

# CURRICULUM DESIGN FOR CREATIVE AND CRITICAL THINKING



Glen Thielmann • <http://thielmann.ca>  
SD28 Quesnel Curriculum Day • Feb 15, 2019

WORKSHOP RESOURCES and LINKS  
<https://thielmann.ca/presentation-notes.html>





# CURRICULUM DESIGN FOR CREATIVE AND CRITICAL THINKING



Hand-drawn letters 'W H O' and 'W H Y' on a grid background. Each letter is filled with diagonal hatching and includes small arrows indicating the correct stroke order for writing.



The image shows two rows of hand-drawn letters. The top row contains the letters 'W', 'H', and 'O'. The bottom row contains the letters 'W', 'H', and 'Y'. Each letter is filled with a dense, diagonal hatching pattern, giving them a textured, three-dimensional appearance. The letters are drawn in a simple, slightly irregular style, with visible pencil or pen strokes. They are set against a plain white background.





# CURRICULUM DESIGN FOR CREATIVE AND CRITICAL THINKING



The Donella Meadows Project  
Academy for Systems Change

ABOUT | WORKS OF DONELLA MEADOWS | RESOURCES

## Systems Thinking Resources

### See our Systems Thinking Resources below!

Concepts and Frameworks

#### THE FIVE LEARNING DISCIPLINES

Developed by renowned systems thinker [Peter Senge](#), these five disciplines each enhance the ability of a person or organization to use learning effectively. Leveraged together, they contribute heavily to the success of learning organizations, defined by Senge as, "...organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together."

The five learning disciplines are


1. Personal Mastery
2. Mental Models
3. Shared Vision
4. Team Learning
5. Systems Thinking

- \* U-Process (Theory U)
- \* Biomimicry
- \* Double Loop Learning
- \* Iceberg Model
- \* Bathtub Theorem
- \* Stock and Flow Diagramming
- \* Open Space
- \* World Café
- \* Graphic Facilitation
- \* Guided Envisioning (of a Sustainable World)


<http://donellameadows.org/systems-thinking-resources/>



# CURRICULUM DESIGN FOR CREATIVE AND CRITICAL THINKING



## The Sustainable Scale Project




> Conceptual Framework > Understanding Scale > Measuring Scale > **Panarchy**

**Under Construction**      About Us   Vision/Mission   Projects   More Info   Sitemap

### Panarchy

**What is Panarchy?**  
Panarchy is a conceptual framework to account for the dual, and seemingly contradictory, characteristics of all complex systems – stability and change. It is the study of how economic growth and human development depend on ecosystems and institutions, and how they interact. It is an integrative framework, bringing together ecological, economic and social models of change and stability, to account for the complex interactions among both these different areas, and different scale levels (see **Scale Levels**).



The diagram illustrates the Panarchy framework. It consists of two main ovals: 'bioregion' on the left and 'institutional setting' on the right. Inside the 'bioregion' oval are two smaller ovals: 'watershed' and 'local ecosystem'. Inside the 'institutional setting' oval are two smaller ovals: 'managing institutions' and 'local management'. A double-headed arrow connects 'local ecosystem' and 'local management', with 'ecological knowledge & understanding' written above the arrow and 'management practice' written below the arrow.

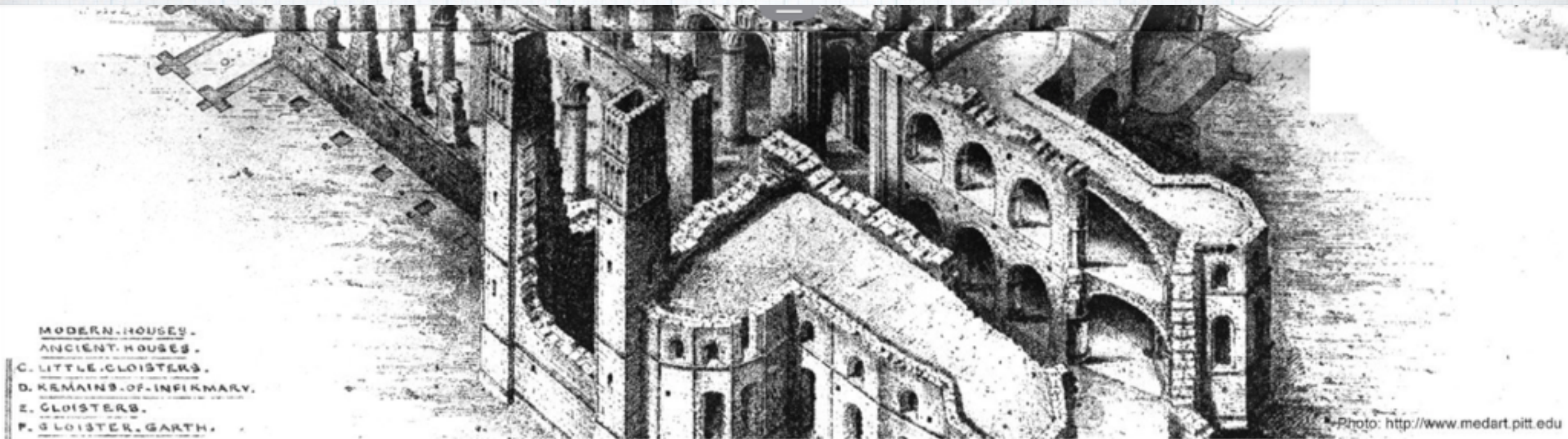
Panarchy's focus is on management of regional ecosystems, defined in terms of catchments, but it deals with the impact of lower, smaller, faster changing scale levels, as well as the larger, slower supra-regional and global levels. Its goal is to develop the simplest conceptual framework necessary to describe the twin dynamics of change and stability across both disciplines and scale levels.

The development of the panarchy framework evolved out of experiences where "expert" attempts to manage regional ecosystems often resulted in considerable degradation of those ecosystems (Gunderson and Holling, 2002). Regional management efforts are generally linear in nature, targeting the maintenance of certain variables – forest growth rates, river clarity, fish harvest rates, etc.

**Design Thinking based on the need to manage natural resources where the existing expert approaches and competing interests were not working.**



# CATHEDRAL THINKING

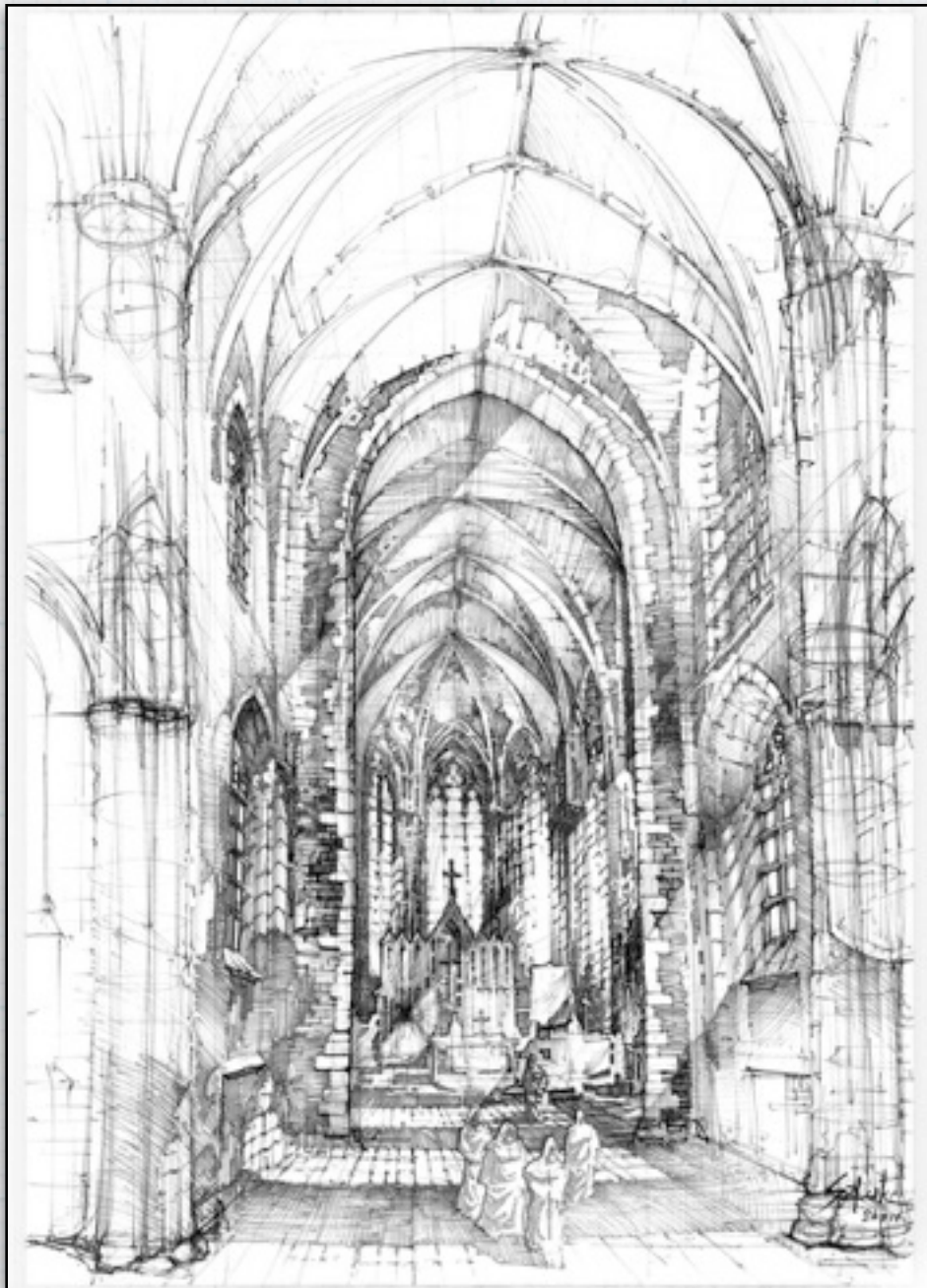


Cathedral Thinking and Education, from <https://cathedralthinking.com>

Cathedral Thinking” is that the creation of a significant sustained initiative, like the construction of a cathedral that will take a very long time to complete. In the case of cathedrals this will likely be several hundred years, much longer than the lifetime of those who started it. To undertake such a long term, demanding and potentially Evolutionary endeavour requires strategic innovations and strategic systems that are entirely different from those that deal with mundane day-to-day problems. Courage, vision and commitment is mandatory.



