Capstone- Inquiry to Action

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Getting to know you…

- Please make a name tag for yourself
- Include the subjects you teach

Invitations

"Students cannot possibly learn everything of value by the time they leave school, but we can instill in them the desire to keep questioning throughout their lives."

Grant Wiggins, Author of Understanding by Design

Learning Intentions

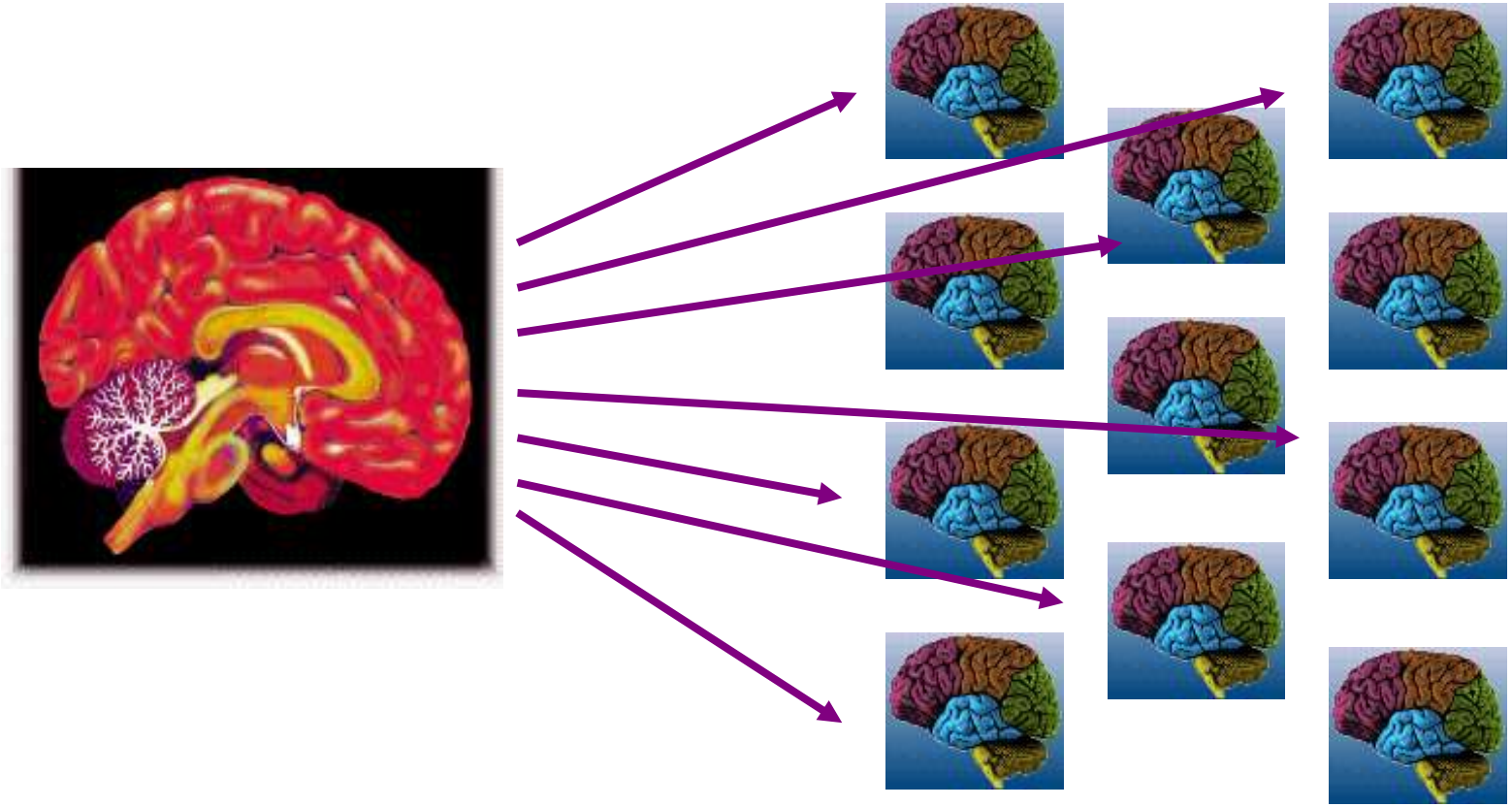
- To begin to understand inquiry and concept-based learning
- Identify how to connect students to a Capstone
- To focus discussion on the Capstone project

A Community of Learners

- How do you learn?
- How do students learn?

They engage with life and what is all around them. This curiosity creates a need to know which leads to more in-depth investigations which in turn, constructs their understandings of the world, as well as seeking more complex questions. (Short, 2009)

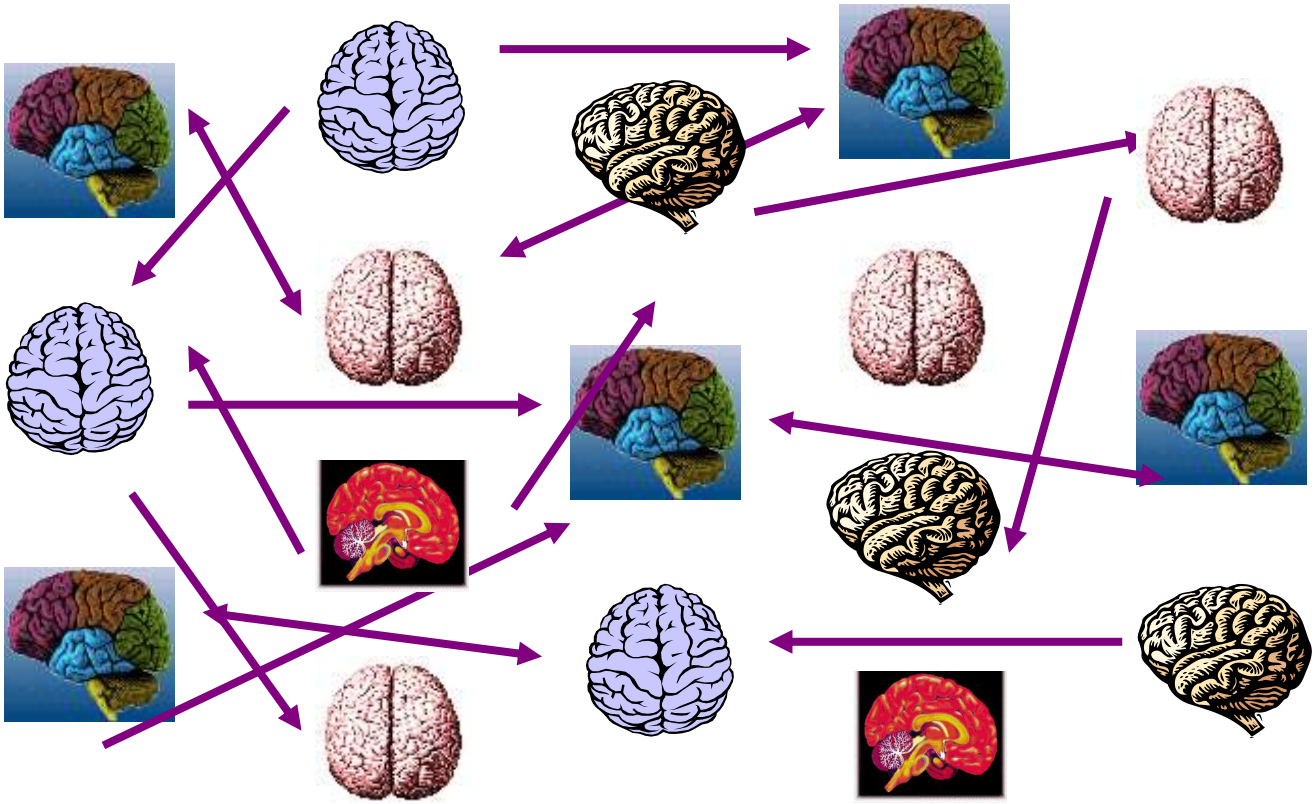
Traditional classroom methodology



Teacher

Students

Constructivist theory/methodology

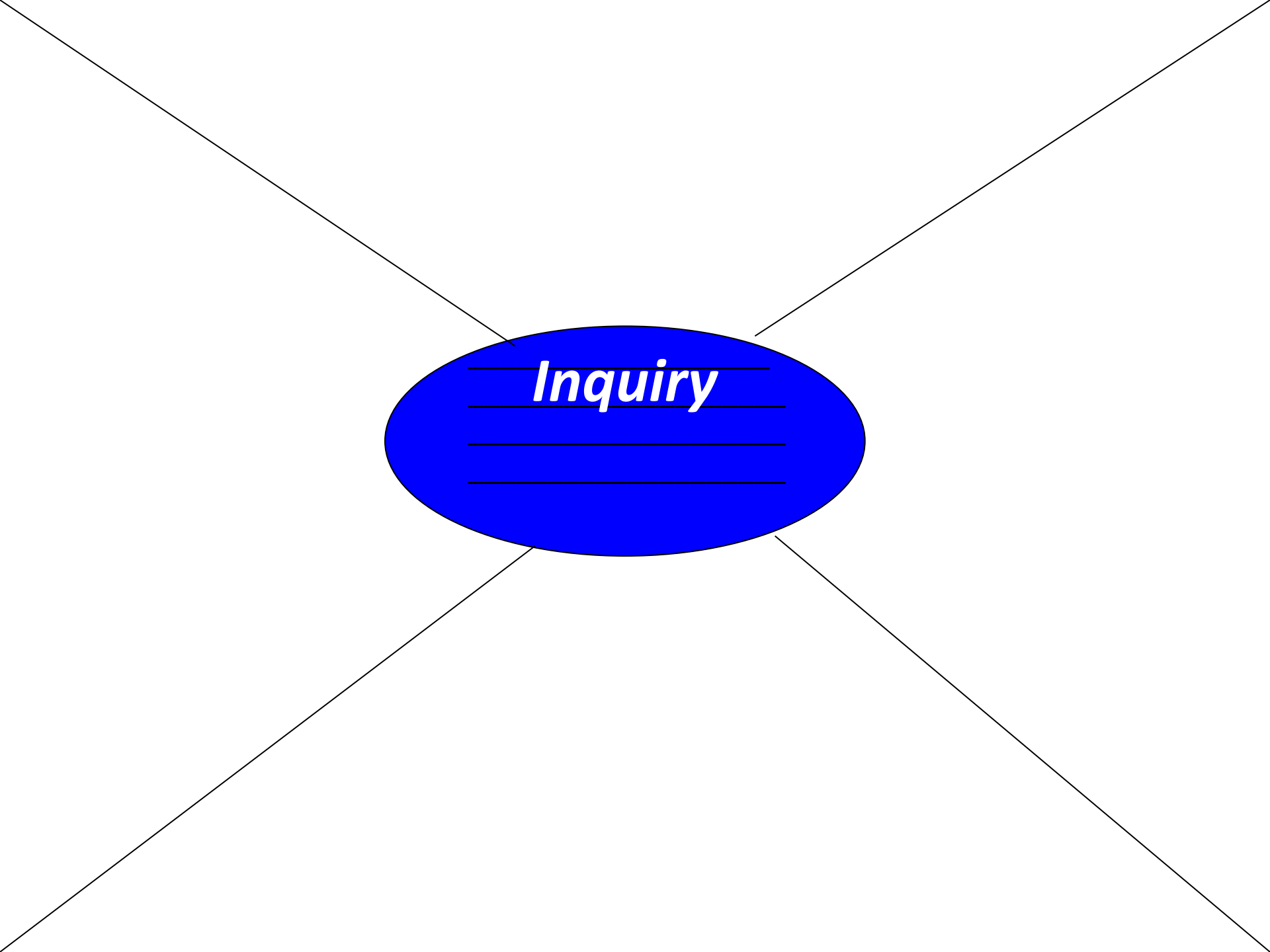


The inquiry stance:

- **Open -** Welcoming ideas, even conflicting ones
- **Wondering -** Being playful with words and ideas
- **Committed -** Actively involved
- **Engaging of others -** Building on each others' utterances- agreeing/disagreeing with own ideas and ideas of others- reshaping understandings/ misunderstandings
- **Supportive of own and others' ideas -** Offering evidence and opinions- constructing from own understanding

Doughnut strategy

- Write your own individual definition of inquiry.
- Record your definition (or key words from your definition) on the outside of the donut.
- As a table group, use group notes to come up with a table definition for “authentic and effective inquiry.”
- Write the group definition on the inside of the donut.


Inquiry

What is Inquiry-Based Learning?

View this short YouTube clip by Mark Chaloner
Inquiry-Based Learning

Jot down: Key words (words that stick)

- Connections
- Feedback
- Questions

We will share these out after.

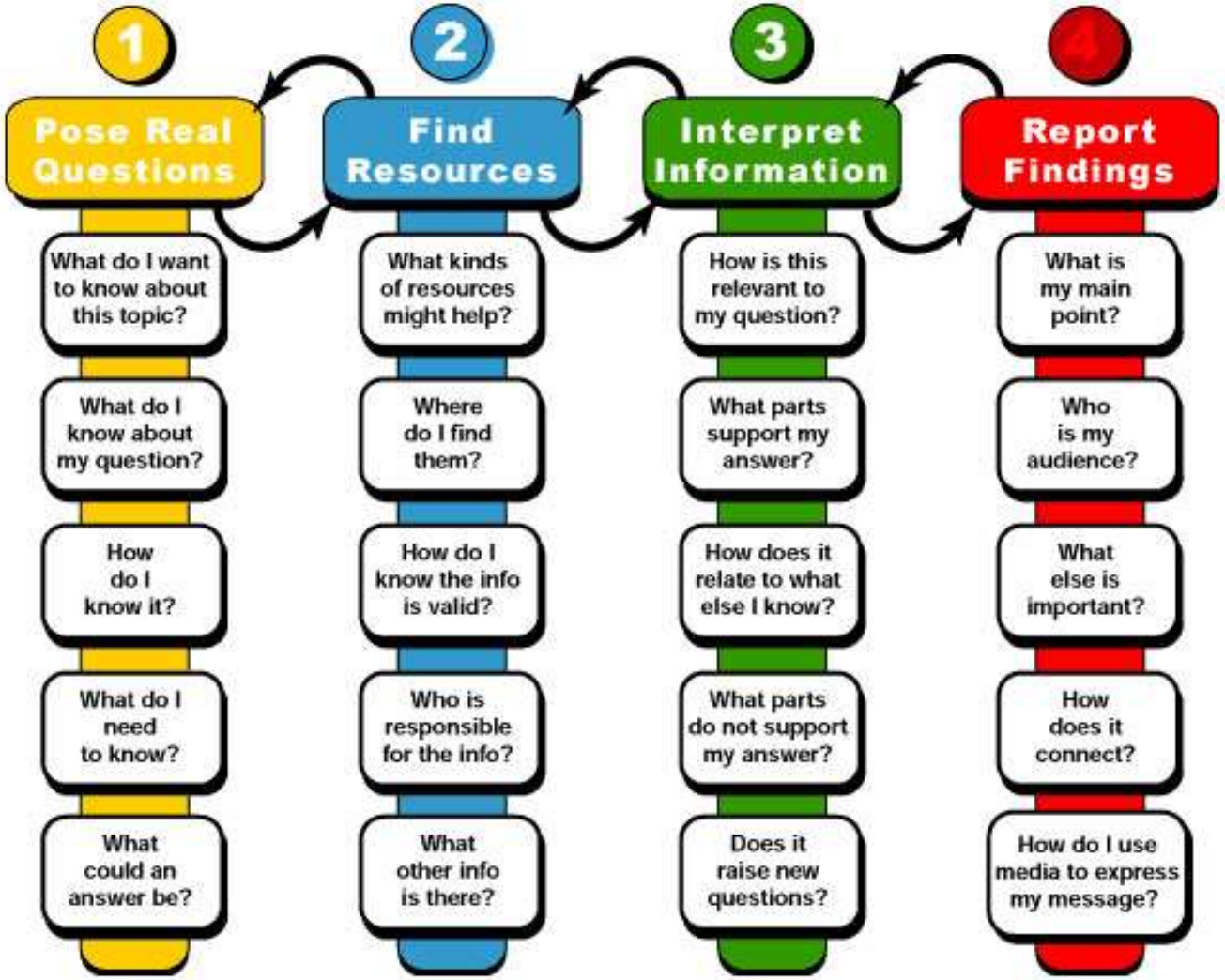
What is inquiry/ project-based learning?

- Based on **constructivist theory** and grounded by the work of Piaget, Vygotsky, Dewey and Bruner.
- **Concept-based** with an emphasis of “enduring understandings” and core competencies.
- Balance between the **acquisition of skills, knowledge and meaning**.
- Inquiry/ project-based learning is, “the creation of meaning that occurs when an individual **links new knowledge with…existing knowledge”** (International Baccalaureate, 2007, p. 6)
- Inquiry learning is the **continual and cyclic** path of constructing, testing, confirming or revising our models of how the world works with the purpose **to transform** our thoughts, beliefs and actions.

A Continuum of Inquiry

- **Open inquiry-** students are exploring and manipulating.
- **Guided inquiry-** discovering while manipulating
- **Structured inquiry-** discovering , more task orientated while manipulating.
- **Didactic inquiry**

The Inquiry Process



Kath Murdoch's Inquiry Cycle

"Becoming a Skilled Investigator:" Kath Murdoch, 2009

- Units of Inquiry are: "an opportunity to develop students' skills in methodologies that researchers use to gather information they need in response to questions or problems they or others have posed…they see themselves as active investigators." (2009)
- When there are skills that are common to all, teachers should model and specifically teach in order for students to become increasingly independent in the use of those skills.
- The end goal is for students to be able to decide on an appropriate course of action when attempting to answer their own wonderings.

Tuning in…to students' thinking

What do we bring to this inquiry?

What do we think we know and feel?

What are we unsure about?

Why learn about/ to do this?

What needs to happen next?

Where are we headed?

Finding out: learning to investigate and find out in different ways.

- How can we investigate this?
- What information do we need to gather and from where?
- How will we record and organize this data?
- What skills do we need for this investigation?
- What is the best way to find out more?
- How is this challenging our thinking?

Beyond K.W.L.

“Making thinking Visible” –Ritchhart and Perkins (2008)

“By asking what students ‘think they know’ rather than what they ‘know,’ the prompt uses conditional language that suggests possibilities and openness rather than absolutes. This encourages the sharing of tentative ideas. All students can engage in a conversation focussed on personal thoughts rather than definitive knowledge… learning begins with one’s own ideas and truth is built over time.”

Making thinking visible

What do you think you know about…	What makes you think that? What are our puzzles?	How will we explore our puzzles?

Sorting out: time to respond to and process information gathered

- How can we make sense of this information?
- What patterns are we noticing?
- What does it mean to me/us?
- How can we express our new learning?
- How is our thinking changing?
- What questions does this raise?
- What else do we need to find out?

