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# ADST RESOURCES---K to 5+

## (Collection started in February 2017)

**4 & 5+ (February 28, 2017)**

**Coding with Scratch (three books to view at the website listed below)**

**www.dk.com/ca**

K to 5+ **(February 28, 2017)**

## Computational Thinking:  A Guide for Teachers (Electronic version)

Provided by:  CUEBC (Computer Using Educators of British Columbia)

Go to this web link to download the above mentioned teachers guide.

http://cuebc.ca/cue/2016/02/01/computational-thinking-a-guide-for-teachers/

==CUEBC intends to continue to facilitate resource sharing and development of support materials for BC teachers in the adoption of computational thinking principles into their K-12 classrooms. (Posted on the CUEBC website as of February 1, 2016)==

K to 5+

## CSUNPLUGGED-Computer Science without a computer **(February 28, 2017)**

http://csunplugged.org/

CS Unplugged is a collection of free learning activities that teach Computer Science through engaging games and puzzles that use cards, string, crayons and lots of running around.

The activities introduce students to Computational Thinking through concepts such as binary numbers, algorithms and data compression, separated from the distractions and technical details of having to use computers. Importantly, no programming is required to engage with these ideas!

CS Unplugged is suitable for people of all ages, from elementary school to seniors, and from many countries and backgrounds. Unplugged has been used around the world for over twenty years, in classrooms, science centers, homes, and even for holiday events in a park!

The material is available free of charge, and is shared under a Creative Commons BY-NC-SA licence, which makes it easy to copy, adapt and share it.

K to 5+

## Common Sense Media <span style="color:red">(February 20, 2017)</span>

This website provides an extensive list of coding resources and the grade levels for which they are best suited: https://www.commonsense.org/education/top-picks/best-apps-and-websites-for-learning-programming-and-coding

Best Apps and websites for Learning Programming and Coding.  The tools listed support project based learning and give students the freedom to create, collaborate, hack, remix and tinker with their own unique designs.  Using the pics listed on this website, students can unlock the logic of code and the basics of programming turning computers into tools to make new things.

## Some examples:

**Block-based Programming** for Grades K-2 (App, free, Android & iPad platforms)

**Codeable Crafts** for Grades K to 3 (App, free, Android platform)

**Blockly for Dash & Dot Robots** K to 5 (App, free, Android, iPhone, iPod Touch &, iPad platforms)

**Scratch Version 2** for Grades K to 12 (Website, Free)

**SPRK Lightning Lab-Programming for Sphero Robots** for Grades 3 to 8 (App, Free & Paid, Android,    iPad, iPhone, iPod Touch, Kindle, Fire, Fire phone)

**Appinventor.org** for Grades 6 to 12 (Website, Free)

# K to 5+

## Mediasmarts.ca <span style="color:red">**(February 20, 2017)**</span>

**Mediasmarts.ca** is the Canadian equivalent to Common Sense Media if you are looking for Canadian specific information as well as **FRENCH resources.** **NOTE:**  Doesn't have a similar rating of apps and include the Privacy Impact of the apps (most of which are American on commonsense.org)-and therefore many of the apps are not FIPPA compliant for British Columbia.

Two examples from this website:

1. **Passport to the Internet:  Student tutorial for Internet literacy (Grades 4 to 8)**

   **Passport to the Internet, an Internet literacy tutorial, helps students in Grades 4 to 8 develop the critical thinking skills they need to apply to their online experiences by enabling them to use popular online tools and websites in a secure and ethical manner, and to their full potential.**

2. **Educational Games**

   **Co-Co's AdverSmarts:  an Interactive Unit on Food Marketing on the Web**

   **For ages 5 to 8.  Designed to help kids recognize the marketing techniques used on commercial websites that target children.**

## K to 5

## Sphero information for K to 5-BC school content from: Eagle Ridge Elementary in Coquitlam (February 20, 2017)

https://rbotero.wordpress.com/2017/02/05/spheros-k-5/

A teacher at Eagle Ridge Elementary, Rick Botero, has had great success with the integration of the Sphero and iPad at this BC school. Take a look at the blog link above for more info on Rick's journey with the Sphero. Rick's blog is full of lesson plan materials, ideas, suggestions and organizational details for use at Eagle Ridge Elementary.