# CATHEDRAL THINKING



OK, maybe not centuries, but think in terms of 30 years before you think of the next 3 days.

Community (network) approach with strong role for experts

Planning for long-term uses that are different than the immediate needs and challenges

Project may never really be completed, but at some point it needs to be used — therefore the planning starts with intention, the broad goals for how the space will be experienced and the expected outcomes from people who use it.



### TEACHER IDENTITY

- ☐ passion, strengths, goals/values, wish-lists, force of personality
- ☐ my story - personal & cultural narratives
- ☐ influence of other educators, peers, and supervisors, network
- ☐ influence from students (e.g. what you think you've learned from them that will influence current or future learning design)
- ☐

### ASSESSMENT

- ☐ formative (formal/informal) & summative assessment
- ☐ entry level & pre/post assessments
- ☐ performance standards/rubrics/proficiency scales
- ☐ reflection cycle for students and teacher
- ☐ real-world/authentic assessment
- ☐

### STRUCTURES & ROUTINES

- ☐ start and end points (e.g. content, timeline)
- ☐ norms & expectations
- ☐ hook(s) - overarching/ongoing vs set of daily prompts
- ☐ kinds and number of lessons (dividing a unit into parts)
- ☐ pedagogical balance (talk vs read vs move vs view, etc.)
- ☐ matching learning resources (old & traditional vs newer & tested vs newest & experimental), design for quick engagement (cool) vs depth or importance
- ☐ classroom traditions or habit-forming practices (for teachers and students)
- ☐ style and expression options for students (e.g. multimodal)
- ☐ flex time, pacing for lesson elements
- ☐ question techniques, varied methods for encouraging response
- ☐ backup activities, go-bag for subs
- ☐ assignment design, digital or print support (e.g. handouts)
- ☐ making space for all voices, perhaps starting by considering Indigenous learners, ELL learners, aiming for equity
- ☐

### SHAPING CONTEXT

- ☐ social-emotional factors, self-regulation
- ☐ embedded classroom management strategies
- ☐ indigenizing spaces - environments of care, inclusion, mindfulness, and paying attention to the needs of the body, mind, and soul
- ☐ social contexts: individual, group, student vs teacher led, guests
- ☐ environmental contexts: indoor vs outdoor, class, library, lab, gym
- ☐ classroom design: the "pattern language" of desks, tables, configuration, patterns, shelves, reggio-inspired, order vs chaos, stations, centres, circles, "feng shui"
- ☐ strategies for clean & safe work areas
- ☐ social contexts: individual, group, student vs teacher led
- ☐ community and place-conscious opportunities, and guests!
- ☐ environmental contexts: indoor vs outdoor, class, library, lab, gym
- ☐ classroom design: desks, tables, configuration, patterns
- ☐ classroom presence: where is the teacher, why there
- ☐

### VALUES & PEDAGOGY

- ☐ educator beliefs (e.g. what is this course about)
- ☐ educational or developmental theory (e.g. attachment, inquiry-based approach, growth mindset, constructivism, Bloom's taxonomy, pedagogy of the oppressed)
- ☐ First Peoples Principles of Learning and/or variants
- ☐ BC College of Teachers Standards
- ☐ values of inquiry (clarity, accuracy, precision, depth, coherence, breadth)
- ☐ Universal Design for Learning, backwards design \* differentiation
- ☐ cognitive skills (e.g. interpretation, analysis, evaluation, inference, explanation, metacognition)
- ☐ Wholistic Learning Intentions (over/above or complimentary to official curriculum)
- ☐ multiple intelligences & learning styles (teaching style)
- ☐ notions of actualization & world-views (what kinds of humans are we making, what do I believe about students)
- ☐

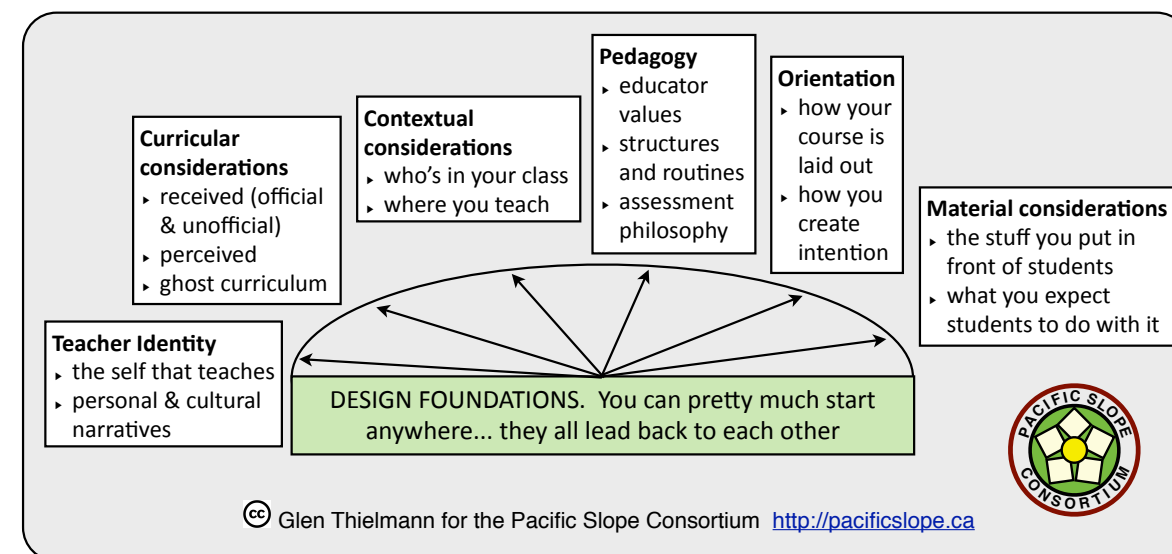
## THE INGREDIENTS OF COURSE AND UNIT PLANNING