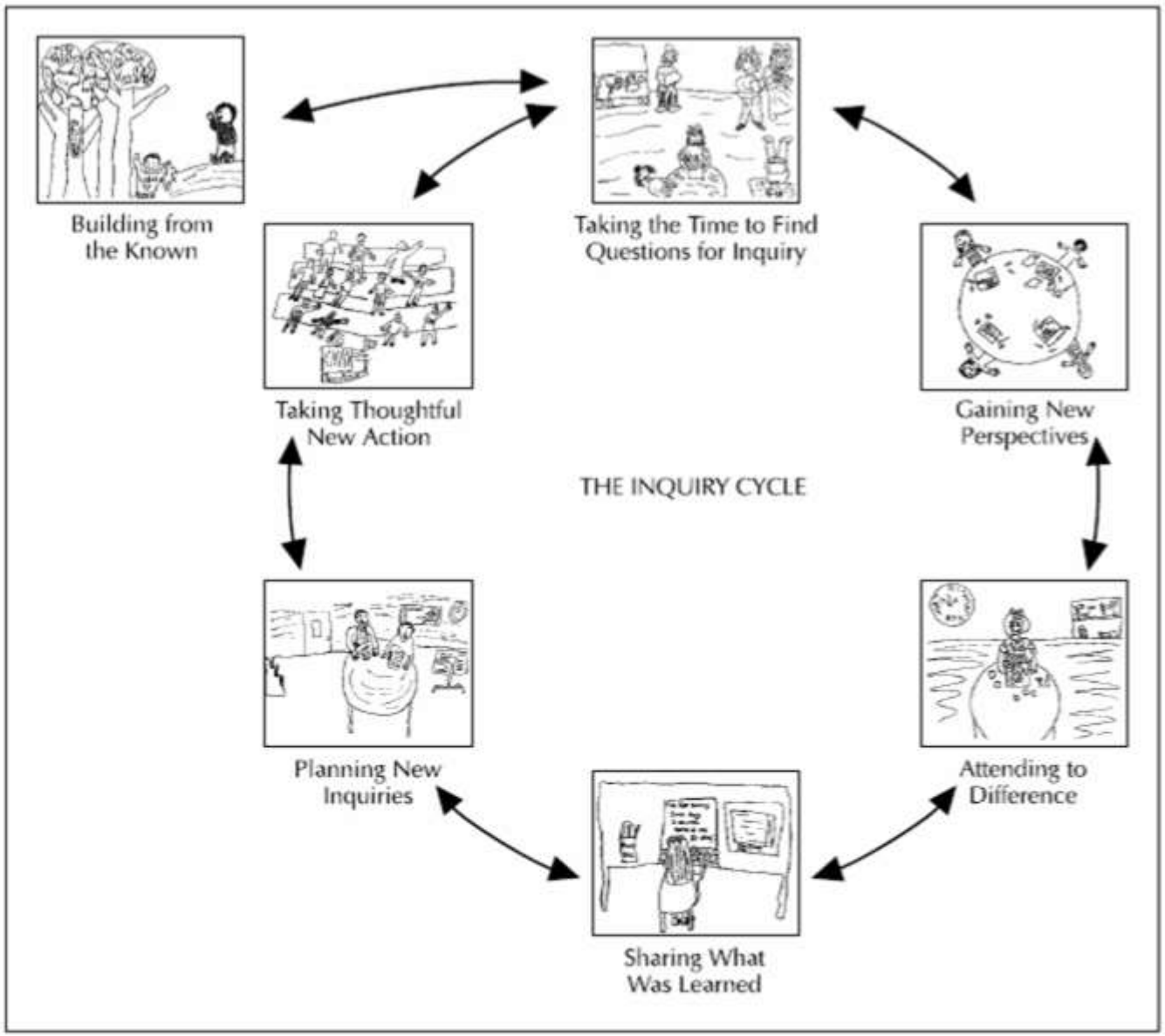
Going further: Student led inquiry

- What am I wondering?
- What else do I need or want to explore?
- How can I take this further?
- How will I share with others what I have discovered?
- What goals do I need to set myself?

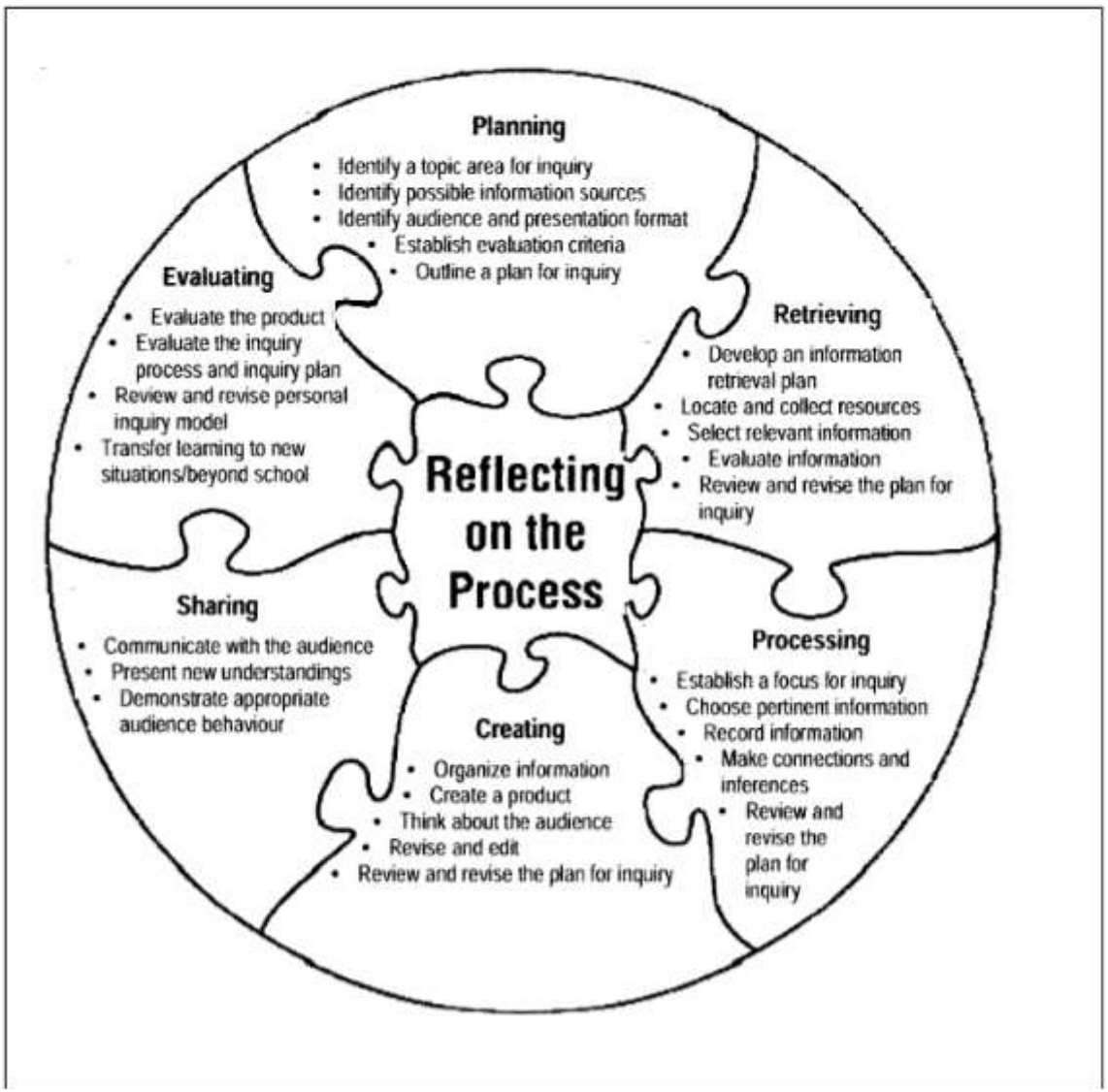
Concluding, Reflecting and Acting

- What can we **now** say about….?
- How has our thinking changed and why?
- What can we do with this?
- So what? Where to now?
- What have we learned about learning?
- What can we do with this learning? How will it make a difference to our lives? To the lives of others?

