SEEING STARS: TRANSFORMING YOUR CLASSROOM FOR DIVISION II STUDENTS WITH THE ORC

Bethany Arsenault, ORC Coordinator
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Why Makerspaces?
WHAT IS A MAKERSPACE?
- Collaborative work space inside a school, library or separate public/private facility for making, learning, exploring and sharing that uses high tech to no tech tools
- Open to kids, adults, and entrepreneurs
- Have a variety of maker equipment including 3D printers, laser cutters, CNC machines, soldering irons and even sewing machines

WHAT IS A MAKERSPACE?
- Also has lower-tech equipment, like cardboard, Lego, and art supplies
- The important part of a Makerspace is the "Maker mindset": creating something out of nothing and exploring your own interests while doing so

Alberta Education Student Competencies
https://education.alberta.ca/competencies/student-competencies/
WHY SHOULD TEACHERS USE MAKERSPACES IN CLASSROOMS AND LIBRARIES?

• Students learn at a deeper level and retain that learning when they engage in critical and creative thinking connected to a subject.
  o learn more authentically when they ‘learn by doing’

• A makerspace is an avenue for this learn-by-doing concept; to go from consumption to creation (http://www.makerspaceforesducation.com/makerspace.html)

WHY MAKERSPACES CTD.

• Students use this authentic learning and idea generation and problem-solving to create a digital or physical product (Gonzalez, https://www.cultofpedagogy.com/makerspace/)

• Students need to be able to take in and synthesize information from an authoritative source, or take information from multiple sources, and then engage in critical thinking to produce a product using that information.

HOW CAN THE ORC SUPPORT YOUR MAKERSPACE?

• Students need to gain foundational knowledge of a concept first, and when that foundational knowledge is provided in various forms of media (text, video, audio, pictures), it allows for a "Maker Culture" to emerge (Kowalewicz, https://medium.com/reading-writing-in-a-digital-world/makerspaces-in-literacy-85328f7d38c5).

• ORC provides that knowledge using authoritative, age-appropriate, Alberta curriculum-aligned information sources

• ORC also allows for the combination of traditional forms of learning with new technologies
HOW CAN THE ORC SUPPORT YOUR MAKERSPACE?

• ORC supports diverse learners through accessibility supports like Read Aloud, text translation, citation tools, vetted websites, copyright friendly pictures and videos

• ORC resources are very timely and cross-curricular, so students can draw on multiple up-to-date resources for a project

HOW CAN THE ORC SUPPORT YOUR MAKERSPACE?

• 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.

• ORC resources allow simultaneous access anytime, from anywhere with an internet connection

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 to 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 barensault@thealbertalibrary.ab.ca for your remote username/password

QUESTIONS?

LITERACY DEVELOPMENT AND ENGLISH LANGUAGE ARTS

TRUEFLIX (GRADES 3-6)
TEACHINGBOOKS.NET (GRADES K-12)
TRUEFLIX

• Sister resource to BookFLIX designed for grades 3-6
• Nonfiction content divided into 2 broad themes with 3-5 sub-themes
• Each eBook includes an introductory video to help build background knowledge of topic and improve students comprehension
• Lesson plans provided for every eBook, all eBooks are guided reading level (Fountas and Pinnell) aligned
• Human voice read-along feature to support emergent/struggling readers
• Interactive table of contents for each eBook, in addition to a glossary and index
• Essential inquiry questions and project ideas from every eBook

HOW DO I USE IT IN A MAKERSPACE?
TRUEFLIX

• Classroom iPad runs TrueFLIX to help resistant readers make selection using the intro video
• Find True Books in your school library print collection - pull them and highlight them for your readers
• Experiment section provides foundational knowledge for concepts (like circuits)
  - provides experiments to demonstrate the concept (how to create a circuit), which can then be transformed into a Makerspace project (create a lamp, invent an alarm clock)
• Every book pairs come with a “project idea” that can be used as a Makerspace project – like using multimedia to demonstrate a food chain (Ecology)

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
HOW DO I USE IT IN A MAKERSPACE?
TEACHINGBOOKS.NET

Support classroom novel studies, literature circles and book clubs with author information and project ideas:

Example:

• using the ELA Authorized Reading List for Grade 5 Alberta, pick The Sky is Falling and create a multi-media book trailer, website or physical artifact using information from the Author Interviews: Insights by Kit Pearson

• use author and book information to recreate a significant scene/passage/event from the novel (in the form of a diorama, collage, 3-D art piece, poster, tapestry, weaving, etc.)