### WHAT ELSE?

- ☐
- ☐
- ☐
- ☐
- ☐

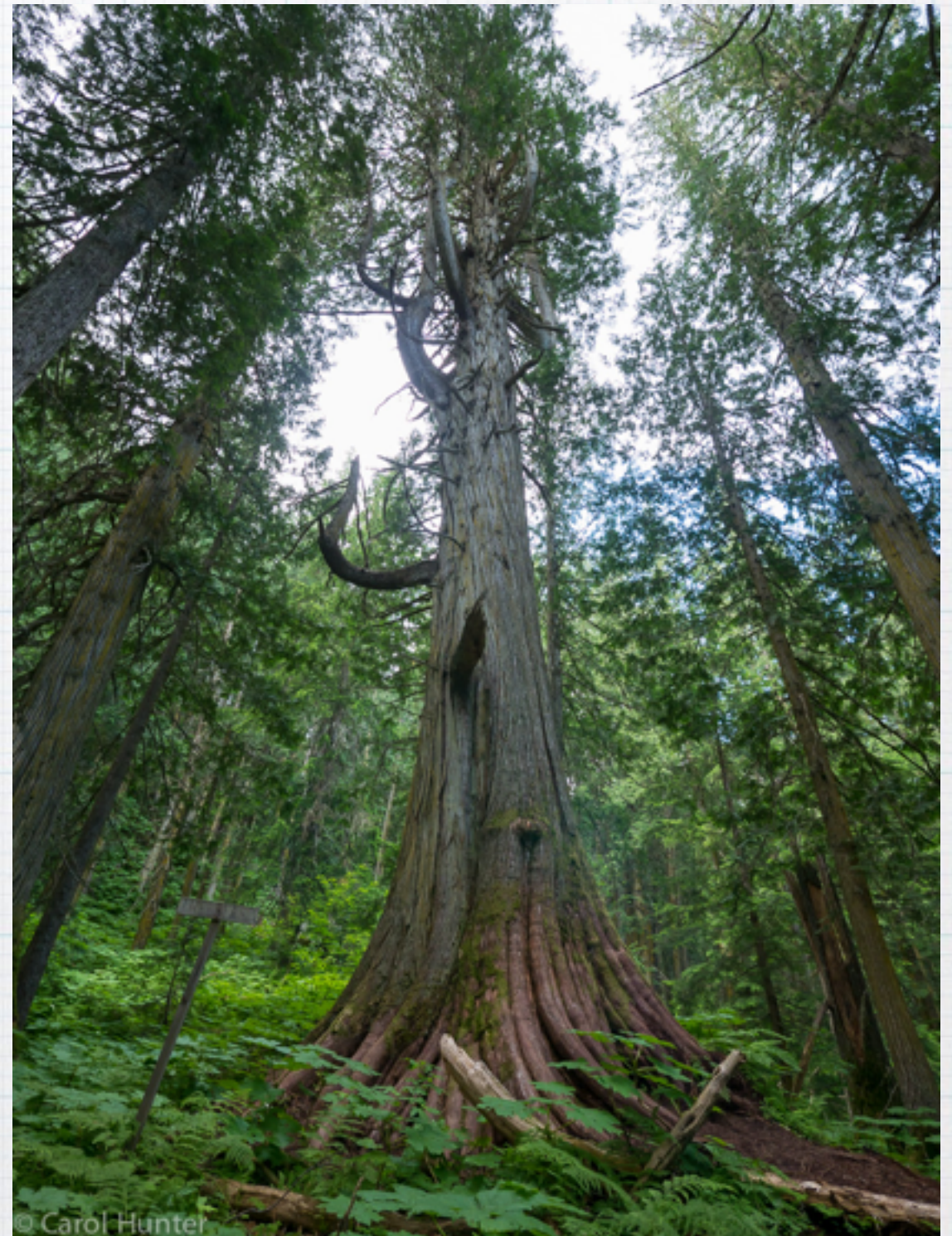
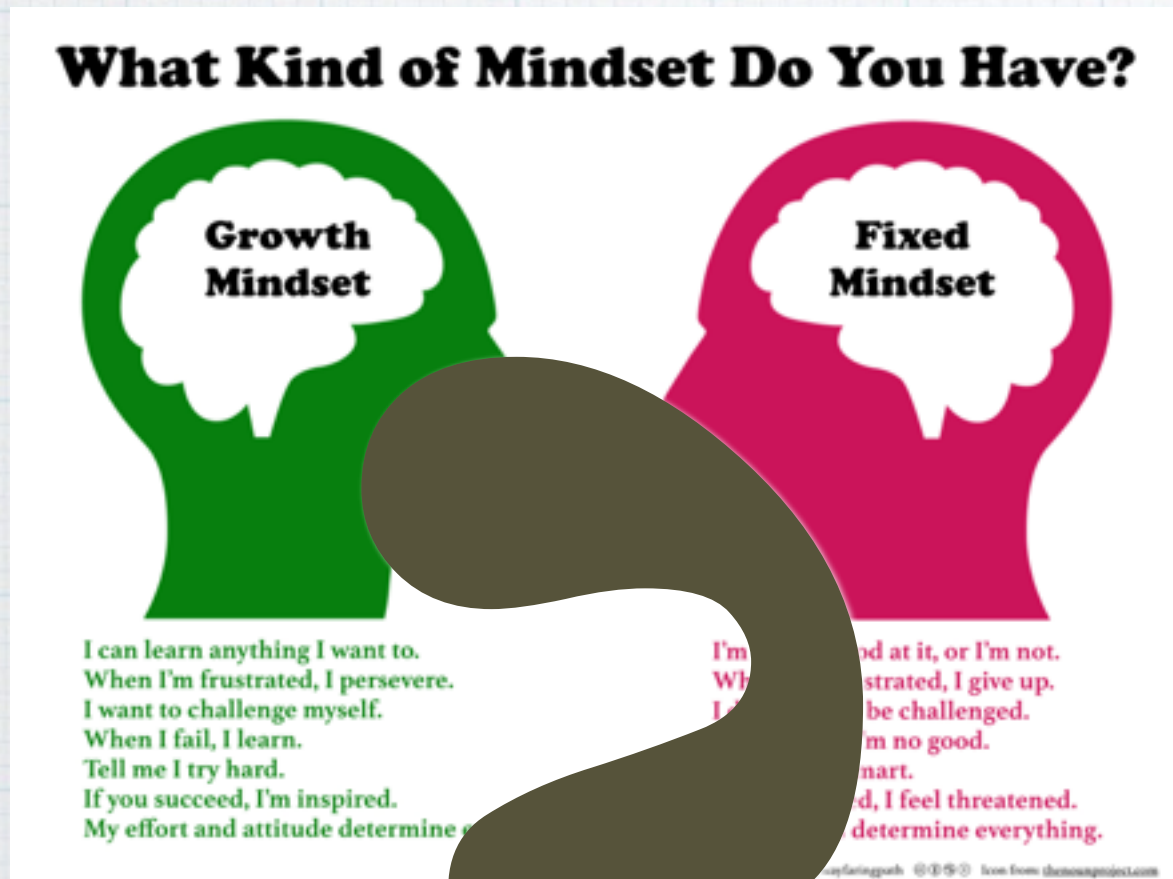
### CURRICULUM

- ☐ Curriculum Goals & Rationale documents
- ☐ Curriculum Core Competencies
- ☐ Curriculum Big Ideas
- ☐ Curriculum Curricular Competencies
- ☐ Curriculum Content Standards
- ☐ how much or little, where to put it and why
- ☐

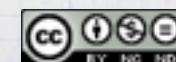




# OLD GROWTH MINDSET



<https://carolondenman.wordpress.com/2015/06/28/an-ancient-forest/>





# OLD GROWTH MINDSET



**Ecosystem Theory in Education suggests that the relationships existing in learning environments are essentially ecological in nature**

**Forest examples:**

- \* intensely connected to the characteristics of place**
- \* interrelatedness of factors affecting performance**
- \* development of niches (specialization)**
- \* interspecies cooperation (e.g. mycelial network)**
- \* community indicator species**
- \* continuous decay and renewal within set patterns**
- \* old growth specimens: the denizens of the forest with impacts that extend well beyond death**

**Views the classroom as an ecosystem with necessarily different functions (niches) but focused on long-term health and diversity of the community**



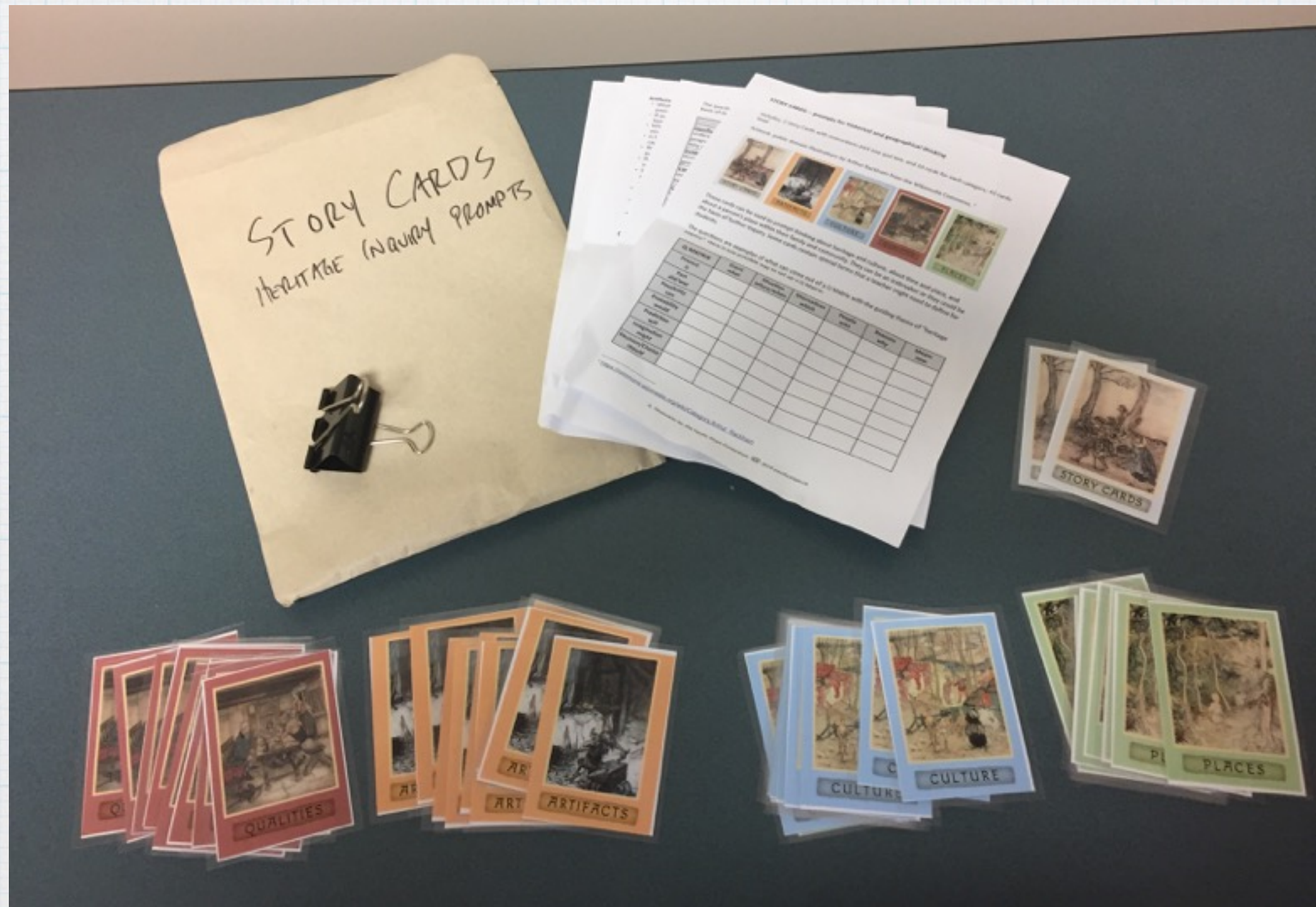
# ECOLOGICAL NATURE OF HERITAGE AND CULTURE

Heritage Inquiry is an effective way to develop ecological structures in a classroom

- \* firm role for teachers and community members (especially elders) to act as “denizens” — intergenerational informants, and a powerful source of nutrients for the classroom soil
- \* create niches for students to specialize and succeed where otherwise they might not
- \* inquiry process acts as a fungal network providing nutrients along the root network — students learn from each other