Kathy Short's Inquiry Model



ALBERTA LEARNING INQUIRY MODEL



Diane Parker's Inquiry Model

Planning for Inquiry, Diane Parker NCTE, 2007 ISBN 978-0-8141-3560-

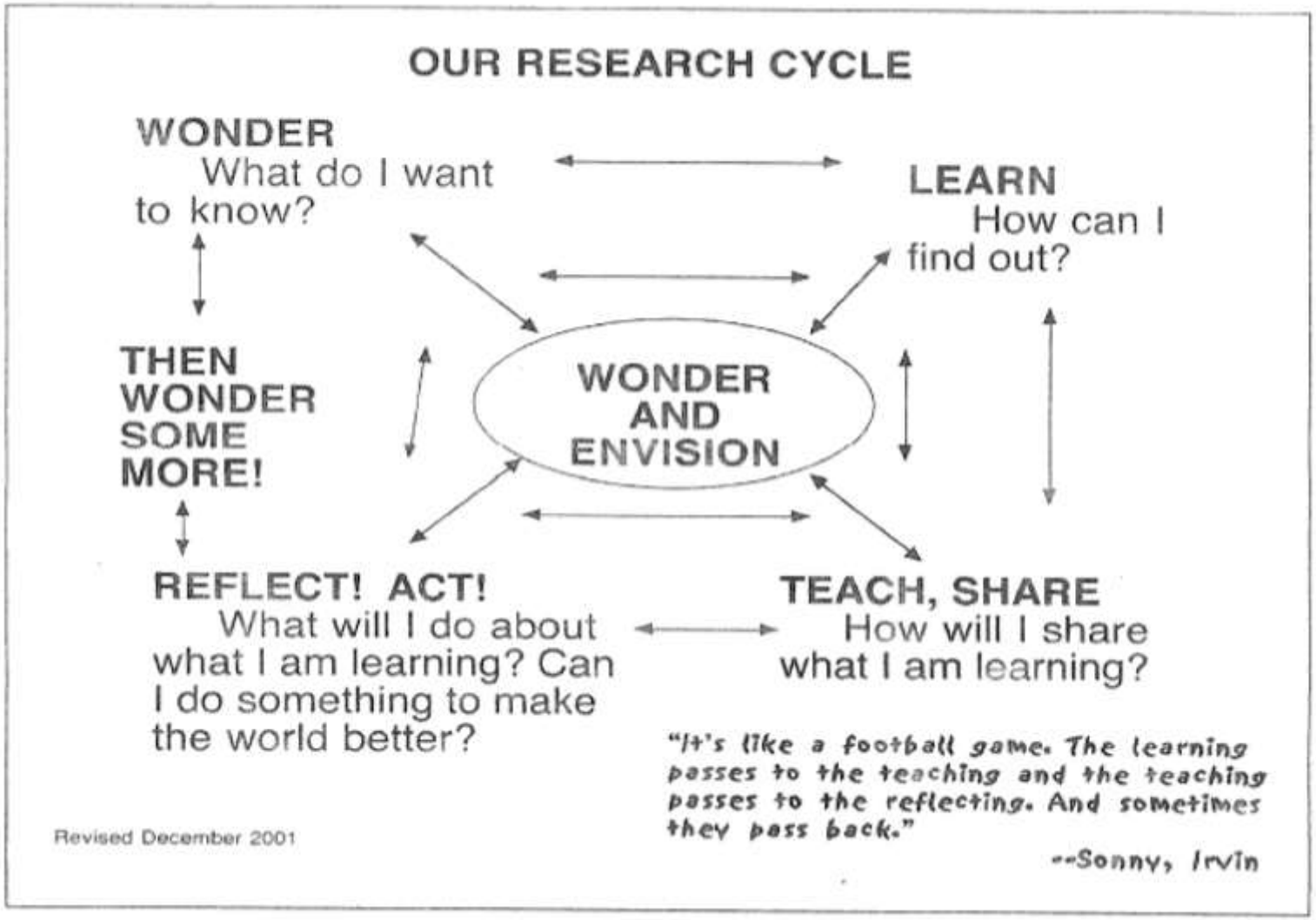
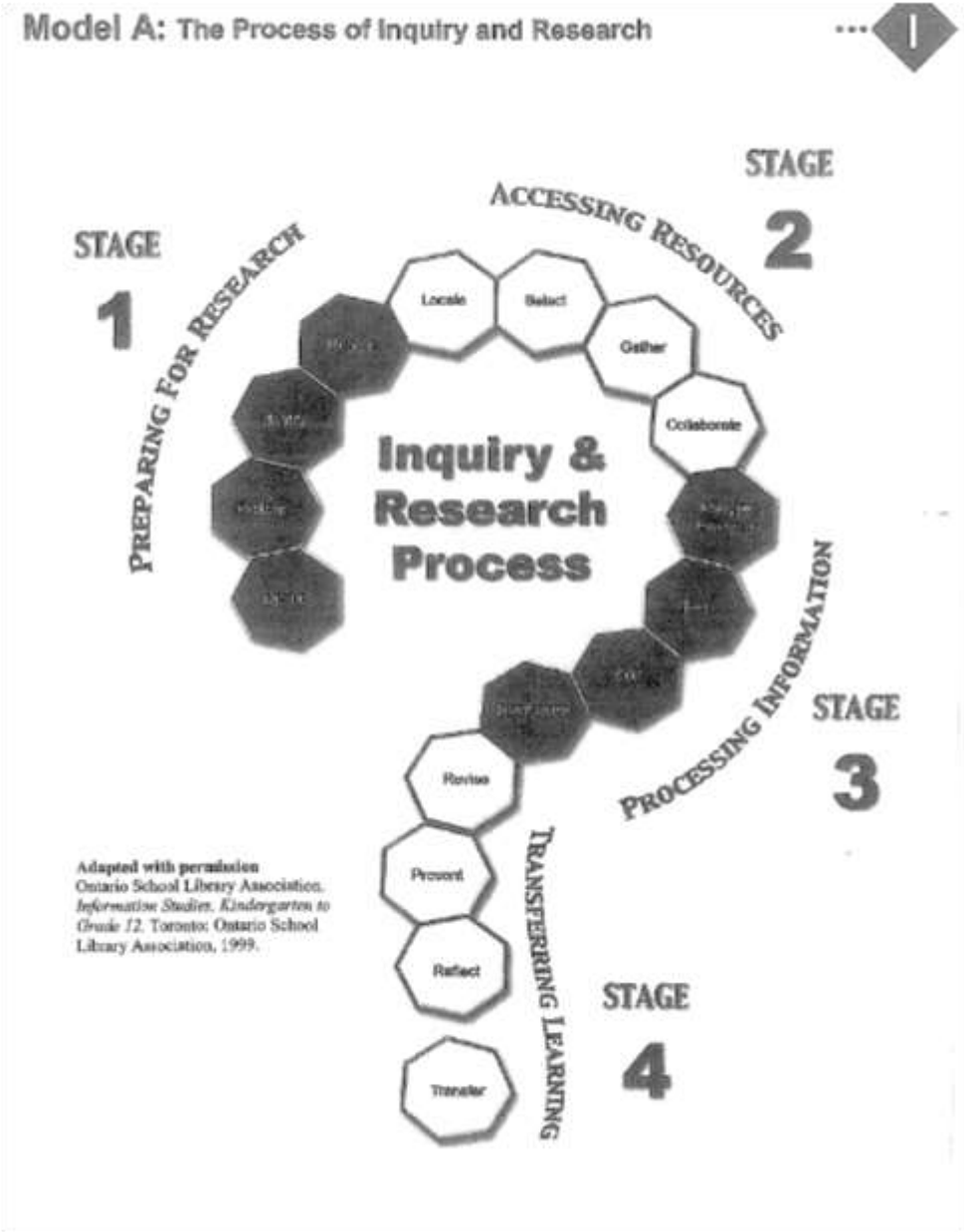
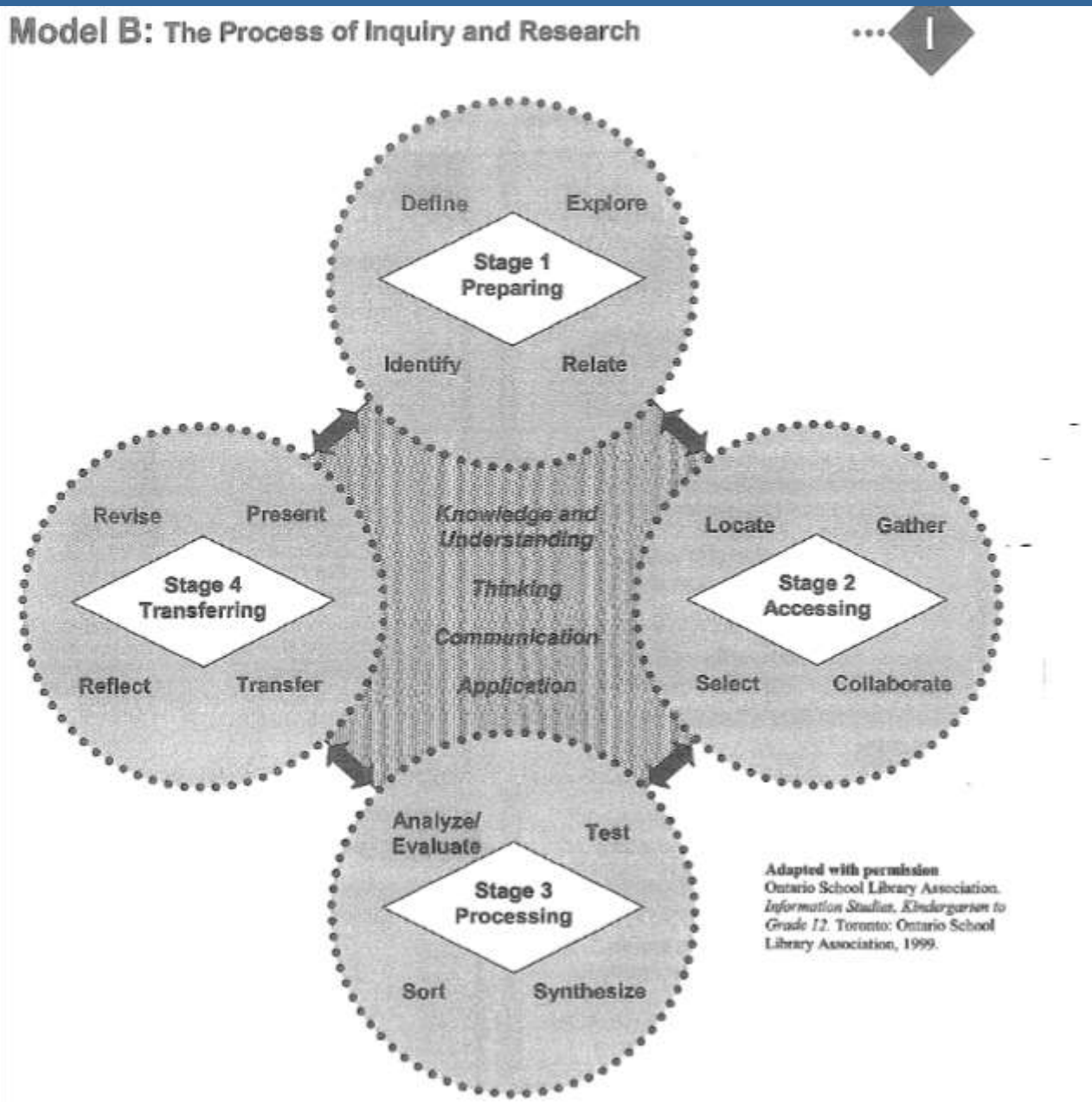


Figure 7.2. Revised Research Cycle chart.

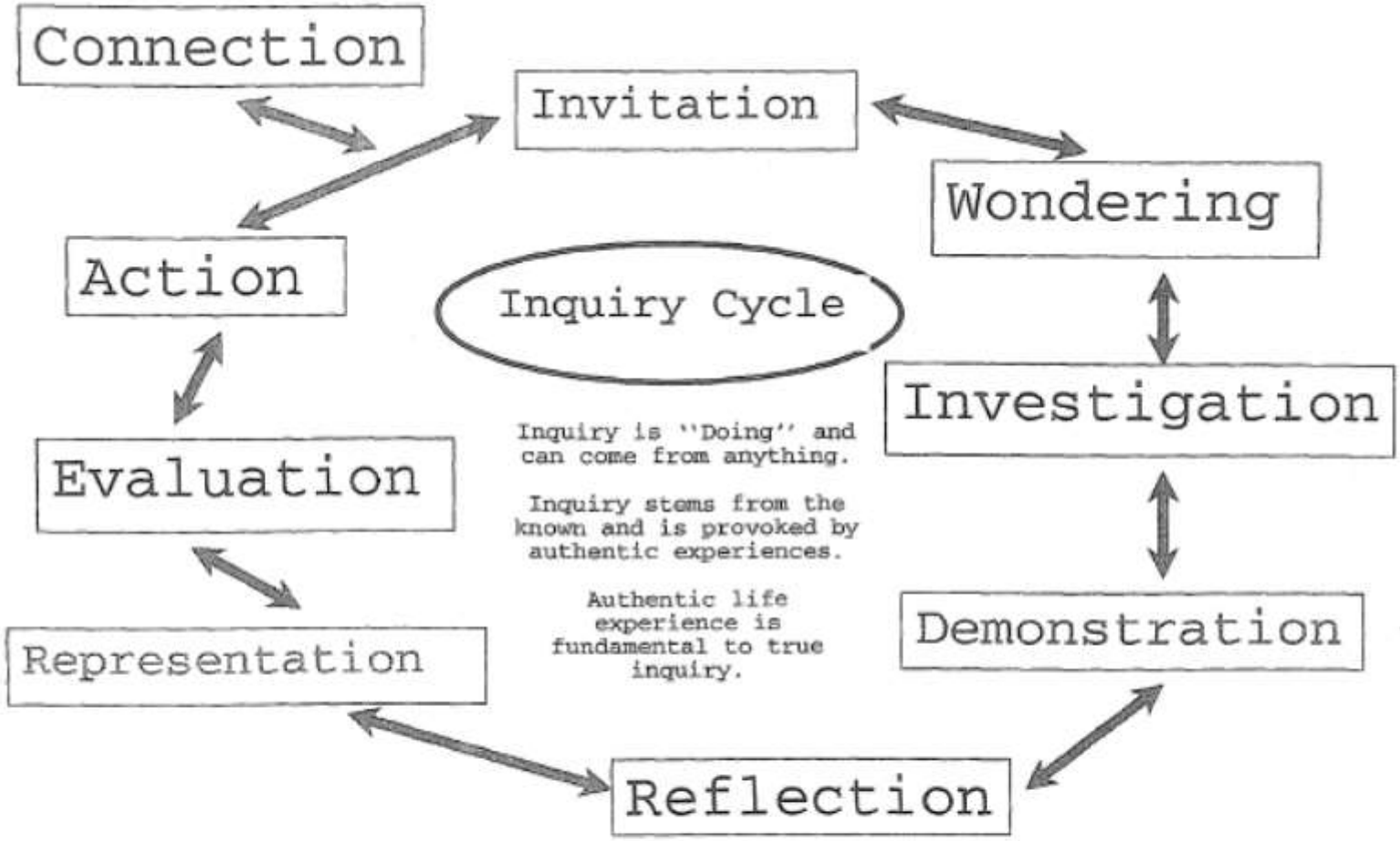
Ontario School Library Association Model #1