• Use the “lists” search tab in TeachingBooks.net to find resources related to makerspaces

SUPPORTING SCIENCE

PEBBLEGO NEXT SCIENCE (GRDES 3-6)
POWERKNOWLEDGE SUITE (GRDES 1-6)
NATIONAL GEOGRAPHIC KIDS VIRTUAL LIBRARY (GRDES K-6)
SCIENCE IN CONTEXT (GRDES 6-12)
SCIENCEFLIX (GRDES 4-9)

PEBBLEGO NEXT SCIENCE

• New ORC resource geared towards the “Next Generation” of science researcher

• Database allows students to move seamlessly from PebbleGo, which serves grades K-3, to PebbleGo Next Science, which supports the grades 3-6 Science curriculum

• Database topics include: Rocks & Minerals, Plant Growth & Changes, Electricity & Magnetism, Evidence & Investigation, and more

• Homepage provides user list of topics to choose from: Earth Science, Life Science, Physical Science, and The Field of Science

• Read Aloud with text highlighting

• Double-click dictionary allows user to double click any word in an article and get a dictionary definition

• Related activity for every article & Citations available for every article
HOW DO I USE IT IN A MAKERSPACE?
PEBBLEGO NEXT SCIENCE

- Database includes Video Experiments on Homepage
- Use these short videos to help turn your classroom or library into a science lab!
- The Field of Science topic on Homepage can act as a great age-appropriate introduction to STEAM (Science, Technology, Engineering, Arts, and Math) education for students
- Grade-Specific Examples:
  - Grade 4 Science - Experiment with different forces and motion and build a ramp to move a toy car from one place to another
  - Grade 5 Science - Create a Lava Lamp. Create a cloud diagram out of different materials to show different types of clouds. Sketch a new animals that would live in a Wetland ecosystem and then use playdough or modeling clay to create model
  - Grade 6 Science - Design/create your own constellation or space station

POWERKNOWLEDGE SUITE

- Recommended for grades 1-6
- Content divided into 3 databases: Earth & Space, Life Science, and Physical Science
- Includes a customizable read aloud feature
- Short, segmented articles with introductory videos to build background knowledge
- Embedded science experiments, projects, and educational games related to the content of the database
- Aligns with 95% of the grade 3-6 science curriculum and 87% of the grade 1-6 science curriculum

POWERKNOWLEDGE EARTH AND SPACE SCIENCE

Science Units Supported:

- Grade 1 Seasonal Changes
- Grade 2 Exploring Liquids
- Grade 3 Rocks and Minerals
- Grade 4 Light and Shadows & Waste and Our World
- Grade 5 Weather Watch, Wetland Ecosystems & Social Studies Mapping
- Grade 6 Sky Science
POWERKNOWLEDGE LIFE SCIENCE

Science Units Supported:

• Grade 1 Needs of Animals and Plants
• Grade 2 Small Crawling and Flying Animals
• Grade 3 Animal Life Cycles & Hearing and Sound
• Grade 4 Plant Growth and Changes & Waste and Our World
• Grade 5 Wetland Ecosystems
• Grade 6 Trees and Forests

POWERKNOWLEDGE PHYSICAL SCIENCE

Science Units Supported:

• Grade 1 Needs of Animals and Plants
• Grade 2 Hot and Cold Temperature & Magnetism
• Grade 4 Wheels and Levers
• Grade 5 Electricity and Magnetism & Classroom Chemistry
• Grade 6 Trees and Forests

HOW DO I USE IT IN A MAKERSPACE?