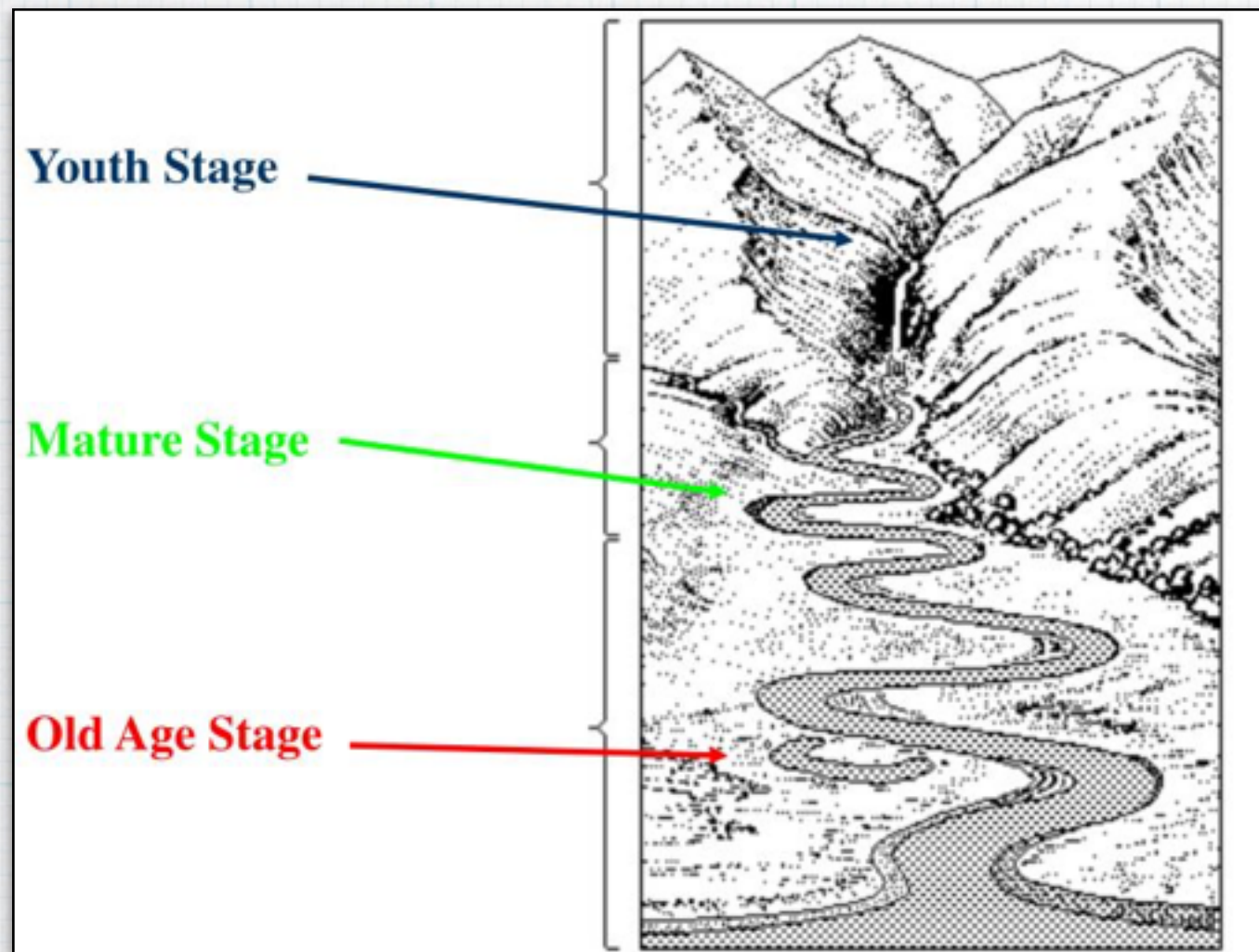


# HERITAGE INQUIRY





# FLUVIAL MODEL



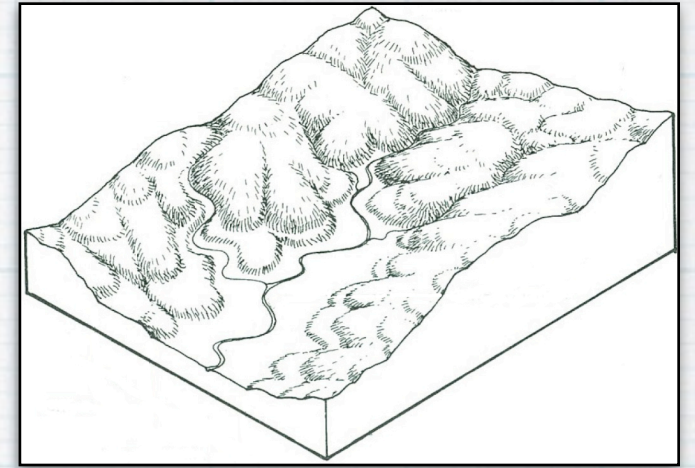
Rivers are complex systems:

- \* in the youthful stage, they have the ability to cut down quickly through substrate, but remain small and subject/ responsive to sudden changes
- \* in their middle stage, they create an ever-widening path of influence, their own distinct landscape & ecosystem
- \* in their older stage, they don't carve vertically through mountains but they do carry mountains of sediment and have enormous horizontal impact



# FLUVIAL MODEL

## THINK LIKE A RIVER



### Competence vs Capacity

- \* fluvial geomorphologists differentiate between stream competence (ability to move particles by size) and stream capacity (total volume of sediment able to be carried)
- \* for a class to think like a river, their needs to be trust and community
- \* trust — that the youthful and the experienced each do their part
- \* community — if each does their part then the whole system has significant impact and ability to accomplish goals





# What we learn, why we learn it, and how it will be assessed in Social Studies

introducing the "CAPACITIES"

## Foundations

ability to comprehend and organize subject/course related knowledge and understandings

### "I can" STATEMENTS

*I know about themes and examples from history, geography, and society.*

*I have a sense of the world in which I live and my story within it.*

### KNOW / DO / UNDERSTAND



++++ + ++  
more about curricular content, acquiring knowledge, and breaking down the big ideas

### EXAMPLES

categorization, annotated map, simulation game, lecture notes, lesson guides, group poster, response guide, question/answer (aka bookwork), test/quiz, graphic organizer, identifying arguments, read for understanding, pose questions of the curriculum

### CORE COMPETENCIES

personal & cultural identity, personal/social awareness & responsibility

creative & critical thinking

communication

communication

communication

communication

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### STRONG ROLE FOR...

KNOWLEDGE ORGANIZERS

e.g. exercises and activities structured around the curricular content standards

COGNITIVE SKILLS

e.g. interpretation, analysis, evaluation, inference, explanation, self-regulation\*

HISTORICAL AND GEOGRAPHIC THINKING CONCEPTS

VALUES OF INQUIRY

e.g. clarity, accuracy, precision, depth, coherence, breadth\*

\*see Ellerton Matrix: [bit.ly/2EltNk6](http://bit.ly/2EltNk6)

All of it.... anchored in educational beliefs

#pedagogy #identity #praxis

[pacificslope.ca](http://pacificslope.ca)

Sample 5 point Proficiency Scale for assessing performance standards or assignment criteria	
1	work has begun but evidence of understanding still to come; skills & concepts may seem very challenging
Emerging	
2	work shows progress towards understanding, mistakes are common & necessary
Practicing	
3	work shows some understanding and increasing confidence with skills & concepts
Developing	
4	work shows solid understanding and flexibility between skills & concepts; new challenges sought
Applying	
5	work shows frequent mastery & versatility with skills & concepts; challenges accepted
Extending	

### Curricular Competencies - recurring concepts

use inquiry processes and skills to ask questions and develop understanding

assess historic and geographic significance of events, actions, places, and people

assess credibility and draw conclusions from a variety of evidence and source data

characterize and compare continuities and changes across time and place

understand how cause and consequence are related in a variety of contexts

consider different perspectives on people, places, issues, and events

make reasoned ethical judgments about past or present decisions and actions



# PACIFIC SLOPE

## APPLYING THE DESIGN THINKING

**Cathedral Thinking** — planning projects that won't bear fruit for 5-10 years, e.g. Sourcebox project, Thinking it Through (book), Place in Education Symposium

**Old Growth Mindset** — creating class activities and structures that encourage niches, and traditions that run from year to year

**Fluvial Model** — our consortium, like our classrooms, runs the spectrum from workshop to congress... different "particle size challenges" balanced with overall capacity to affect learning and develop thinking.

**We often find ourselves at the "braided stream" phase of the river... multiple shifting channels, choked with sediment.**



# PACIFIC SLOPE

## APPLYING THE DESIGN THINKING

**Tinker:** All students can think critically and creatively; using hands-on primary and secondary sources and artifacts provides multiple access points for students to do so, and suggest the way for broader community connections and applications of learning.

**Thinker:** All students are capable of using the six historical and geographic thinking concepts to make sense of their worlds and express their understanding; when done together this forms the basis of learning communities rooted in thinking.