Ontario School Library Association Model #2



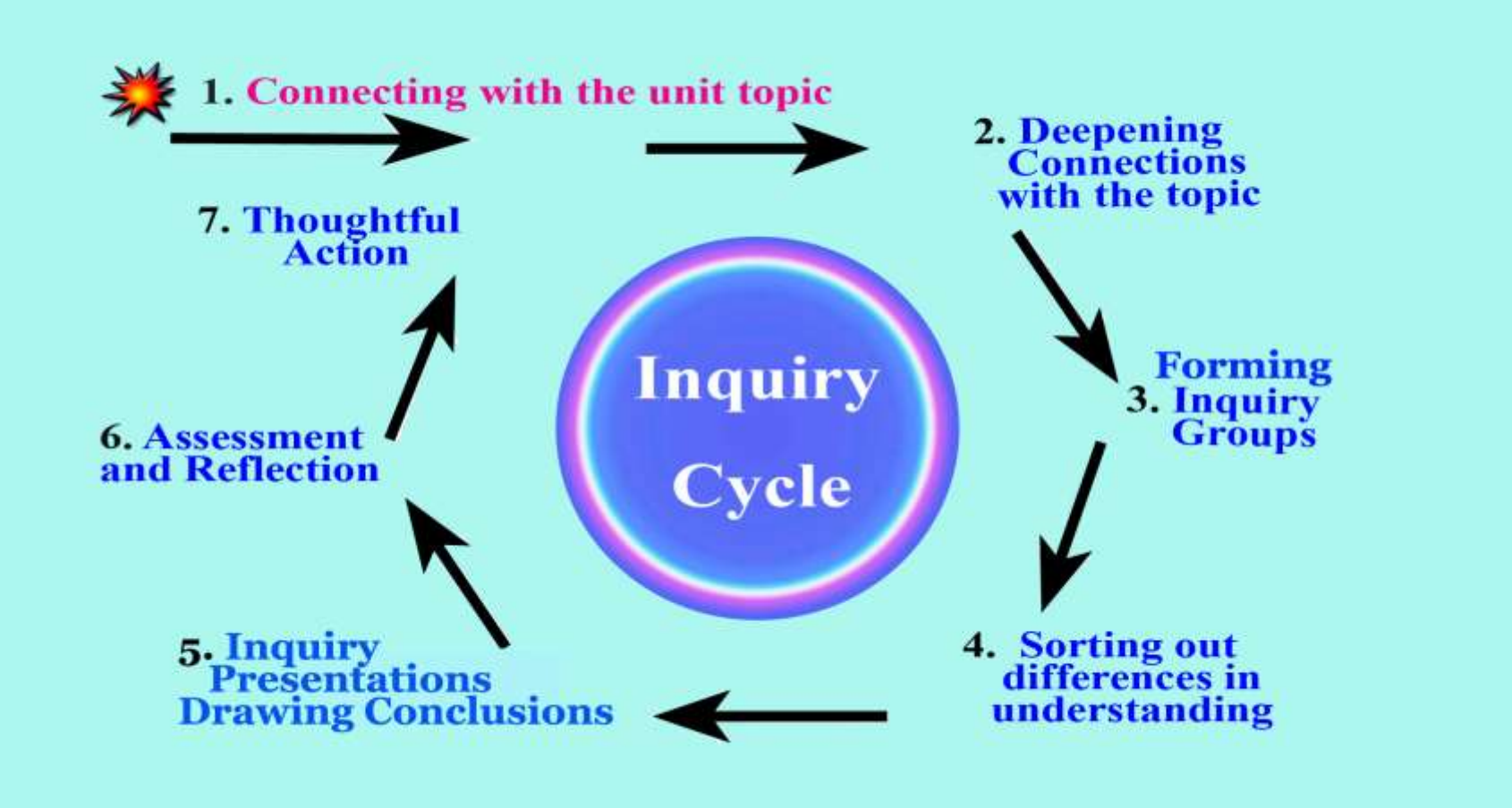
Kath Murdoch's Inquiry Model



Classroom Connections: Strategies for Integrated Learning Kath Murdoch

ISBN 1875327487

Inquiry Cycle http://www.inquiryschools.net



Let's

Have you ever thought about...

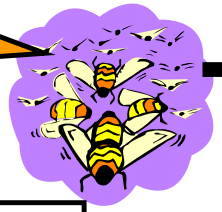
Think about your current unit of inquiry. What interests you???

Let's Explore!

"...wander and wonder..."

Talk to people	Read stuff
Investigate	Listen
Go places	Write

What's the Buzz?



Ask questions

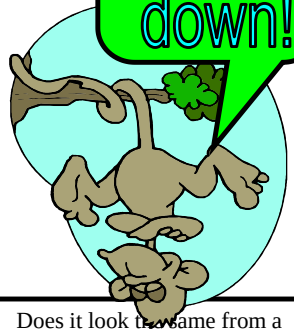
Find answers

TALK!

Is yours the best answer?

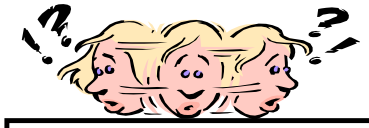
Report back

Hang upside down!



Does it look the same from a different perspective?
How do other people or groups or cultures view your idea?

Time Out!

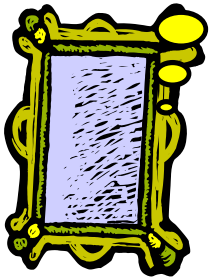


I have heard what other people think…what do I think? What is my opinion?
Take some time out to record your ideas. Ask yourself: "How do I know ?" "Where is my evidence?"

Ladies and Gentlemen!

Get ready to present your work to an audience.
It's time to show us where you're at!

Mirror, Mirror...



Reflect on your work so far: Get feedback from the class, from the teacher, from home. Ask yourself what you have learned: about your topic, about the inquiry process, about investigating a topic or a question.

Standing at the Crossroads...

So what?
How have I changed?
What path do I take now?
Am I satisfied?
Do I have new questions?
Am I finished with this for now?

Sample of inquiry model process created by a teacher and her grade 2 class.

MAKING SENSE OF INQUIRY CYCLES

Created by Natasha Hutchins at www.prodivame.com

Here are some examples of inquiry cycles aligned with Kath Murdoch's model. Use the cycle that supports your inquiry and leads to ACTION.
Many cycles or processes have elements that are key to a quality inquiry, such as, the traits for writing, or, the elements of music for composition.
As inquiry is an active present verb, it is also important to plan for inquiry where students are actively connecting and thinking within the discipline(s).
For example, students should not only study scientists and their discoveries, but also experience BEING a scientist to make his or her own discoveries.

Inquiry Cycle	Personal and Social Development	Writing Process	Reading Comprehension	Scientific Method	Research Skills	Math Problem Solving Process	Creative Process		Arts Responding Stages
							Dance	Music Composition	
Tuning In	Concrete Experience	Pre-Writing	Prior Knowledge/ Predicting	Make Observations	Formulating Questions	Understand	Inspiration	Inspiration	First Impressions
				Think of a Question					
Finding Out		Drafting	Visualising	Research the Topic	Observing			Composing	Description
			Connecting						
Sorting Out	Reflective Observation	Sharing	Questioning	Make a Hypothesis	Planning	Plan	Exploration	Sharing	Analysis
			Inferring						
Going Further	Abstract Conceptualisation	Revising	Summarising	Plan the Experiment	Collecting Data	Act		Revising	Interpretation
				Conduct the Experiment	Recording Data				
				Record the Data	Organsing Data				
Making Conclusions		Editing	Evaluating	Analyse the Data	Interpreting Data	Reflect	Expression	Practicing	Background Information
				Make Conclusions					
Taking Action	Active Experimentation	Publishing	Synthesising	Present Findings	Presenting Research Findings			Performing	Informed Judgement

By: Natasha Hutchins

Inquiry

What it is:

- Exploration
- Self-guided
- Purposeful
- Process
- Active construction of meaning
- Teacher-facilitated
- Never finished
- Inclusive of personal experiences
- Student and teacher-driven
- Open-ended, meaningful questions that lead to exploration and connections

What it isn't:

- Teacher-centered
- Rigid
- Right/wrong answers/questions
- Product
- Quantity
- Just covering content
- Rote memorization
- Solely worksheet-based
- Only teacher-driven
- Just asking questions

“The greatest differences between inquiry learning and didactic teaching are not in the tools themselves, but in how the class functions as a community to develop and use these tools in the pursuit of new insights. Several social aspects are involved: The classroom community is underpinned by shared purposes and values; there are shared classroom routines and approaches; there are shared ways of talking that support the main purposes; the students have varied and changing roles and relationships. It is useful to think of these community aspects of learning as processes of transformation.”

A quote from Simon Davidson, Taking the PYP Forward

Break Time

- Please be back at 10:15

Zoom In

What do you see or notice?

What is your hypothesis or interpretation of what this might be, based on what you are seeing?

Zoom In

- What new things do you see?

- How does this change your interpretation? Has the new information answered any of your wonders or changed your previous ideas?

Zoom In

What lingering questions remain for you about this image?

The Structure of Knowledge

You tube: What is concept based learning?

