FULL STEAM AHEAD:
SUPPORTING STEAM AND SECONDARY HUMANITIES FOR DIVISION III AND IV STUDENTS WITH THE ORC
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STEAM LEARNING
GOALS
THE WHO AND WHAT
WHAT IS STEAM EDUCATION?

• Education approach to learning that uses:
  • Science
  • Technology
  • Engineering
  • Arts (liberal arts, fine arts, social studies, language arts, music, etc.)
  • Mathematics

• An instructional approach that integrates these subjects and encourages cross-curricular learning and a comprehensive approach

• “Science and Technology, interpreted through Engineering and the Arts, all based in mathematical elements” (STEAM.edu)

WHAT IS STEAM EDUCATION?

• Using these subjects as access points for guiding hands-on student inquiry, dialogue, and critical thinking

  • STEAM is not just a subject, it's a mindset
    o Students learn at a deeper level and retain that learning when they engage in critical and creative thinking connected to a subject or a real-world outcome
    o Learn more authentically when they learn by doing
WHY IS STEAM EDUCATION IMPORTANT IN CLASSROOMS AND LIBRARY LEARNING COMMONS?

• One of the goals of STEAM education is to improve employment outcomes
  • learning project management skills and seeing a project through to the end
  • STEAM education allows students to address real social, economic, and environmental problems and seek solutions
  • Often, Makerspaces in Library Learning Commons are the hub for STEAM projects

WHY IS STEAM EDUCATION IMPORTANT? ...CTD

• Helps develop critical thinking, communication, innovation, and collaboration
  • Research shows that arts-based pedagogy can lead to deeper engagement, better retention of content, greater emotional involvement in learning and a stronger ability to apply principles across disciplines.
  • HOWEVER – problems have to be authentic and challenging
    • E.g. addressing food security or making solar power more economical
  • Start locally with challenges specific to your school or community

STEM, STEAM OR STREAM?

• You will encounter all three acronyms in your research – each with a slightly different emphasis
  • R – adds a focus on “Reading and Writing” skills to the mix – a given for us and the AB Ed curriculum re-design with emphasis on literacy being embedded everywhere
  • Slight controversy over which to use – some feel STREAM is more inclusive and approachable
Q: WHAT IS THE ORC?
A: $1.2 million collection of curricular aligned authoritative digital resources licensed on behalf of all Alberta:

• K-12 students and their parents
• School staff
• Pre-service teachers
• Public library staff*

A: Funded by a yearly Grant-In-Aid from Alberta Education to the Alberta Library (TAL)

*for the purposes of supporting K-12 patrons

Q: HOW DO YOU ACCESS THE ORC?

• Go the LearnAlberta.ca
• Select English or French
• Click “Online Reference Centre” in the tab along the top of the screen
• In school automatic authentication should occur
• Outside of school access requires a district username and password

LA___________ (username) ______________ (password)

• Share your district username and password using low tech methods - do not post on an open website
• Email barsenault@thealbertalibrary.ab.ca for your remote username/password

HOW CAN THE ORC SUPPORT STEAM EDUCATION?

• ORC resources can help students gain foundational knowledge of a concept first through various forms of media (text, video, audio, picture)
HOW CAN THE ORC SUPPORT STEAM EDUCATION?

• ORC resources are very cross-curricular and allow for simultaneous access
  • the uniqueness of each discipline can be identified while supporting the connections that can be made between subjects
• Many ORC resources provide the actual experiments and designs to create a Makerspace project, or help turn your classroom into a science lab or museum, to allow for that learning-by-doing experience.

HOW CAN THE ORC SUPPORT STEAM EDUCATION?

• Provide access to engaging, age-appropriate and authoritative virtual resources
  • Provides access anytime, anywhere with an internet connection
  • Access to adaptive & assistive technologies within the resources (read-aloud, larger font, mp3 files, etc.)
  • Vetted information/articles with citation information included
  • Consistent and explicit update schedules
  • Access to journals like *Walrus*, *National Geographic*, *School Library Journal*, *Men’s Health*, and *Maclean’s*
  • Direct links to content (articles, videos, experiments, etc.)
  • Access to curriculum maps for K-12 science and Social Studies

QUESTIONS?
MULTIDISCIPLINARY RESOURCES: A JUMPING OFF POINT TO RESEARCH

BRITANNICA SCHOOL: MIDDLE & HIGH (GRADES 6-8, 9-12)
SCHOLASTICGO! (GRADES 2-12)

BRITANNICA SCHOOL: MIDDLE & HIGH

Recommended for students in grades 6-8 (Middle), 9-12 (High)

