



Computational thinking makes students better thinkers, writers, & researchers

Don't be fooled—computational thinking isn't all about computer science! It has more to do with language arts than you might realize. Computational thinking equips students with valuable problem-solving tools. By using strategies that computers use to solve problems, students learn new ways to identify patterns and themes, break assignments into manageable pieces, and edit to fix errors. These engaging and fun resources give you the tools to integrate computational thinking into your language arts classroom.

Computational thinking strategies:

Collecting data—how to find the right information

[open.canada.ca: Open Data from the Canadian Government](https://open.canada.ca/)

Collecting data helps writers shape their topic and support it with details. The Canadian government publishes open source data. The site offers a variety of topics from which to collect data for the purpose of research, writing, and speaking, ranging from agriculture to education and public safety. Search terms can also be entered for a specific topic of interest.

Analyze data—find relationships and predict outcomes

[Create a Graph using Statistics Canada](#)

Producing charts and graphics helps writers support ideas and convey information. Statistics Canada hosts a web page that allows users to create a variety of graphs based on collected government data.

Decompose—break a text or project into smaller, manageable pieces

[Governor General's Literary Awards](#)

Becoming a better writer often involves breaking down and examining what good writers do and trying out their writing craft tips. Literacy also requires evaluating content presented in diverse formats and media. Students can research and decompose the techniques of Canada's favorite authors using the Governor General's Literary Awards website. Students can answer the question "What makes these Canadian authors good writers?"

Find Patterns—identify themes and connections

[The Canadian Letters and Images Project](#)

Identifying patterns in a genre of writing is part of analyzing text structure. Students explore the art of letter writing through the Canadian letters and images project site collection. Starting with letters from before the First World War, and continuing through the twentieth century, significant time periods and letters are showcased. Compare and contrast letter styles through each time period, discuss rules of letter writing, and predict the future of this genre of writing and the impacts of technology on the patterns students identified.

Abstract—remove unnecessary detail to see central themes

[Heritage minutes by Historica Canada](#)

Sorting out details and reducing complexity is important to both identifying the main idea or theme when reading, and in summarizing when writing. Historica Canada showcases Canada’s story through Heritage Minutes. These one-minute clips about important historical events and characters shed light on key events in our complex history. Students study the works of significant writers, find out how they impacted Canada, and see timelines and biographies for influential figures. Students can compare the accuracy of the short film to the original event.

Build models—outline, review, and edit to fix errors

[Purdue OWL Online Writing Lab \(Purdue University\)](#)

Writing is a text-based model—and the writing process includes creating, experimenting, and finding and fixing errors in the model. Students should view revision as an iterative process of building models, each a bit better than the last. Introduce students to the resources at the Purdue OWL Online Writing Lab, a great asset through high school, college, and beyond. The page “Full OWL Resources for Grades 7-12 Students and Instructors” provides support for every stage of the writing process, beginning with building a text model using an outline. It also helps students find and fix common errors such as proper quotations and citation, evaluating sources, or proper punctuation and grammar.

Develop algorithms—structure a process using step-by-step instructions

[Choose Your Own Adventure, by Scratch](#)

Emphasize the event sequences of the narrative structure by developing step-by-step instructions in Scratch (MIT). Choose your own adventure stories are based around decision matrices just like an algorithm with a sequence of steps or choices. Students explore examples on Scratch—a block style coding platform that allows drag and drop programming. Select a story, choose events, and then click on “See Inside” to view how the blocks are organized. Encourage students to develop their own storyboard or algorithm, and then build the story in Scratch.