Based on the work by Lynn Erickson

Groups Discuss the following:

1. What is the difference between a topic and a concept?
2. What is the difference between a fact and a generalization?

Share out some thoughts…

2-D vs 3-D Curriculum & Instruction

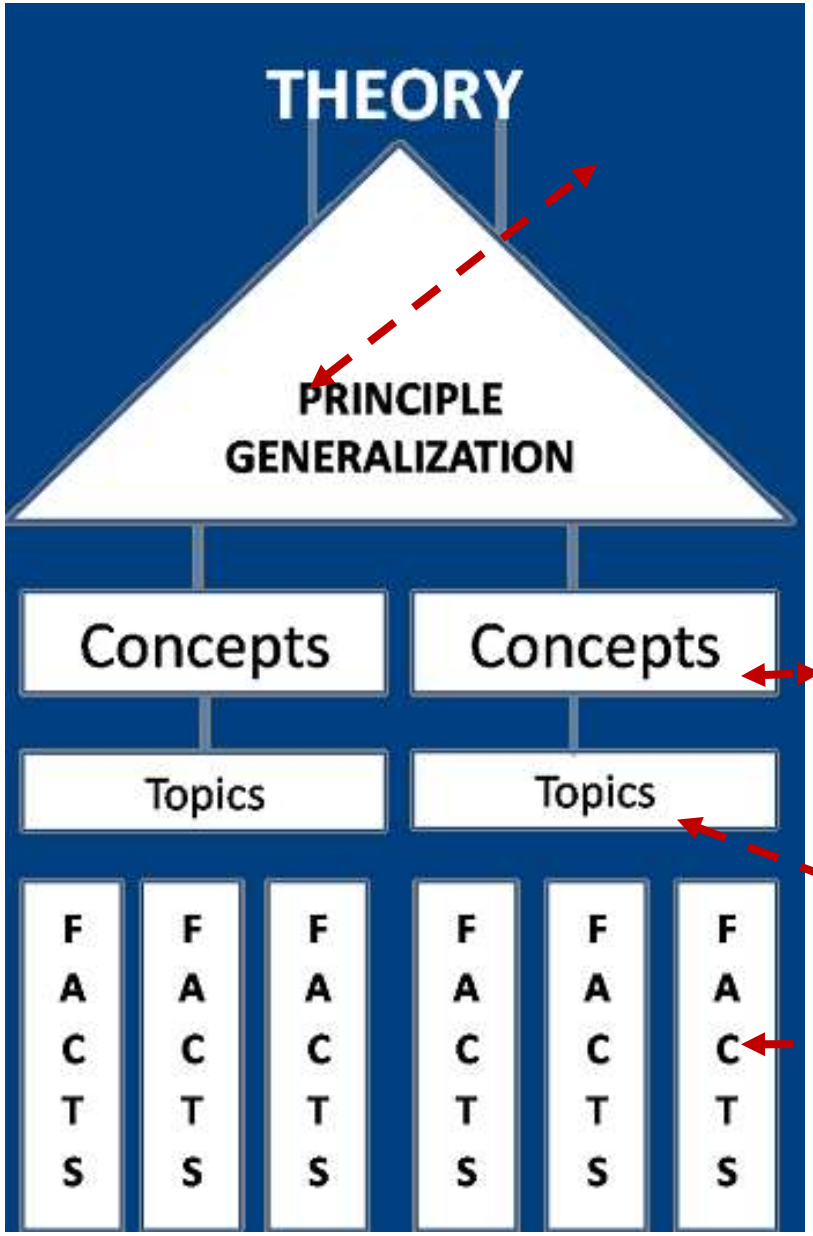
- Traditional curriculum and instruction (including many P.L.O.'s) has been 2-D (**know** and **be able to do**). This stops at just the "facts" and "topics".
- A typical standard may be ***"describe the development of British Columbia's economy from 1815 to 1914."***
- Note the typical verb ("describe") followed by the topic. This fails to take the student to the third dimension: **conceptual understanding.**

What is *concept-based curriculum*?

How is it different from the traditional *topic-based curriculum*?

How do we *scaffold thinking* from lower to higher levels?

The Structure of Knowledge

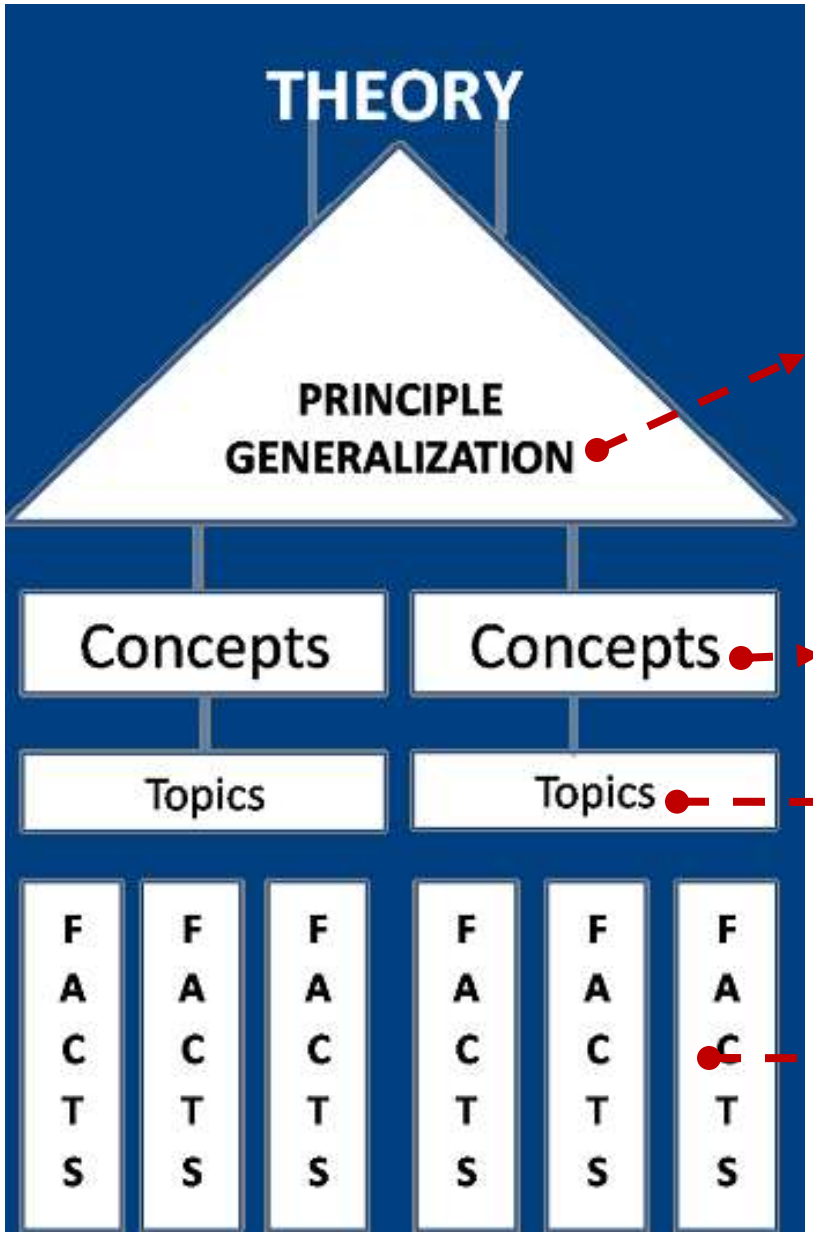


<u>Generalizations:</u> 2 or more concepts stated in a relationship **This is where we want the Capstone questions to get to!**

Concepts are the "big ideas" that are generally **timeless, universal, abstract to some degree, transferable, and are usually 1 or 2 words**

Facts and Topics are **locked into time, place, and situation**.

The Structure of Knowledge



Generalization:

Environmental factors influence the **adaptations** of **living things**.

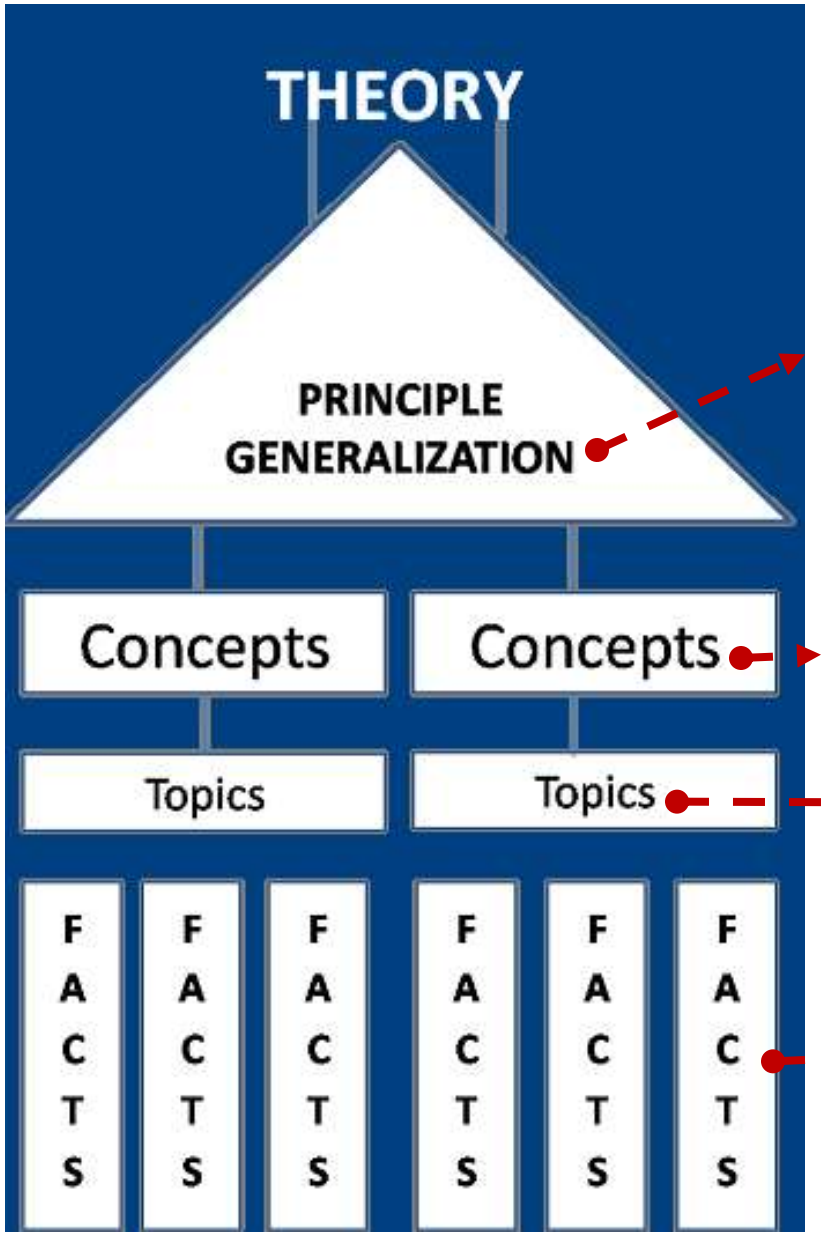
- **living things**
- **environment**
- **behavior patterns**
- **adaptations**