POWERKNOWLEDGE SUITE

• Has experiments and other resources that can be used in a Makerspace, or to transform your classroom into a Science Lab

Examples:

• Grade 4/5 Social Studies - Information on how to draw maps (topography, climate) can be used with art supplies to create maps
• Grade 4 Science - Stop motion video to show understanding of food chains, design a way to clean up oil spills (PK Life Science)
• Grade 5 Science - Create “Crystal Landscapes” using coloured salt (PK Earth & Space Science: Experiments - Creating Crystals) – tie it with Language Arts by creating a story that goes with the Crystal Landscape
• Grade 5 Science - Design your own planet with characteristics and surface conditions and use a green screen to create a movie of the orbit around the sun (PK: Earth and Space Science - Space - Planets)
HOW DO I USE IT IN A MAKERSPACE?

NATIONAL GEOGRAPHIC KIDS VIRTUAL LIBRARY

• Have National Geographic Kids running on iPads instead of print - better yet have both and direct students to this resource for additional content on inquiry topics
• Use copyright friendly images & videos from this resource in/on collages, videos, websites, presentations, etc.
• Examples:
  • Grade 4 Social Studies - create wildlife overpass similar to the one in Banff using the Nat Geo photo as an exemplar
  • Grade 6 Science – use the article The Greatest Heists of All Time as inspiration to create a crime scene (draw, 3D diorama, video, etc.) and create the narrative around it (Science, ELA)

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 and access to full journals/magazines
• Advanced search allows for Boolean, and content selection (Advanced/Intermediate/Basic)
• Search specific learner outcomes in “Curriculum Standards” for the Alberta Science curriculum - embedded links to the article included
HOW DO I USE IT IN A MAKERSPACE?
SCIENCE IN CONTEXT

• Experiments section on every topic page
• Examples:
  • Grade 5 Science – Sketch a new animals that would live in a Wetland ecosystem and then use playdough or modeling clay to create model (Topic: Ecosystems)
  • Grade 6 Science - build bird feeders (including hummingbird) so you can observe birds and how they fly (topic: Aerodynamics), Design a solar-powered machine (Topic: Sun), Design a planet or moon rover using legos or other building materials (Topic: Space Exploration), Design/create a logging machine - or faller-buncher - using building materials (Article: Logging)

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

How Do I Use It in a Makerspace?
SCIENCEFLIX
• Has experiments that can be used in Makerspace, has a whole section on what Makerspaces are, has information on Scientific method and how to conduct Science experiments
• Examples:
  • Grade 4 Science - stop motion movie to show understanding of habitats and biomes, Design a way to move a heavy object (Tec, Math & Engineering - Simple Machines)
  • Grade 5 Science – Create a Maglev Train (Physical Science - Magnets and Magnetism - Electromagnetism at Work), Create a Lava Lamp (Experiments - Lava Lamp Reaction), Draw or model a biome diagram (Life Science - Biomes)
  • Grade 6 Science - Design a model airplane and measure how far it can fly (Tech, Math, & Engineering: Modeling and Testing), Create a box planetarium to show image of a constellation or design your own constellation (Experiments: Seeing Stars)
SOCIAL STUDIES CONTENT

CANADA IN CONTEXT (GRADES 6-12)
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

HOW DO I USE IT IN A MAKERSPACE?

CANADA IN CONTEXT

- Grade 4 Social Studies – Create/model a 3D timeline of Alberta (or stop motion video, etc.)

- Grade 5 Social Studies - Create timelines/documentaries of both historical figures and scientists (Famous Five, women’s Rights Groups, Nellie McClung; WWI) using the reference information

- Grade 6 Social Studies - timelines, sculptures, and documentaries about Canadian political figures
  - Lego stop-motion movie of important historical events
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 calculate, and currency converter

HOW DO I USE IT IN A MAKERSPACE?