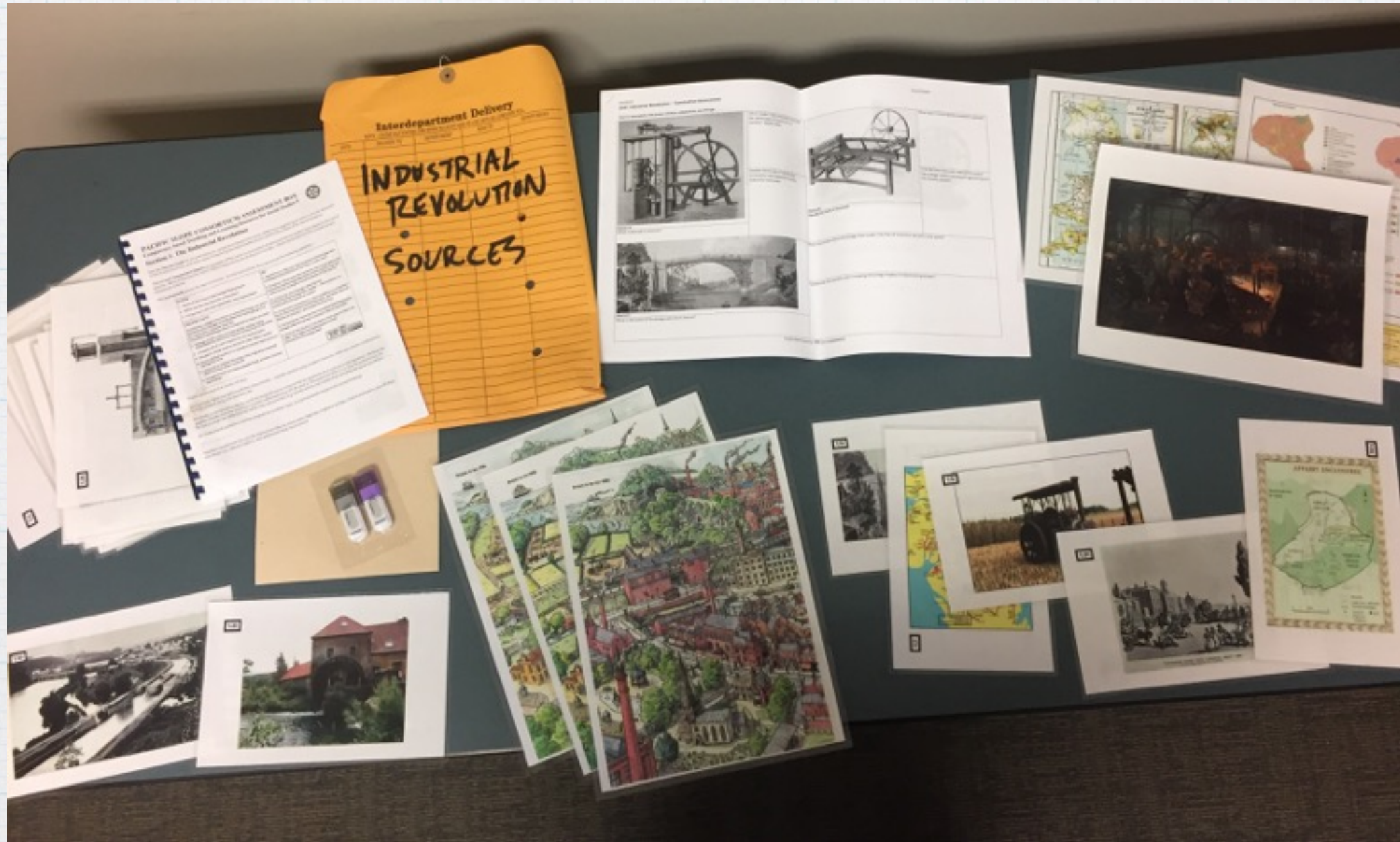
**Storyteller:** All students have powerful stories to tell, developed through techniques such as heritage inquiry and narrative writing; the roots of personal and cultural identity are intertwined with all aspects of curriculum

**PIE: Place in Education** — all learning is influenced strongly by context and deep connections to place, and is made more authentic when teachers and students work intentionally with notions of place.

T  T  S  P 	Glen	Trina	Ian	Rob	JP	Joe
Role-play simulations	✓		✓	✓	✓	✓
Manipulative sets	✓			✓	✓	✓
Thinking classroom initiatives	✓	✓	✓	✓	✓	✓
Sourcebook Author	✓			✓	✓	✓
Heritage Inquiry Program	✓	✓	✓			✓
Place-based Songwriting		✓				
Integration of Outdoor Ed in SS			✓			
PIE planning & contribution	✓	✓	✓	✓	✓	✓
Other?						