Biology in the Florida Everglades

Alligators and endangered species live in the Everglades

Pythons are becoming more numerous in the Everglades

The Structure of Knowledge



Generalization:

Weight, transfer, follow through, and **force** determine the accuracy of a throw. **3**

- **Weight Transfer**
- **Follow Through**
- **Force** **2**

Throwing Skill **1**

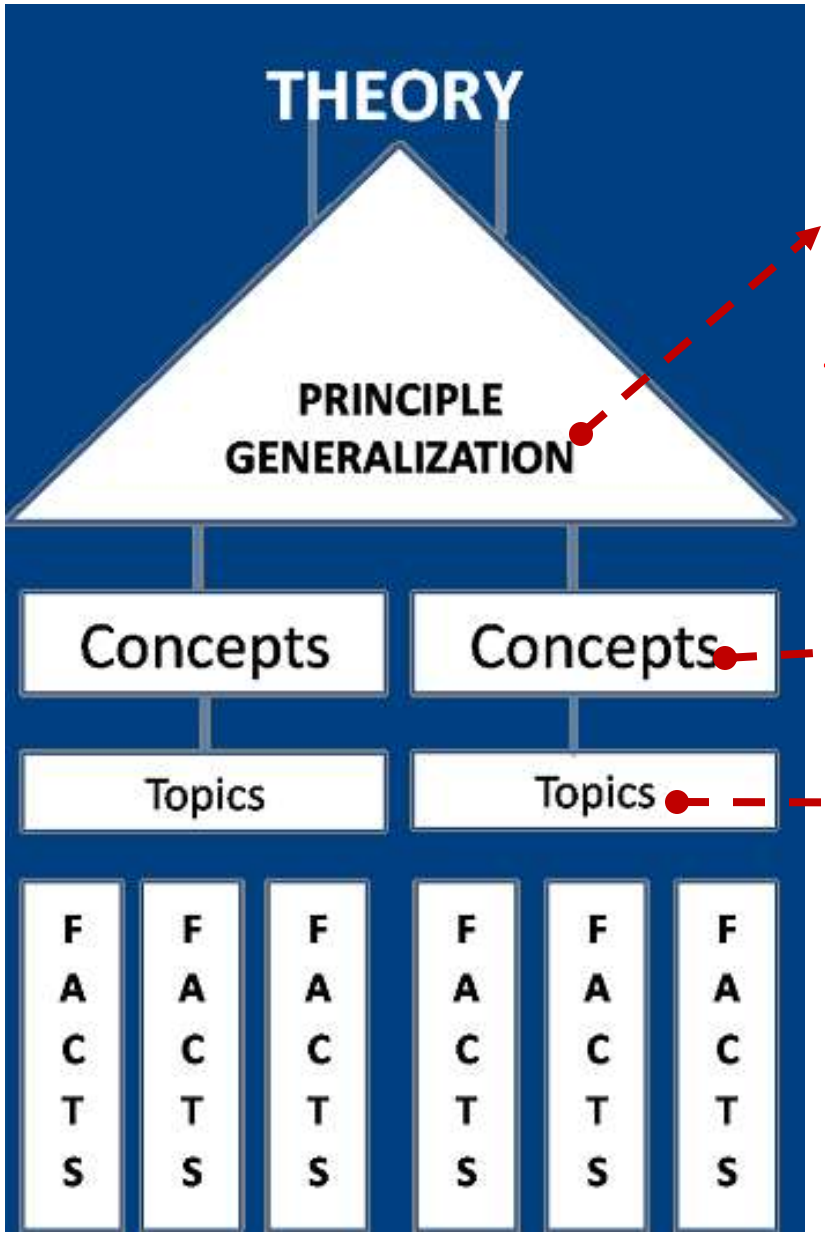
The harder you throw the faster a ball goes.

The way you grip and throw a ball affects where it goes.

Let’s try together to structure our knowledge

Writing a “Level 1” Generalization(Low Level)

- Each group should choose two related concepts about economics from related concepts list.
- Use a “Level 1” verb (affects, impacts, influence, is/are/have)
- Write a “simple” Level 1 generalization about economics on chart paper
- Be ready to share out.



The Structure of Knowledge

(THINK: "The student understands that…):

3. _____(use a Level 1 Verb)____

_____.

2.

1. **B.C. trade and competition**

Examples of Related Concepts

Economics

- **Markets**
- **Supply and Demand**
- **Cost**
- **Interdependence**
- **Beliefs/Values**
- **Goods/Services**
- **Conflict**
- **Cooperation**
- **Perceptions**
- **Patterns**
- **Power**
- **Systems**

“Level 1”
Verbs

affects | impacts | influence | is, are, have

“Level 1” Low Level (Generalization Statement) for “B.C. Trade & Competition”

Let’s share out some “Level One” Generalization Statements for the topic “B.C. Trade & Competition

Scaffolding Thinking:
Writing intermediate generalizations

To SCAFFOLD a Low level (Level 1) generalization to an Intermediate generalization”(Level 2)…

- Ask **“HOW?”** or **“WHY?”** or **“SO WHAT?”**
- **<u>The GOAL:</u>** To make our “Level 1” questions “Level 2”… OR to START at “Level 2”.

Scaffolding Thinking to Complex Levels

Going even deeper…

- To move from an **intermediate generalization** to a **Universal generalization (construct)** try and strengthen your verb or even add another layer by adding a third related concept.

Scaffolding Thinking to Complex Levels

Social Studies Concepts

Economics Concepts

- Needs/wants
- Scarcity
- Goods/Services
- Choice
- Resources
- Value
- Opportunity costs
- Costs/benefits
- Market economy; markets
- Command economy
- Consumers/producers
- Incentives
- Production, consumption and distribution
- Exchange
- Trade
- Imports/exports
- Labor and labor productivity
- Wages/income
- Money
- Specialization
- Supply and demand
- Competition
- Price
- Exchange rate
- Standard of living
- Productivity

Sharing out…

- **RISK-TAKERS**: Share a few examples out with whole group. (Your Level 1, Level 2, and Level 3 (describe how you got there)

Using WHERETO to Focus on Learning:

THE 'BIG IDEA' or ENDURING UNDERSTANDING BECOMES ARTICULATED IN THE WRITTEN, TAUGHT, AND ASSESSED CURRICULUM USING BACKWARDS DESIGN

W = **W**hat will students be learning? **W**hy is it worth learning?

H = **H**ow do learning activities "**H**ook" and engage the learners?

E = What learning **E**xperiences will develop and deepen student understanding?

R = How are students encouraged to **R**ethink, revise and refine their ideas?

E = How is student self-**E**valuation promoted?

T = How are learning experiences **T**ailored to address unique student needs? (Do they allow for differentiation)

O = Are learning experiences **O**rganized and sequenced to maximize student learning?

Wiggins and McTighe, 1998

Examples of "Related Concepts"

Science	Social Studies	Concepts in Text	Writer's Craft	Reader's Craft
Order Organism Population System Change Evolution Cycle Interaction Energy/Matter Ecosystem Habitat Interdependence	Conflict/Cooperation Patterns Scarcity System Change/Continuity Culture Supply/Demand Civilization Migration/Immigration Interdependence	Prejudice Perspective Conflict Cooperation Power Relationships Envy Emotions Oppression Influence	Organization Word Choice Context Conventions Fluency Voice Presentation Symbolism Allegory Metaphor Protagonist Antagonist	Inference Context Clues Meaning Paraphrase Summary Text Structure Reading Rate Directionality Self – regulation Imagery Genre Background Knowledge

"Related Concepts" for Social Studies

Macro-concepts:

- Place
- Space
- Region
- Location
- Human/environmental interaction

Specific (Micro) Concepts:

- Physical environment
- Landforms
- Geographical Patterns
- Natural Processes
- Migration
- Population density
- Growth rates
- Cultural landscapes
- Urbanization
- Settlement patterns
- Geographical locations
- Rural/urban
- Natural resources
- Technology
- Natural disasters
- Spatial organization

Social Studies Concepts

"Related Concepts" for Economics

- Needs/wants
- Scarcity
- Goods/Services
- Choice
- Resources
- Value
- Opportunity costs
- Costs/benefits
- Market economy; markets
- Command economy
- Consumers/producers
- Incentives
- Production, consumption and distribution
- Exchange
- Trade
- Imports/exports
- Labor and labor productivity
- Wages/income
- Money
- Banks; financial institutions
- Specialization
- Supply and demand
- Competition
- Price
- Exchange rate
- Standard of living
- Productivity

“Related Concepts” for Physical Education

Examples
Space
Movement
Angle
Action/Reaction
Energy
Flexibility
Endurance
Speed
Strength
Patterns
Cooperation
Agility
Motion
Force/Power
Behaviors
Development
Weight Transfer

Example from Elementary

Fact: Plants can not grow with water and light.

- Lower-level generalization: **Plants need certain things in order to grow and survive.**
- Intermediate-level generalization: **We have an impact on the growth and survival of plants.**
- Universal-level generalization: **Understanding that our actions impacts the growth of plants, helps look after our environment.**

Affinities

"A mind grows through the pursuits of deep interests, the following of its inclinations. An affinity can bring on expertise. I would like to see every kid become an expert on something, accumulating more knowledge and insight on particular topics than anyone else…Parents can make this happen. Schools should insist on it."

Mel Levine

Lunch

- Please be back at _____?