- Canada In Focus section devoted to articles about significant Canadian people, places, and history
- 3 reading levels allow users to change level while maintaining age appropriate interface
- Embedded read aloud feature and font adjustment
- Text translation for 100 languages
- Seamless access on tablet, smartphone, laptop or desktop
- Educator tools including lesson plan builder

USING BRITANNICA SCHOOL FOR STEAM

- Use for foundational knowledge on the topic(s) → e.g. search "Fashion"
- Use for “go further” information by utilizing the provided web links (‘web’s best sites’)
- Use the embedded links within each article to find out more information on specific topics (especially the math and science pieces) → click “dress”
- Use the “related” tab to find out further information
- Long list of famous designers and fashion magazines, etc.
SCHOLASTIC GO!


- Contains 115,000 articles written by experts in that subject and edited by professional editors.
- Articles are all differentiated by Lexile Reading Level.
- Read Aloud available for every article.
- Access to world atlas with more than 1200 maps, hundreds of photos, and thousands of links to related articles within Scholastic Go!

USING SCHOLASTIC GO! FOR STEAM

- Use for foundational knowledge on the topic(s) → 3D printing.
- Use for “go further” information by utilizing the provided web links (‘web’sites) → 3D Printing.
- Use the embedded links within each article to find out more information on specific topics → 3D printing of human organs.
- Use new info to design & create (using a software like sketch-up) a human organ or prosthetic design (3D print if available).

LITERACY DEVELOPMENT AND ENGLISH LANGUAGE ARTS

TEACHINGBOOKS.NET (GRADES K-12)
ACADEMIC ONE FILE (GRADES 10-12)
TEACHINGBOOKS.NET

• A wealth of support materials to teach and promote books in your school (book trailers, author interviews and read-ins, author audio name pronunciation, QR flyers, embedded citations, book guides and lesson plans)

• Share/permalink any page using the Email/Text/QR Flyer/Bookmark or PermaLink features

• Access Alberta specific booklists:
  - Pacific Northwest Library Association Young Readers Choice Award (YRCA)
  - ELA Authorized Novel and Nonfiction Reading List for grades 4-12
  - Canadian Book Award Winners/ Canadian Book and Author Resources

• Create and/or request a personalized booklist

USING TEACHINGBOOKS.NET FOR STEAM

• Use for foundational knowledge on the book and author/illustrator

• Use content (e.g., info on the author, interviews, read-aloud files, etc.) within a digital book trailer or digital story (green screen, stop motion, video creation)

• Use a book as inspiration for a project

  - e.g., The Big Orange Splot → students designed 3-D houses and printed them using 3D printer & used TeachingBooks.net as background on the story, language used, etc. (Jr. High)

ACADEMIC ONEFILE

• Multidisciplinary Gale resource that supports students enrolled in an IB, AP or 3-0 program

• Customizable read-aloud feature, articles available to download to MP3

• Text Translation to 13 languages

• Highlight and take notes within the article, save to a folder without an account

• Embedded citation tools (MLA 7th Edition or APA 6th Edition)

• Links to “Related Subjects” to support shallow searchers

• Share/permalink any page using the “Bookmark” tab right side of the search bar at the top

• Homepage lists “Top Searches” at the bottom (right-hand side) that you can click on and see articles related to that search term

• Homepage also has “Topic Finder” to help users discover the context of their search term and find connections to other terms
USING ACADEMIC ONEFILE FOR STEAM

- Use for foundational knowledge on the topic(s) e.g. hydroponic gardening, chef, cooking, gardens, agriculture, etc.
- Narrow search (many tools) for current content (periodicals, newspapers, etc.)
- Use the embedded links within each article to find out more information on specific topics
- Use the “related” tab to find out further information

SUPPORTING SCIENCE

SCIENCE IN CONTEXT (GRADES 6-12)
SCIENCEFLIX (GRADES 4-9)
TEEN HEALTH AND WELLNESS (GRADES 7-12)

SCIENCE IN CONTEXT

- Featured videos, news, and stories on homepage
- Customizable read-aloud feature, articles available to download to MP3
- Text Translation to 35+ languages
- Highlight and take notes within the article, save to a folder without an account
- Embedded citation tools (MLA 7th Edition or APA 6th Edition)
- Links to “Related Subjects” to support shallow searchers
- Share/permalink any page using the “Bookmark” tab right side of the search bar at the top
- Advanced search allows for Boolean, and content selection (Advanced/Intermediate/Basic)
- Search specific learner outcomes in “Curriculum Standards” for the Alberta
USING SCIENCE IN CONTEXT FOR STEAM

