtures contain pure substances that can pollute the air, soil, or water. Often, a mixture or a product containing a mixture has both benefits and costs associated with it. For example, compact fluorescent light bulbs (CFLs) use much less energy than incandescent bulbs (Figure 1). However, CFLs contain a mixture of gases that includes mercury—a toxic pure substance that can pollute the environment when the bulb is thrown away (Figure 2). Are the benefits of using CFLs worth the costs?
5. NEW—Achievement chart category of Science and Technology curriculum—offering significant change in expectations—more prominence in the list of Science, Technology, Society, Environment (STSE) emphasis.

3. NEW—Inclusion of investigation.

6. REDUCED—From five strands and topics to four—full implementation to the final curriculum!

STSE expectations—more prominence in the list of Science, Technology, Society, Environment (STSE) emphasis.

Differentiated instruction—more prominent in the list of 21st-century skills.

Guided inquiry instruction—more prominent in the list of 21st-century skills.

Student interest—more prominent in the list of 21st-century skills.

Fundamental Concepts

Accessible science and technology

Multiple opportunities to Differentiate Instruction

Linkages between engagement, reading level, and numeracy skills

Linkages between engagement, reading level, and literacy skills