Criteria for a Capstone Project

- Significant and relevant
- Real-life issue or problem
- Lends itself to open-ended inquiry
- Lends itself to local research
- May have global significance-relevant to people in other parts of the world

Role of the Teacher: Facilitating Meaning Making

Constructing meaning –

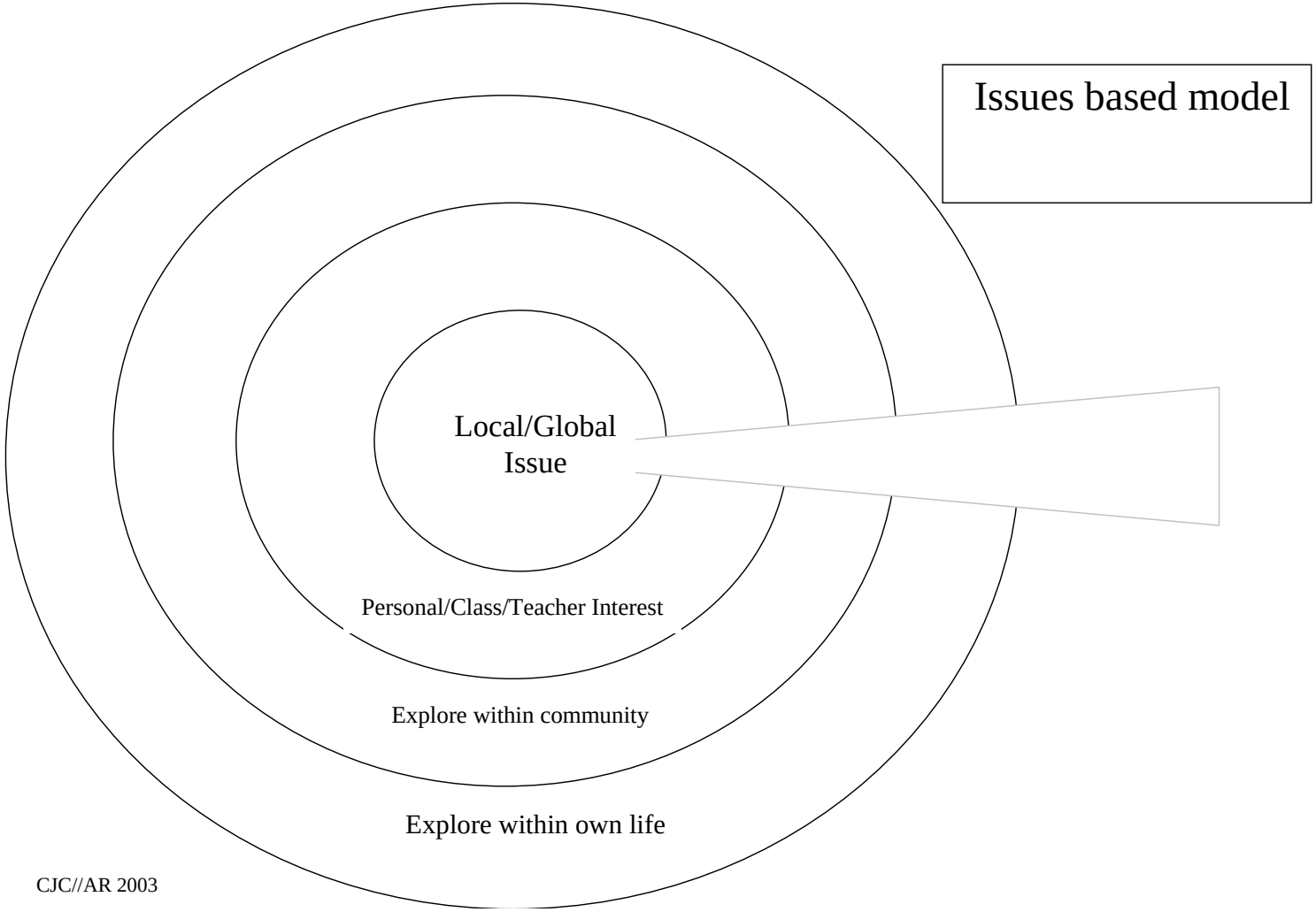
- Facilitation by adult/mentor/teacher
- Mediation to avoid misconceptions and topic focused ‘projects’

Example;

- I love Sport
- I like to do lots of Sports
- How does Sport affect me?

Are there some sports which are not good for young children’s bodies?

Making meaningful connections



CJC//AR 2003

The Deforestation Group Model

The World Hunger Group sharing with First Graders

Issues based model

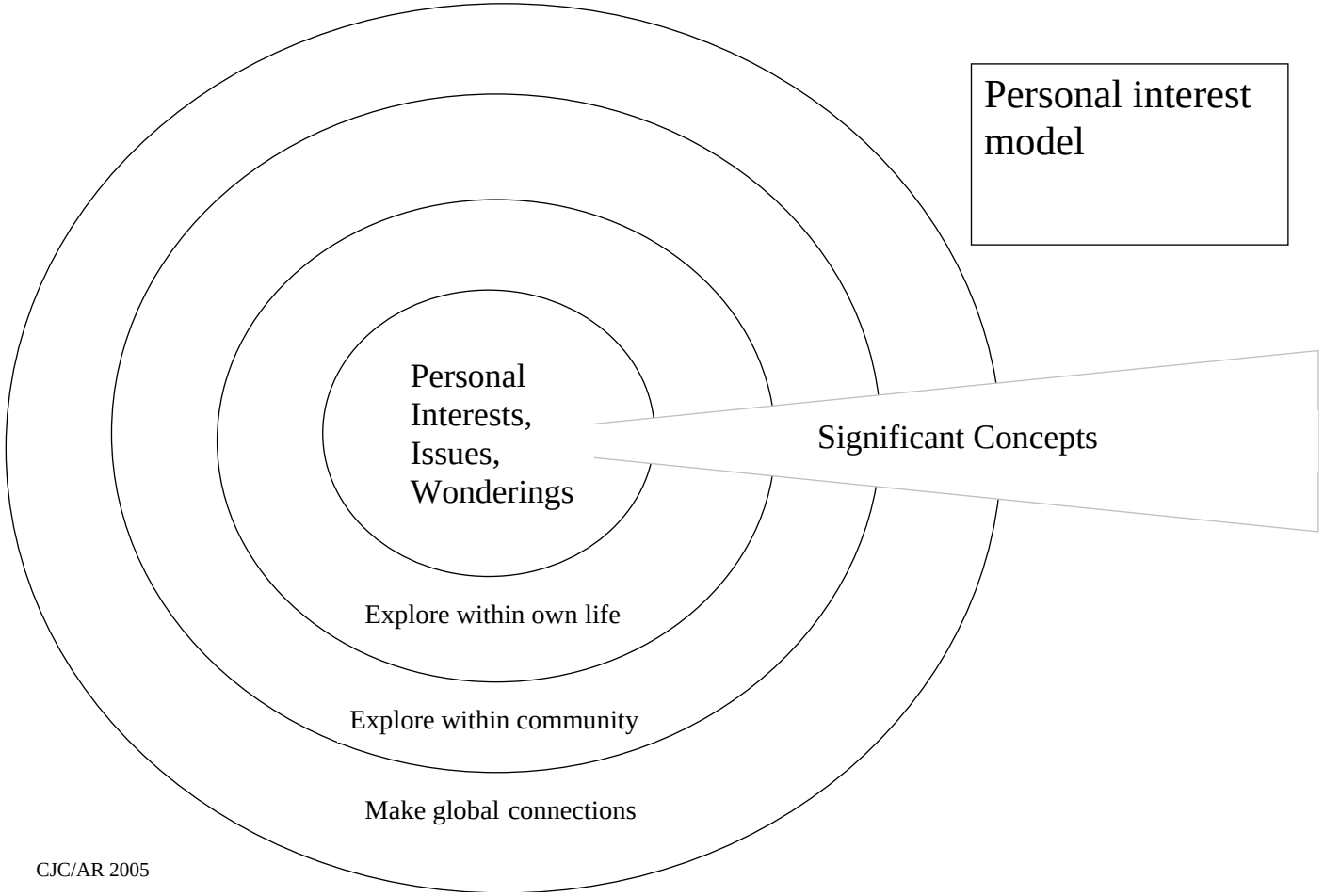
Some Positives

- Can lead to significant action
- Can choose local or school-based issues (e.g., traffic, homework, lunch lines)
- Teachers can help choose things that are more manageable

Some Negatives

- Heavily reliant on text-based research
- Unclear what is driving us through – often topic / research based

Making meaningful connections



CJC/AR 2005

Sports Technology

Personal Interest Model

Some Positives

- Learner is at the center – connecting to what makes them angry, excited, sad, confused
- Passion – kids need to develop personal expertise
- Easier to sustain motivation

Some Negatives

- Can lead to more groups to manage
- Collaboration can be trickier
- Sometimes tricky to take an INTEREST and turn it into an ISSUE

“Representing what has been learned to an audience opens an opportunity for learners to pull back even further to reflect on what is of value from their learning for themselves and the world.” Kathy Short

“Exhibitions are the best way to measure learning because they put the kids right in the midst of their learning.” Dennis Littky

Stages in Backward Design

1. Identify desired results
2. Determine acceptable evidence
3. Plan learning experiences and instruction

Focusing the Plan

- Beginning with what we know about the learners before beginning our planning

- What are the learning, thinking and skills characteristics of your Capstone students?

Organizing the Capstone

- Thinking about the various roles (Teachers, Parents, Principal)
  - What needs to be done?
  - Who is responsible?
  - When?

Things to consider…

- Determine **timeline** using backward design
- Determine **logistics** – groupings, who will be involved (mentors or not?), space for staging, costs, resources, booking
- **Inform** whole school community – other teachers/ admin., students and parents, board, community
- **Keep records** of teacher collaboration and reflection

Assessing the Capstone

- Assessment of the Capstone as a process and as an event

We need ways to assess and evaluate the success and achievement of this year's event and this year's process- looking at this group of students and this group of teachers

Assessing the Capstone

- **The Capstone as an assessment of the program within the school**

Using the Capstone to assess the strengths of the teaching and learning within the school – looking at this year as one of several years. How is the program affecting student learning? How can we improve the students' high school experience?

Planning the next steps

- In job-alike or school groups begin to make plans for this year's Capstone.

- Who has to do what, when?

- First steps:
  - Who do you need to talk to first?
  - What do you still need to know or do?
- Make and action plan

"To begin with the end in mind means to start with a clear understanding of your destination. It means to know where you are going so you better understand where you are now and so that the steps you take are always in the right direction."

Stephen Covey

The Seven Habits of Highly Effective People

Closing activity…

Please take a moment to complete the following as a wrap up for the day.

- “I used to think _____, but now I (think, understand, know) that _____ and am still wondering about _____.”

- Thanks for a great day!
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Something for us all to remember…

- ✓ As with any inquiry there will be times when it seems that students are not being very productive.
- ✓ Sometimes there will be a lot of discussion and thought but this will not result in anything that can be seen.
- ✓ Students (and adults) need time and space to wonder about things and consider their plans.
- ✓ This is why we place so much emphasis on the reflections and interviews during the process. They will show the understanding of concepts and application of skills (e.g. problem solving) more than the final product.