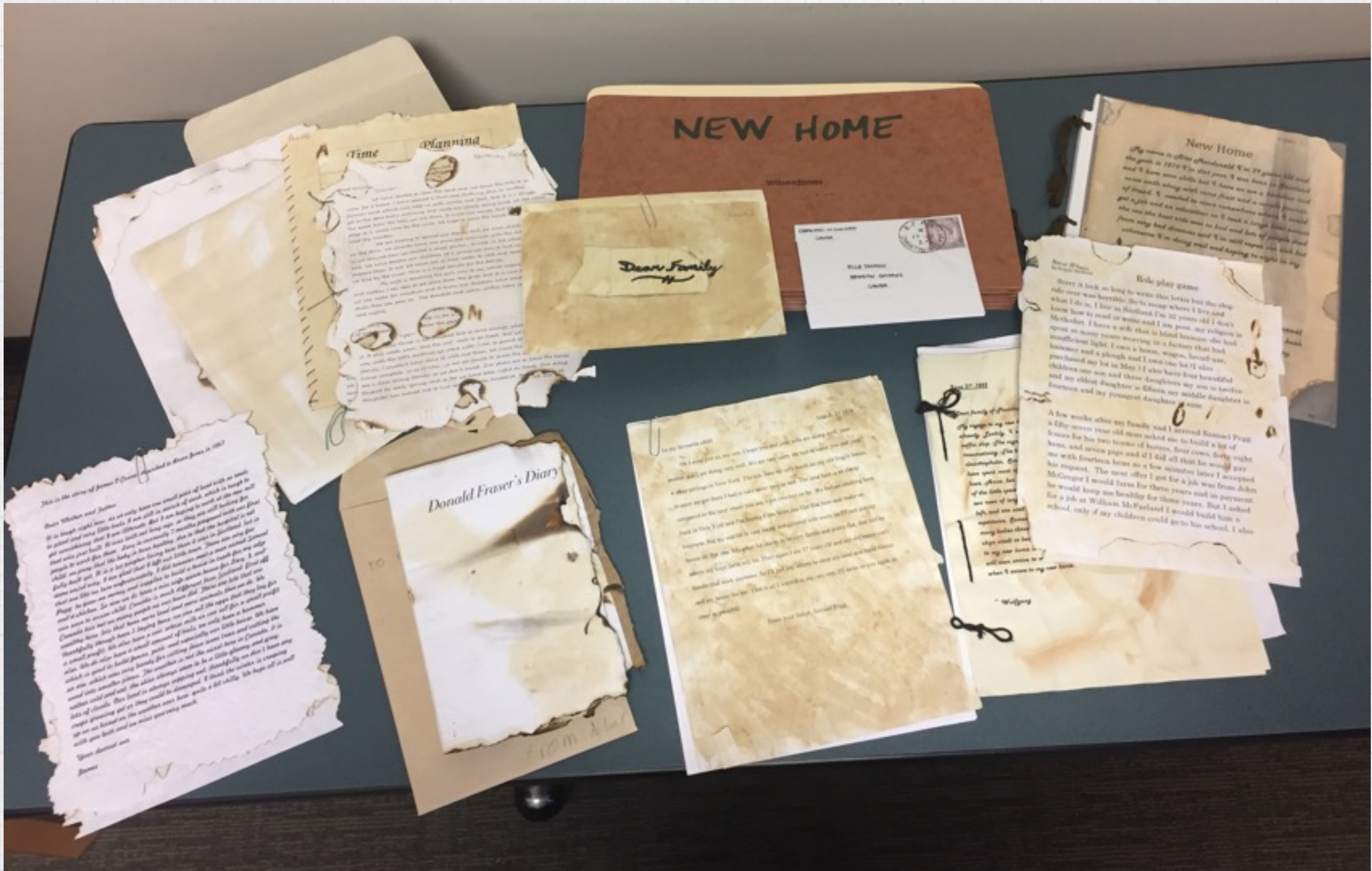


# SOME PROJECTS FROM THE PACIFIC SLOPE CONSORTIUM





# SOME PROJECTS FROM THE PACIFIC SLOPE CONSORTIUM





# SOME PROJECTS FROM THE PACIFIC SLOPE CONSORTIUM



**Elders Project — using Métis kit to develop storytelling K-3**



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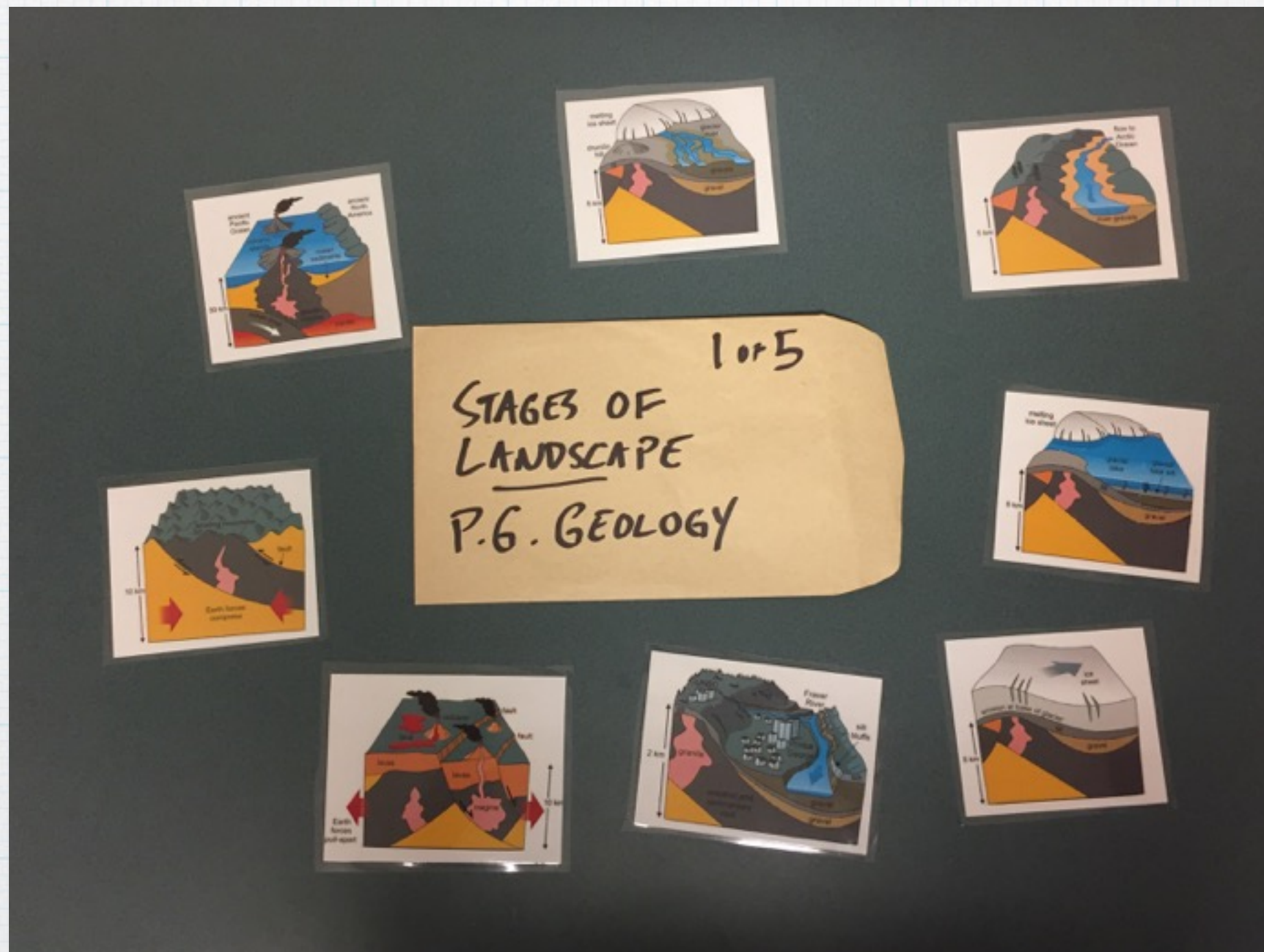


## Soviet Survivor



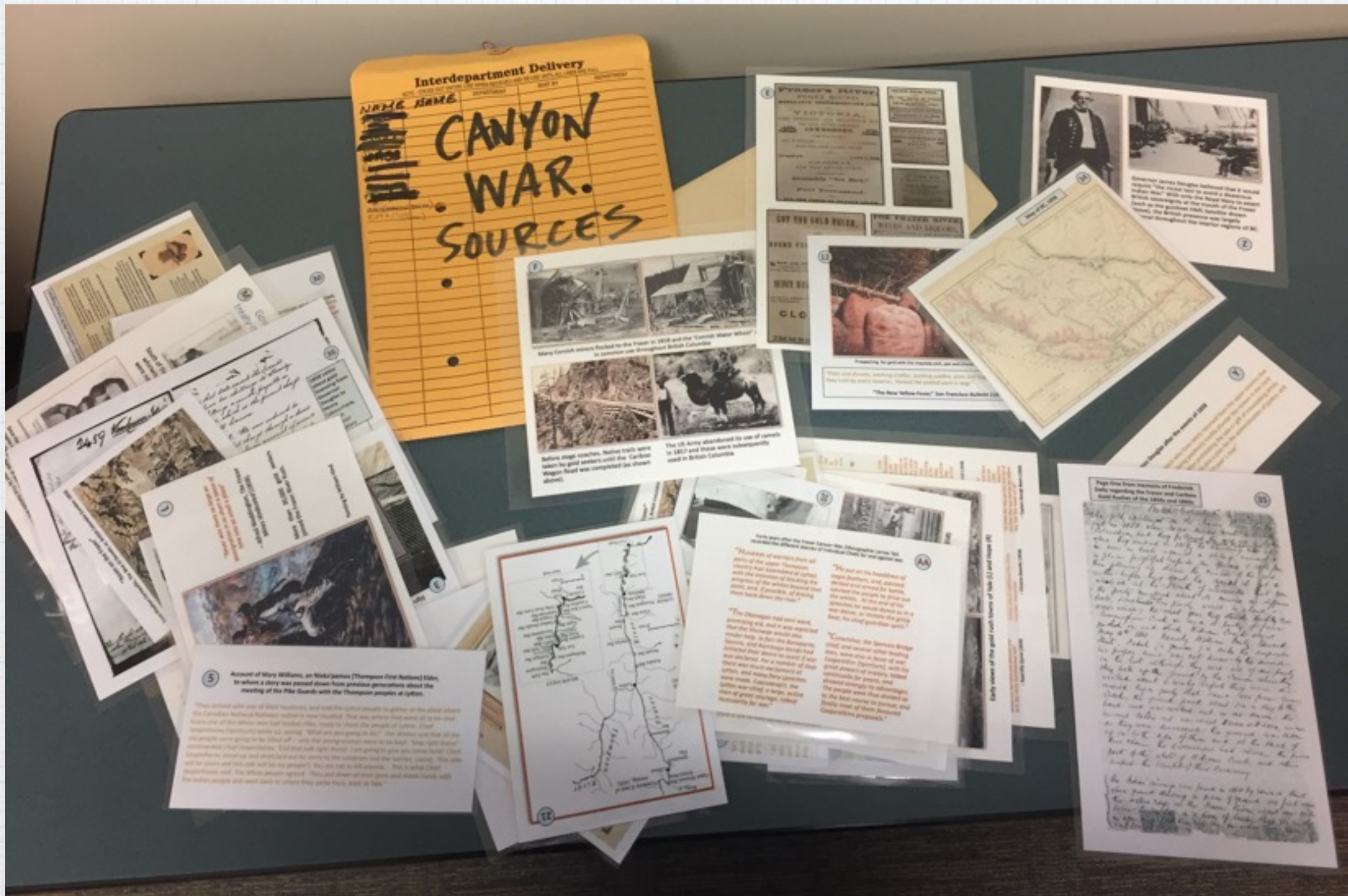


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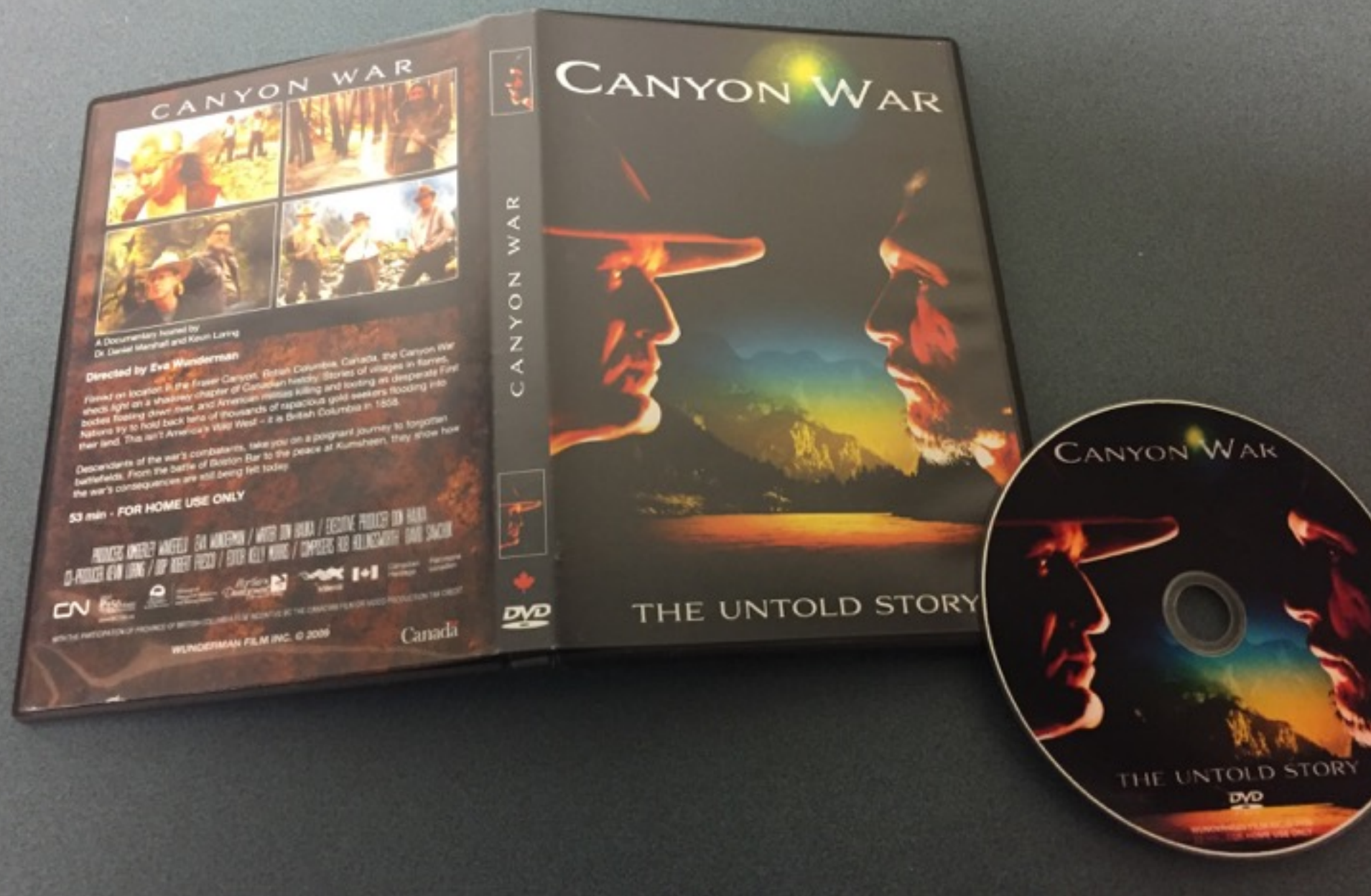