## K to 9+

## How to use Sphero the Robot for incredible STEM lessons (February 20, 2017)

http://dailygenius.com/teaching-with-sphero-the-robot-in-math-science-and-beyond/

Sphero is a robotic ball that can pair with an iPad, tablet, iPhone, or smartphone through Bluetooth. Sphero emphasizes the power of play in education and has a variety of lessons that are aligned to the Common Core and Next Generation Science Standards on their website. They also have a number of STEM challenges in the form pre-designed engineering projects designed for collaborative group work with students and are helpful for teachers using the robots in their classes.

Sphero in the Physics, Art & Language Arts Classrooms-more info and links within this above mentioned website.

K to 5+

# CODING with ROBOTS (As of Feb 15, 2017)

Example of a BC school using a couple of robots to get students excited about coding. This school would like to have a few different robots available for different grade levels (maybe one-two for each of K-3, 4-7, 8-12).

Here is what they are using:

Sphero - http://www.sphero.com/

The kids love these ones! The apps are flexible so can be used drag and drop for younger students and full coding for older students. Haven't had any trouble with hardware yet, though there are occasionally connection problems with Android devices. Their tech support is great. They have online lesson plans available.

The Finch - http://www.finchrobot.com/2

The app uses a drag and drop interface to code (Snap or Scratch). It has speakers, sensors for light (obstacle avoidance) and a mount for a pen. It uses a 10ft usb cable so is limited in distance (unless using a portable device) but there is no battery to charge. Ours are a bit older now, but have occasional problems with connectivity with the app (fixed by restarting) and the light sensors need high contrast to work properly. This is a lot of fun for basic coding, like creating a remote control. They have online lesson plans available.

Some other robots that they are looking into include:

- Blue or bee bots
- Programmable mouse from scholastic
- Dash and Dot
- Edison

## Ideas for using the Blue Bots from a school includes: (As of Feb 15, 2017)

Using Blue Bots with our younger students and everyone is really loving them! We bought plexiglass from Home Depot and had it cut into 2ft x 2ft squares, and drew 15 cm square grids on them with Sharpie marker. You can place items under the clear plexi grid and have students program the bots to move to those items.

This teacher has been pinning all sorts of Blue/Bee Bot and Sphero project ideas (as well as other resources related to coding and computational thinking) to her Pinterest board: https://www.pinterest.com/tracypoelzer/coding-in-the-classroom

**K to 5+**

## Coding Robots

This Langley school has a variety of codeable robots at their elementary school:

BeeBot
BlueBot
Code-a-Pillar
Robot Mouse
Dash
Dot
MIP
Sphero
BB-8
Rover (Canadian Robot)
Codeybot
Tiddlybots

The school is sharing their coding journeys on The Inspire Project blog at www.mrspimentel.wordpress.com2

If you'd liked to know more about any of our coding adventures we are using in our kindergarten to Grade 7 classrooms please feel free to email the teacher at:   apimentel@sd35.bc.ca

## More details on two of the robots on the above list:  (DASH & CODEYBOT)  (As of Feb 15, 2017)

DASH (https://www.makewonder.com) he is durable; there is a teacher portal; a kids portal; a variety of apps (that are free); students from kindergarten to high school have enjoyed learning coding with DASH; he's very teacher friendly; and haven't had many technical problems with them.

Codeybot (http://www.codeybot.com) is a Kickstarter robot (https://www.kickstarter.com/projects/1818505613/codeybot-new-robot-who-teaches-coding). I love the idea that we supported a pioneering initiative. We have two of them so they can battle against each other which adds a novelty to the robots. They can be coded to do everything from dance to move as well you can design their various facial expressions.

# K to 5+ resources

[http://bcerac.ca/](http://bcerac.ca/)   **(As of Feb 14, 2017)**

The Education Resource Acquisition Consortium

[http://bcdc.bcerac.ca/curriculum-connection/](http://bcdc.bcerac.ca/curriculum-connection/)



The BC Digital Classroom curriculum connections identify digital resource teaching opportunities

**Quick Access to Resources:**

Click the product icon. If you are within a licensed school, it will IP authenticate and connect. If you are outside of your school you need to use the username & password provided by your school/district.

**Supporting Aboriginal Connections**

Click the Aboriginal Connection Icon. A new browser will open to abedsupport.bcerac.ca with a connection to *First Peoples Principles in Learning* , and *Aboriginal Worldviews and Perspectives in the Classroom* .

**Making Connections with the Revised Curriculum**

There are more than 100 starting points where you can connect a Big Idea, Curricular Competency and Content to an example lesson topic and activity utilizing part of the BC Digital Classroom Collection.