- Use for foundational knowledge on the topic(s) → Tiny Homes
- Use the embedded links within each article or “Related” to find out more information on the specific topics → tiny houses / neighborhoods
- Use new info to design & create
  - Video advertisement for new district
  - 3D scale model of proposed community
  - Science curriculum - embedded links to the article included

SCIENCEFLIX

- Sister resource to TrueFLIX designed for grades 4-9
- Nonfiction content divided into topic areas: Earth Science, Life Science, Physical Science, Space science, Health and Human Body, and Math and Engineering
- Introductory videos help build background knowledge of a topic and improve comprehension
- Every article has three adjustable reading levels to support differentiated learners
- Embedded read aloud feature to support emergent/struggling readers
- Hands-on experiments and project ideas
- More than 12,000 editorially vetted and maintained websites on related subjects
- Science News with study guides

USING SCIENCEFLIX FOR STEAM

- Use resource to investigate chosen topic (topic breakdown on search page is easy to navigate and isolate ideas)
- Use Careers in Science tab to research STEM and STEAM careers, problems, activities
- Use Experiments tab for STEAM experiment ideas as well as click on the Browse Websites link for more ideas.
TEEN HEALTH AND WELLNESS

• Straightforward discussion of all teen health and wellness topics with links to the Alberta science, foods, health and CALM curricula
• Customizable listen feature and text translation
• Sectioned articles with links to related articles for shallow searchers
• Embedded citations (MLA, APA, Chicago)
• Many interactive features that allow students to interact and contribute:
  • Student polls on current topics
  • Share personal stories and read stories from other teens
  • Create and submit videos on various health and wellness topics
  • Submit questions to Dr. Jan and receive answers back
• Alberta/Canada specific hotlines

USING TEEN HEALTH & WELLNESS FOR STEAM

• MakerGym Project (Health, Phys Ed, Science, Humanities, etc.)
  • Research exercise (Using Teen Health and Wellness) and what makes a good exercise (routine, activity, etc.). What do you need to consider? (Heart health, modifications, blood pressure, etc.) – provide or co-create questions to investigate
  • Divide into groups – each group design an exercise (station) (give guidelines)
  • Create instructions (video, step-by-step brochure, etc.)
  • Each group lead whole class in exercise

SOCIAL STUDIES CONTENT

CANADA IN CONTEXT (GRADES 6-12)
GLOBAL ISSUES IN CONTEXT (GRADES 7-12)
WORLD HISTORY IN CONTEXT (GRADES 7-12)
CULTUREGRAMS (GRADES 3-12)
THE CANADIAN ENCYCLOPEDIA (GRADES 5-12)
**CANADA IN CONTEXT**
- Canadian Content not only for Social Studies but also Science (i.e. Alberta Oil Sands)
- Featured videos, news, and stories on homepage
- Customizable read-aloud feature, articles available to download to MP3
- Text Translation to 13 languages
- Highlight and take notes within the article, save to a folder without an account
- Embedded citation tools (MLA 7th Edition or APA 6th Edition)
- Links to “Related Subjects” to support shallow searchers
- Share/permalink any page using the “Bookmark” tab right side of the search bar at the top
- Advanced search allows for Boolean, and content selection (Advanced/Intermediate/Basic)
- Search specific learner outcomes in “Curriculum Standards” for the Alberta Social Studies, ELA and Science curricula - embedded links to the article included

**GLOBAL ISSUES IN CONTEXT**
- Excellent support for the Grade 10-12 Social Studies Curriculum
- Featured videos, news, and stories on homepage
- Customizable read-aloud feature, articles available to download to MP3
- Text Translation to 13 languages
- Highlight and take notes within the article, save to a folder without an account
- Embedded citation tools (MLA 7th Edition or APA 6th Edition)
- Links to “Related Subjects” to support shallow searchers
- Share/permalink any page using the “Bookmark” tab right side of the search bar at the top
- Advanced search allows for Boolean, and content selection (Advanced/Intermediate/Basic)
- Search specific learner outcomes in “Curriculum Standards” for the Alberta Social Studies and Science curricula - embedded links to the article included

**WORLD HISTORY IN CONTEXT**
- Excellent support for the grade 8 social studies curriculum
- Featured videos, news, and stories on homepage
- Customizable read-aloud feature, articles available to download to MP3
- Text Translation to 13 languages
- Highlight and take notes within the article, save to a folder without an account
- Embedded citation tools (MLA 7th Edition or APA 6th Edition)
- Links to “Related Subjects” to support shallow searchers
- Share/permalink any page using the “Bookmark” tab right side of the search bar at the top
- Advanced search allows for Boolean, and content selection (Advanced/Intermediate/Basic)
- Search specific learner outcomes in “Curriculum Standards” for the Alberta Social Studies curriculum - embedded links to the article included
USING ...IN CONTEXT SERIES FOR STEAM

• When students are challenged with connecting STEM and social studies, they recognize how scientific concepts can be found within society, thereby expanding their career options.
  