# SOME PROJECTS FROM THE PACIFIC SLOPE CONSORTIUM







# CANYON WAR



A Documentary hosted by  
Dr. Daniel Marshall and Kevin Loring

Directed by Eva Wunderman

Filmed on location in the Fraser Canyon, British Columbia, Canada, the Canyon War sheds light on a shameful chapter of Canadian history: stories of villages in flames, bodies floating down river, and American miners killing and looting as desperate First Nations try to hold back hordes of thousands of rapacious gold seekers flooding into their land. This isn't America's Wild West - it's British Columbia in 1858.

Descendants of the war's combatants, take you on a poignant journey to forgotten battlefields. From the battle of Boston Bar to the peace at Kumsheen, they show how the war's consequences are still being felt today.

53 min - FOR HOME USE ONLY

PRODUCERS: KIMBERLY WAREFIELD, EVA WUNDERMAN / WRITER: DON HARRIS / EXECUTIVE PRODUCER: DON HARRIS  
CO-PRODUCER: KEVIN LORING / ADP: ROBERT FREDERICK / EDITOR: KELLY MOORE / COMPOSER: ROB HOLMESGARTH / GAIL SANCHEZ

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WITH THE PARTICIPATION OF PROVINCE OF BRITISH COLUMBIA FILM SOCIETY AS THE CANADIAN FILM BOARD PRODUCTION TEAM CREDIT

WUNDERMAN FILM INC. © 2006

Canada

DVD

# CANYON WAR

CANYON WAR



THE UNTOLD STORY

# CANYON WAR



THE UNTOLD STORY

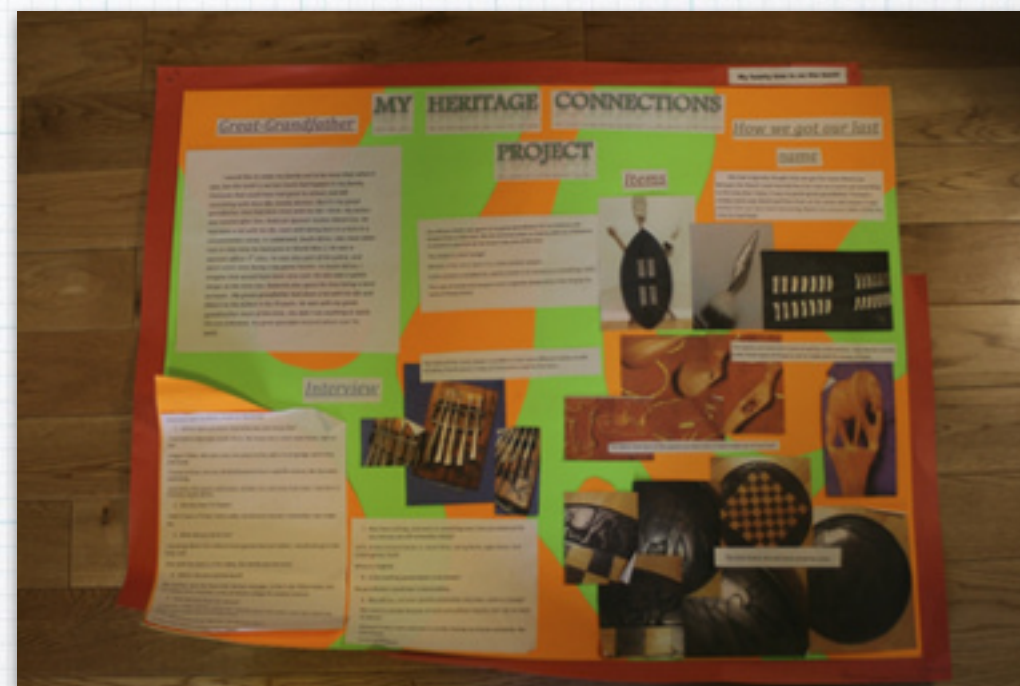
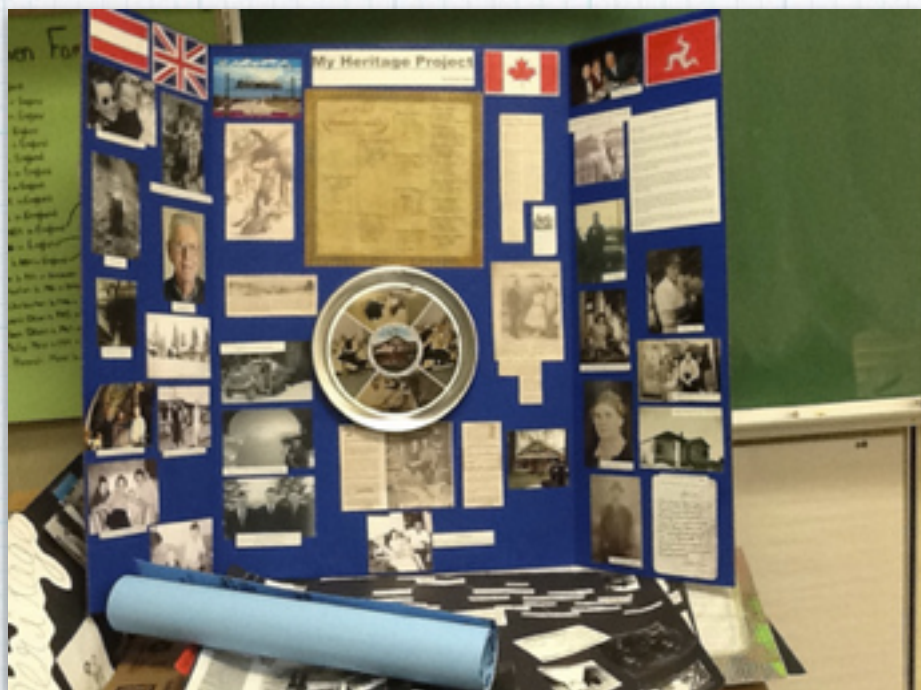
DVD