--Subject-- ▼     Grade: All

How to search out specific subject and grade level.

**WORLD BOOK Early World of Learning**

Kindergarten
Science

Big Idea

Daily and seasonal changes affect all living things.

Read > Welcome to Reading > Level A > Seasons

**ACTIVITY -** Read Seasons and see additional images at bottom - Compare printed season information with personal experience.

Lesson Topic
Comparing Book Knowledge to Personal Knowledge

Curricular Competency
Questioning and predicting: demonstrate curiosity and a sense of wonder about the world

Content
Weather changes, seasonal changes

**WORLD BOOK Early World of Learning**

Kindergarten
Social Studies

Big Idea

Our communities are diverse and made of individuals who have a lot in common.

Read > Welcome to Reading > Level D > Working it out

**ACTIVITY -** Read Working it Out and see additional images/videos on bottom.

Lesson Topic
Solving Problems Peacefully

Curricular Competency
Acknowledge different perspectives on people, places, issues, and events in their lives (perspective)

Content
Needs and wants of individuals and families

**Grade 2**
Applied Design Skills & Trades

http://bcdc.bcerac.ca/curriculum-connection/

# Big Idea

Technologies are tools that extend human capabilities.

Know It! > (Class Topic)

**ACTIVITY -** Teacher leads class in exploration of a topic and related images, videos and stories. Discussion focuses on what kind of sources of information you can find online.

**Lesson Topic**
What can we Learn From an Encyclopedia?

**Curricular Competency**
Explore the use of simple, available tools and technologies to extend their capabilities

**Core Competency**

**Content**
(ADST Curricular Competencies K - 3 are in combination with cross-curricular grade-level content)

# K to 3

# BCTF TeachBC website (As of Feb 14, 2017)

https://teachbcdb.bctf.ca/list?q=ADST&p=1&ps=25

Applied Skills Integrated with other Curricular Areas Using First Nations Content in Primary Grades

adstintegratedideas.pdf  (13 page pdf document)  Excellent ADST resource for K to 3.

# K to 6

# Art Bot STEAM Challenge (As of Feb 14, 2017)

**From:  Dryden Elementary, Arlington Heights, Illinois**

http://drydenart.weebly.com/fugleblog/art-bot-steam-challenge

This teacher received an ABS/25 grant for an engineering and art integrated project that challenge students to create small drawing machines that will move on their own with a battery powered vibrating motor.  These little ART BOTS are constructed from lightweight foam, markers, a battery operated electric toothbrush then decorated with wiggle eyes, pipe cleaners and other craft items.  Students work collaboratively in groups of 4 to make one ART BOT and use it to create their own piece of abstract art.  The initial year of implementation targets an entire 5th grade within a school.  The grant included recyclable batteries and a recharger, the bots will be deconstructed and rebuilt by next years' 5th grade students to make this a multi-year school wide grant.

# Intermediate to Secondary Level

# Kahoot! <span style="color:green">(As of Feb 14, 2017)</span>

An online platform that allows users to create and share learning games made up of multiple choice questions.  Kahoot! also give the opportunity for group play to include a score, which encourages friendly competition.  The games are intended to be played in a group setting in which each person chooses his or her answer on a computer, laptop, or mobile device <u>with an Internet connection.</u>

Games made from a series of multiple choice questions.  Add video, images and diagrams to your questions to amplify engagement.

Best played in a group setting, like a classroom.  Players answer on their own devices, while games are displayed on a shared screen to unite the lesson-creating a 'campfire moment' and encouraging players to look up.

Social learning promotes discussion and pedagogical impact…whether players are in the same room or on the other side of the globe!  After a game, encourage players to create and share their own kahoots to deepen understanding, mastery and purpose.

No plyer accounts required and one click gameplay.


WEBSITE:  [https://getkahoot.com/](https://getkahoot.com/)


[https://getkahoot.com/blog/professional-development-teacher-resources](https://getkahoot.com/blog/professional-development-teacher-resources)

Building Kahoot! into lesson plans.  PDF guides to making and playing learning games, presentations for professional development events, downloadable templates for planning and assessing Kahoots!

# K to 5+

## About Scratch <span style="color:green">(As of Feb 14, 2017)</span>

**SETBC recommends Scratch VERSION 2**

https://scratch.mit.edu/about

With Scratch, you can program your own interactive stories, games, and animations — and share your creations with others in the online community.