CULTUREGRAMS

• Grade 4 Social Studies - Provinces Edition: Environmental Issues for Alberta -- Water Shortage and Forest management inventions; use reference information to create timeline with art supplies or digital tools

• Grade 5 Social Studies - Create documentary or representative sculpture about the Famous Five

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
HOW DO I USE IT IN A MAKERSPACE?
The Canadian Encyclopedia

- Help turn your classroom into a virtual museum through virtual exhibits and timelines with access to primary source materials

Examples:
- **Grade 4 Social Studies** - makerspace conservation projects and new ideas for sustaining land
- **Grade 5 Social Studies** - stories and documentaries about Indigenous peoples, Asian Canadians, and Francophone community, work with music teacher to create musical instruments representative of Scottish music, create documentary about WWI
- **Grade 6 Social Studies** - timelines, sculptures, and documentaries about Canadian political figures

LANGUAGE LEARNING
BBC Muzzy Online (Grades K-6)

- Guided immersion language learning program; lessons build on the previous for lots of repetition
- Languages include: British English, American English, Spanish, Latin-American Spanish, French, Chinese Pinyin, Italian, German, Korean (RR)
- Two levels of learning, twelve lessons per level
- Topics include: time, health & feelings, past, present & furthers tenses, asking questions, transportation, people and places, life at home, family and friends, food, etc.
- New features include: music (with optional subtitles) and recording
- Ideal for English Language Learners (ELL), French as a second language (FSL) or special needs students experience social challenges
HOW DO I USE IT IN A MAKERSPACE?
Muzzy

- Use immersive world building techniques to create Muzzy’s home planet and label items from the planet in different languages
- Create word guides for newcomers using Muzzy and art supplies
- Create/design a bilingual map of Alberta based on the languages found in Muzzy

MULTIDISCIPLINARY RESOURCES:
A JUMPING OFF POINT TO RESEARCH

BRITANNICA SCHOOL: ELEMENTARY (GRADES 1-6)
BRITANNICA SCHOOL: MIDDLE (GRADES 6-8)
SCHOLASTICGO! (GRADES 2-12)

BRITANNICA SCHOOL: ELEMENTARY

- Recommended for students in grades K-6
- Canada In Focus section devoted to articles about significant Canadian people, places, and history
- Two reading levels allow users to change level while maintaining age appropriate interface
- Embedded read aloud feature and font adjustment and text translation for 50 languages
- Seamless access on tablet, smartphone, laptop or desktop
- Educator tools including lesson plan builder
BRITANNICA SCHOOL: MIDDLE

- Recommended for students in grades 6-8
- **Canada In Focus** section devoted to articles about significant Canadian people, places, and history
- **Three 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

HOW DO I USE IT IN A MAKERSPACE?

BRITANNICA SCHOOL

- Every article comes with access to related media, like pictures, videos, tables, charts, graphs, etc. to use for independent inquiry projects

Examples:

- **Grade 4 Social Studies** - Create map of Alberta (or globe) using art supplies or digital tools
- **Grade 6 Social Studies** - theatre production – re-enact confederation using materials to create a set, create timelines, documentaries, playdough sculpture about Canadian political and historical figures
- **Grade 5 Science** - Design & build/model a compass, Sketch a new animal that would live in a Wetland ecosystem and then use playdough or modelling clay to create model
- **Grade 6 Science** - Design a paper airplane and measure how far you can make it fly (ties in math) (Articles: Science and Math - Airplanes), design a bird based on the structure & physical features info given (Articles: Animal - Bird), Create a documentary about famous astronomer (Articles: Science and Math - Astronomy)

SCHOLASTICGO!

- 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!
HOW DO I USE IT IN A MAKERSPACE?

SCHOLASTICGO!

• Every article comes with access to related media, like pictures, videos, tables, charts, graphs, etc. to use for independent inquiry projects
• The Go Tube collection provides hundreds of videos that can be used as an introduction to a topic or spliced into a student-created video/presentation/documentary
• Learn about new technologies for your Makerspace (e.g. 3D printing articles, images and videos)

SUPPORT FOR SCHOOL STAFF USING THE ORC

ORC SUPPORT SITE
ORC LISTSERV

CONTACT

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:

Bethany Arsenault, ORC Coordinator

Call 780-414-0805 Ext. 236

OR

Email barsenault@thealbertalibrary.ab.ca