www.wundermanfilm.com

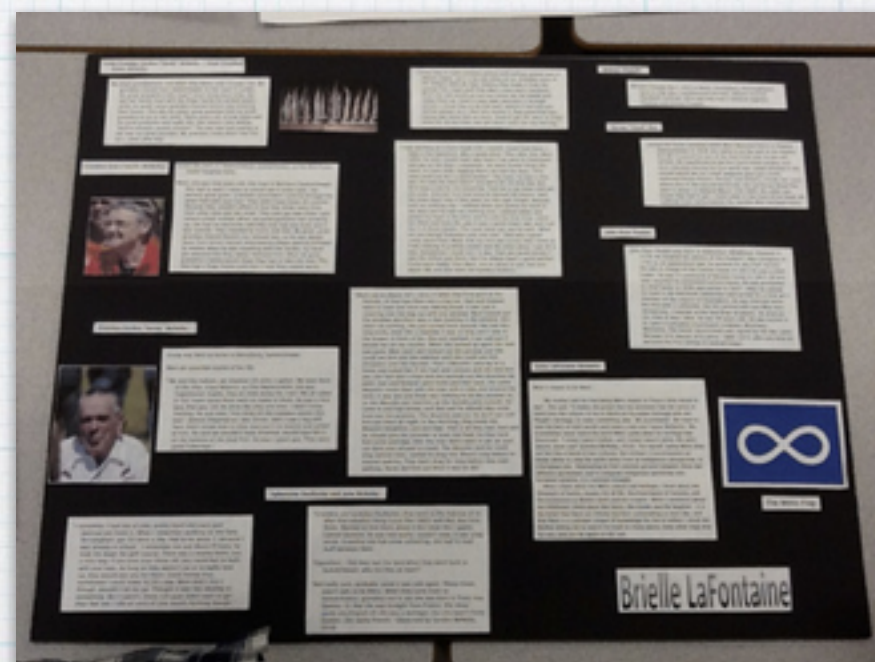
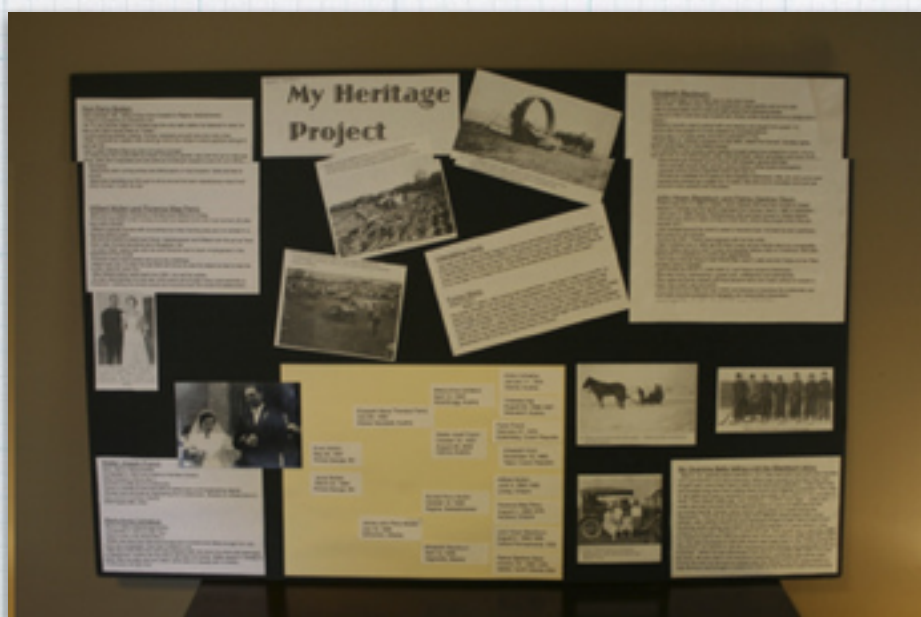
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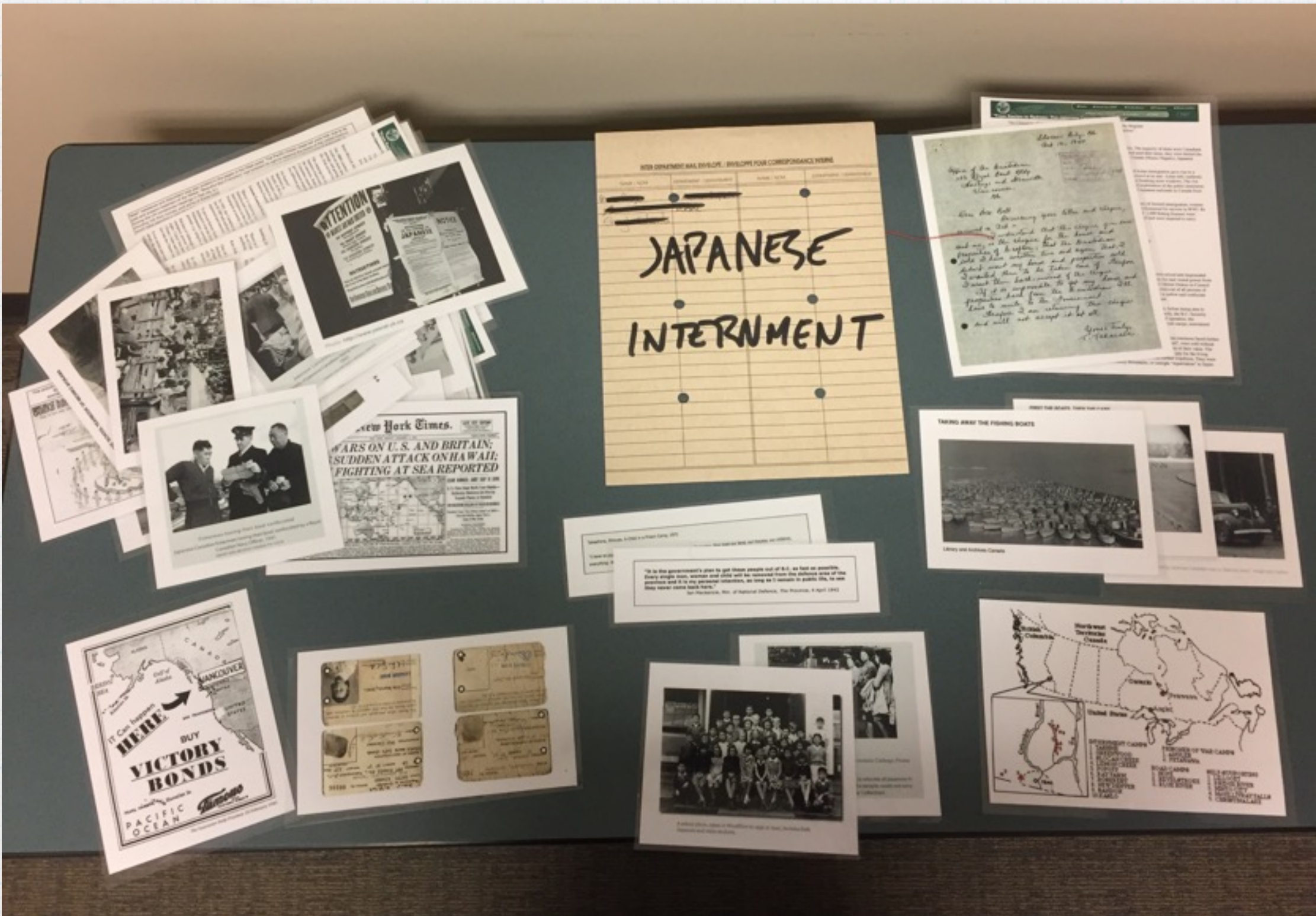


## Heritage Inquiry



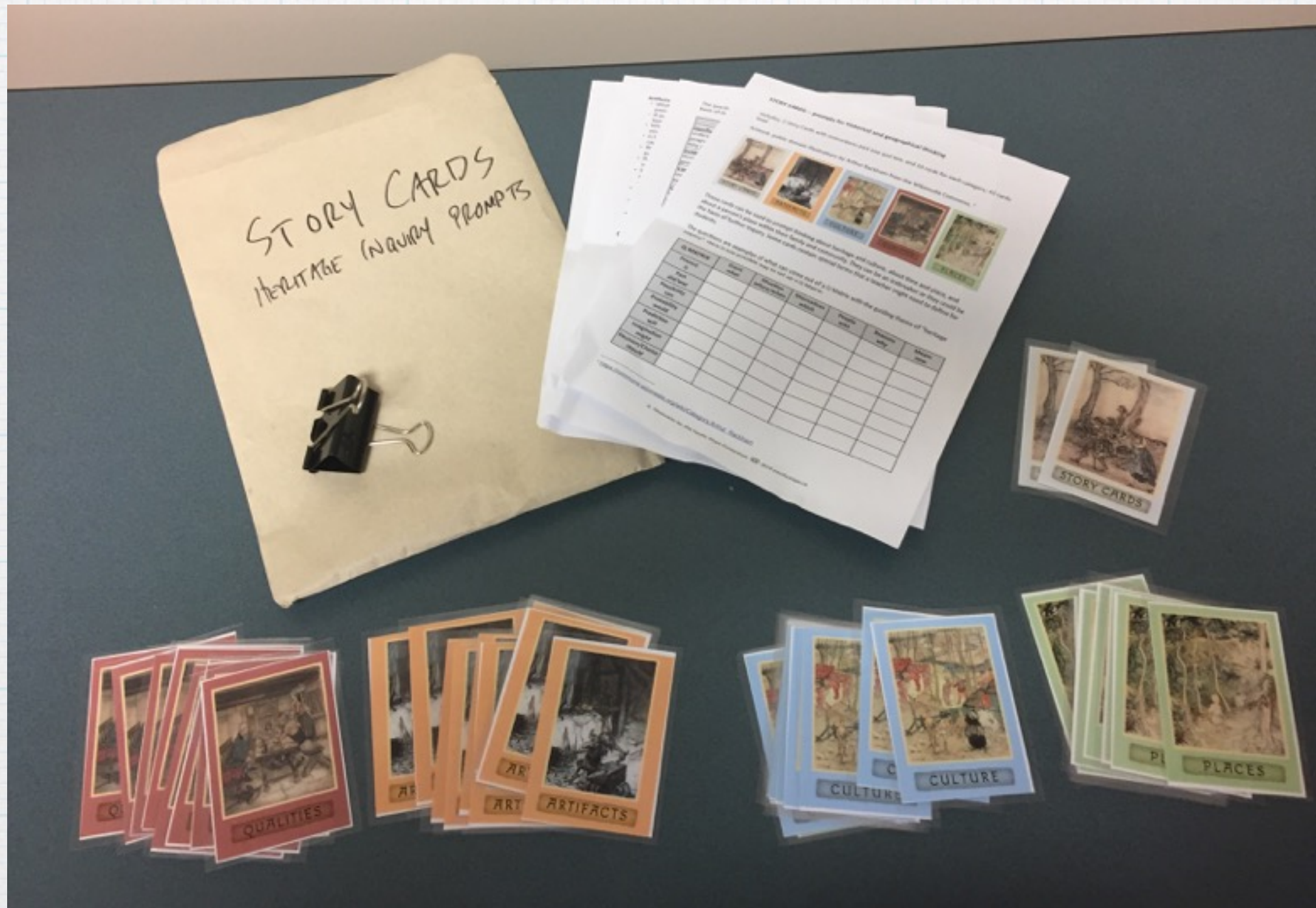


# SOME PROJECTS FROM THE PACIFIC SLOPE CONSORTIUM





# SOME PROJECTS FROM THE PACIFIC SLOPE CONSORTIUM





# CURRICULUM DESIGN FOR CREATIVE AND CRITICAL THINKING

## Some questions to consider

- \* what kinds of design processes do you use, and why did you choose it?
- \* how does your design process relate to your goals for how your classroom will be experienced by students, e.g. what are your intentions around student outcomes?
- \* are there gaps between your design goals and your values as an educator (e.g. does the assessment match your expressed purpose?)
- \* are there gaps between your design goals and the limitations imposed by the current school system?
- \* how can you use existing resources or activities to affect a new outcome (e.g. a focus on curricular competencies)?
- \* do you have a design team... what would you create with colleagues with a little time and money?



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## WORKSHOP RESOURCES and LINKS

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