Scratch helps young people learn to think creatively, reason systematically, and work collaboratively — essential skills for life in the 21st century.

Scratch is a project of the Lifelong Kindergarten Group at the MIT Media Lab. It is provided free of charge.

Scratch is designed especially for ages 8 to 16, but is used by people of all ages. Millions of people are creating Scratch projects in a wide variety of settings, including homes, schools, museums, libraries, and community centers.

Students are learning with Scratch at all levels (from elementary school to college) and across disciplines (such as math, computer science, language arts, social studies). Educators share stories, exchange resources, ask questions, and find people on the ScratchEd website.

The ability to code computer programs is an important part of literacy in today's society. When people learn to code in Scratch, they learn important strategies for solving problems, designing projects, and communicating ideas.

The MIT Scratch Team and collaborators are researching how people use and learn with Scratch (for an introduction, see Scratch: Programming for All).

The Scratch project has received financial support from the National Science Foundation, Scratch Foundation, Google, LEGO Foundation, Intel, Cartoon Network, Lemann Foundation, and MacArthur Foundation.

As an educator, you can request a Scratch Teacher Account, which makes it easier to create accounts for groups of students and to manage your students' projects and comments.

https://scratch.mit.edu/educators/

http://scratched.gse.harvard.edu/guide/files/CreativeComputing20141015.pdf

# K to 5+

# Codecademy (As of Feb 14, 2017)

https://www.codecademy.com/schools/curriculum/resources#3

## Class Resources

Access materials and resources aimed at helping students learn the fundamentals of programming.

### Download our free materials

Here you can find schemes of work, assessment levels and plenary quizzes that link to our online courses.

VIEW LEVEL PROGRESSION MAP

| | |
|---|---|
| Unit 1: Web Fundamentals - HTML/CSS | 20 lessons |
| Unit 2: Python | 36 lessons |
| Unit 3: Javascript | 28 lessons |
| Unit 4: jQuery | 6 lessons |
| Unit 5: PHP | 11 lessons |
| Unit 6: Make a Website | 5 lessons |
| Unit 7: Make an Interactive Website | 9 lessons |
| Unit 8: Ruby | 30 lessons |

# K to 5+

## Tynker (Coding for Kids) (As of Feb 14, 2017)

https://www.tynker.com/

Tynker is a computing platform designed for students to learn about the basics of computational thinking and coding. There are self-directed and self-paced online courses available, as well as project-based exercises that give students the opportunity to explore coding.

Tynker is a complete learning system that teaches kids to code. Kids begin experimenting with visual blocks, then process to text-based coding as they design games, build apps, and make incredible projects.



WE EMPOWER KIDS TO BECOME MAKERS

Kids acquire crucial 21st century skills and learn to innovate across multiple themes based on their interests.

CREATE APPS

EXPLORE STEM

BUILD GAMES

FLY DRONES

CONTROL ROBOTS

MOD MINECRAFT

K to 12.... **(As of Feb 14, 2017)**

Learn to Code, Code to Learn, Mitchel Resnick, EdSurge

https://www.edsurge.com/news/2013-05-08-learn-to-code-code-to-learn

Let's Teach Kids to Code, Mitchel Resnick, TED

http://www.ted.com/talks/mitch_resnick_let_s_teach_kids_to_code?language=en

Education Reform, Brian Aspinall, TEDxChathamKent

https://youtu.be/ngeZPU35zm4

Hacking the Classroom, Brian Aspinall, TEDxKitchenerED

https://youtu.be/UyxfPnO5lgk

New Frameworks for Studying and Assessing the Development of

Computational Thinking,
Karen Brennan and Mitchel Resnick, MIT Media Lab

http://web.media.mit.edu/~kbrennan/files/Brennan_Resnick_AERA2012_CT.pdf

The Scratch Ed Creative Computing Curriculum Guide has been created at Harvard and offers guidance and lesson plans for teaching Scratch in the classroom:

http://scratch.mit.edu

The mission of Code Club is to give every student and child the opportunity to learn code. A bank of step-by-step projects in Scratch, HTML and Python facilitates the creation of after school clubs for an increased network and support.

http://codeclub.ca

The Hour of Code initiative has sparked interest in coding internationally. This section of the site is dedicated to educators at all grade levels who are interested in techniques and resources for bringing computational thinking and computer science to their classrooms.

http://code.org/educate