  • e.g. **How an Idea Becomes an Invention**
    
    • Ask students to choose an invention from the past that is now commonplace and another that is currently being developed – (use In Context databases for research info)
    
    • research the process through which the older invention became ubiquitous in society, then examine current regulations and develop a theory regarding how the new invention will move through the process of being approved by the government and accepted in society. (globalism, nationalism, government, etc.)

CULTUREGRAMS

• **Kids Edition** - excellent support for gr. 3 & 5 S.S.
• **Provinces Edition** - supports gr. 2 & 4 S.S.
• **World Edition** - supports gr. 10-12 S.S.

• Updated every 6 months and written/reviewed by in-country consultants

• Features included: customizable read-aloud, photo gallery, slideshows, videos, famous people, and cultural recipes

• Tools included: build-your-own graphs and tables, pre-generated graphs and tables, distance calculator, and currency converter

USING CULTUREGRAMS FOR STEAM

• Use information to compare/contrast two nations (maps, graphs, statistics) in culture studies and current events
THE CANADIAN ENCYCLOPEDIA

- Free website provided by Government of Canada
- Change from English to French at the top right-hand corner of every page
- New updated interface - much more aesthetic and functional
- Multiple pathways to finding content
- View personal accounts from veterans, view videos, articles, image and digital exhibits
- Articles include information about the author, publication date, editor, and edit date
- Wealth of Canadian content to support Social Studies grades 9-12
- Historica link at top left-hand side includes Citizen Challenge, immigration stories, etc. for gr. 9

USING THE CANADIAN ENCYCLOPEDIA FOR STEAM

- Using primary source images, writing, etc. to research grade 7 SS topic – Canadian history
  - A lot of information on Indigenous Canadians- View Treaty documents, timeline for Residential Schools, Indigenous art – historical and present
  - High School – Nationalism – Canadian Identity
  - From their research they will create a simulated television production that represents and justifies their group’s opinion about Canadian identity.

MULTIDISCIPLINARY VIDEO CONTENT

CURRICULUM VIDEO ON DEMAND (GRADES 7-12)
CURRICULUM VIDEO ON DEMAND

• Thousands of exclusive educational videos segmented into easy-to-use clips ideal for mashups
  • Ability to share, save, and organize videos and custom playlists
  • Google translate on every page
  • Closed captioning and interactive transcripts on thousands of titles
  • HTML embedded codes that allow direct access to videos from within Google Classroom, Moodle, or other CMS
  • Content added regularly, approximately 1,000 new titles per year

CURRICULUM VIDEO ON DEMAND: CONTENT INCLUDED IN ORC

• 10,000 programs, 130,000 segments, 6,500 hours
  • Business and Economics
  • Family and Guidance
  • Health and Nutrition
  • Literature and Language Arts
  • Science and Mathematics
  • Social Studies
  • Visual and Performing Arts
  • Archival Films and Newsreels

• Also Available: Master Career and Technical Education Collection
  • Career Exploration
  • Career Fields
  • Job Search Skills
  • Job Success Skills
  • Automotive Technology
  • Building and Technical Trades
  • Engineering Technology
  • Technical Communication

USING CURRICULUM VIDEO ON DEMAND FOR STEAM

• Use wide variety of videos as exemplars for a How-to or informational video – e.g. examine what different formats are used? How chaptered? Narrated? Sets? Titles?

• Use the discerned pattern/format to create own informational video (suitable for almost any subject area).
SUPPORT FOR SCHOOL STAFF USING THE ORC

ORC SUPPORT SITE
www.onlinereferencecentre.ca
- Resource training materials - podcasts, videos, archived, webinars, and guides
- Information about upcoming free ORC PD opportunities
- Information about province-wide resource trials and surveys
- Online booking system for ORC sessions
- Calendar of ORC Events
- Links to the ORC Twitter, YouTube, and Facebook accounts

ORC LISTSERV
ORC LISTServ http://eepurl.com/cgred5
- Weekly email updates powered by MailChimp and organized by grade levels:
  - New resources and features
  - Province-wide trials
  - Surveys
  - Free PD opportunities
- No emails during school breaks
- Email ORC@thealbertalibrary.ab.ca or visit the ORC Support Site to join today
CONTACT

For more information or to schedule a school or library presentation, contact:

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Call 780-414-0805 Ext. 236

OR

Email barsenault@thealbertalibrary.ab.ca