Developing More Curious Minds And Schools of Inquiry

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Our Agenda:

Enhancing Inquiry with Short/Long Term Approaches

I. Modeling our own inquisitiveness

II. Short Term Approaches:

A. Observe, Think and Question

B. Developing "deeper, more philosophic questions."

C. Using Inquiry Journals for Reflection

III. Longer Term Approaches

A. Problematic Scenarios

B. Initiating Inquiry with Culminating Assessments

"What does/should inquiry look like in your classroom?" Your vision:

Story of Isidore I. Rabi ("Izzy") and Your immediate questions/concerns about fostering inquiry/critical thinking in classrooms and throughout the school.

The Reflective Questions we ask ourselves that enhance personal agency and self-control.

Situation: What do you want to know more about? Assess needs in reaching your vision of the inquiry-based classroom.

Planning: "What is my goal/task for this workshop? How will I achieve it?"

Monitoring: "How well am I/are we doing?"

Evaluating: "How well did we do? What might we do differently next time and why?"

Level I Some short term approaches to create environment that invites and supports inquiry:

A. Personal Modeling of Inquisitiveness

B. Planning, Monitoring and Evaluating (PME)

C. Observe, Think and Question—objects, pictures, articles, art works, experiences. . .Show and Tell, artifacts from units.

D. Inquiry Journals—following OTQ, readings, recitations, and presentations

E. Reading stories with KWL and poetry with OTQ

F. Using Critical Thinking Questions to assess claims, judgments and conclusions

G. "Parking Lot/Wonder Walls" A repository for students' questions. "Wondering Wednesdays"

H. Developing good cooperative learning skills/attitudes— listening to each other, responding, building upon each other's ideas, working collaboratively. . .

Level I: Creating the Invitational Environment--Modeling Our Own Inquisitiveness

A. **Using objects from our experience**
B. **Current stories in the news**
C. **Reflecting in our Inquiry Journals**
D. **From personal experiences, e.g. Antarctica.**

What characterizes Antarctica, these objects and stories:

Novelty,

Benefits of our modeling our own inquisitiveness:

Share your own experiences of significant persons who modeled inquiry for you. Who opened you to wondering about the world? How did you grow up to be an inquisitive person? Or what impeded your growth toward inquisitiveness?

Elements that foster Curiosity—What stimulates our thinking?

Novelty **Doubt**

Level II:

Observe, Think and Question

Observe: What do we see? Note all sensations with the object and/or experience: sight, touch, hearing, taste. . What do you notice that seems significant? Note that which all agree upon is observable.

Think: What do your observations remind you of? What are you recalling in prior knowledge? Differentiate between observations and inferences.

Question: What curiosities come to mind? What do you wonder about?

Developing More Complex Questions

Observe, Think and Question with Artifacts:

Initial Questions:

Select those that seem "most important" and determine why:

Questions from research. See p. 32 :

Consult 3 Story Intellect. Develop questions at level II or III, p. 9:

Reflections on your questioning. Use Inquiry Journal ("What am I observing about my own questioning processes?"):

Inquiry Journal Entry Stems. . .

I noticed/observed/saw/experienced. . . . and my thoughts/feelings/questions are . .

What I am curious about. . .

It says, ". . . ." but I do not yet understand. . .

I saw. . . and what I want to know is. . .

I really wonder why. . .

This reminds me of. . . relates to. . .

What's important here is. . .

What I'm trying to understand/figure out. . .

Maybe. . . Perhaps. . .Might it be that. . ?

The big ideas here are. . .

This makes me feel. . . What I feel is. . .

What if. . .?

What I'm learning about my questioning, thinking, searching for answers. . .

Three Story Intellect (Revised) *--Based on Benjamin Bloom

Level III Applying/Using Knowledge to demonstrate Understanding

Evaluate
Judge
Imagine
Speculate. . . If. . . then
Estimate
Apply a principle
Forecast
Create a product

Level II Processing Information [in order to Understand]

Compare/Contrast
Classify
Identify Variables
Analyze
Distinguish Cause and Effect/Fact and Opinion

Pose problems, generate solutions and solve
Make decisions

Infer and draw conclusions

Hypothesize, experiment and draw conclusions

Explain (Why) Justify decisions/conclusions

Level I Gathering Information

Describe	Name
Observe	Recite
Record Data	Recall

Source: Illinois Renewal Institute/Skylight Publishing, Inc., 1990
See also, *Developing More Curious Minds* (2003), p. 64 and *Problem-Based Learning—An Inquiry Approach* (2007, Corwin), p. 18.

Question Frame

A question frame is an attempt to provide a generic set of questions to pose about complex, perplexing situations:

Critical Factors/Elements
Systems/ Symptoms
"What is the evidence/data?"

History
Causes
Assumptions
Precedents

"Why?"

Puzzling, Complex Situations:

Natural, Personal, Mechanical

Future
Effects
Solutions
Possibilities
"What if we do this?"

"How do we know?"

Related Situations
"What can we compare this to?"
c/c

Concluding Statements/Questions:
"What do we want to do?
What are our tentative conclusions?
What questions do we have now?"

Personal Inquisitiveness Inventory:

I. Assessment: "What I've observed about my own critical thinking/inquiry processes. . ."

II. Goals: What I'd like to get better at and why

III. Strategy: How will I work toward this goal? (elicit ideas from at least one other person)

A.

B.

C.

IV. Resources

V. Indicators of Success:

III. Spectrum of Teacher-Student Control of Decision Making

Teacher Directed Inquiry	Teacher-Student Negotiated Inquiry	Student Independent Inquiry

Who makes which decisions about content, objectives, strategies, assessments (rubrics) and sharing of findings?

Teacher-Directed Inquiry

Content Concept: Cultures and Cultural Diversity (Who We Are)

Essential Questions: What is culture? How they reflect how we live?
What is cultural diversity and why is it important?

Objectives: 1. To describe and explain culture and its manifestations.
2. Compare/contrast different cultures and explain differences.
3. Analyze new culture to identify its priorities and rationale
4. Create a model culture reflecting your own philosophy/needs

A Problem-Based Inquiry Approach—Getting students involved at the beginning of the unit and preparing for Summative Assessments.

"You are a member of a team of cultural anthropologists/paleontologists/artists and museum curators on a dig excavating the remains of a possible lost civilization. One member of the team finds an artifact and wonders what it might represent. You are charged with observing, analyzing and raising key questions about this artifact, conducting research and sharing findings—Meaning and relevance of the piece--with local museum experts interested in the people who created it and their culture."

Observations: Use all senses to describe what you see in objective terms. Note color, shape, taste, size, textures. . .Avoid drawing premature conclusions. ***Differentiate between observations and inferences.***

Think and Relate: What do these observations make you think of? Identify related prior knowledge. Tentative conclusions. . .

Your Wonderings/Puzzles/Confusions/Questions

Analyze this experience:

1. Identify major Observations, Thoughts (Connections/Relationships) and Questions. Note differences between Observations and Inferences:

2. Initial Questions following observation and reflection:

3. Questions following research, p. 33:

4. Questions using 3 Story Intellect format, p. 9 :

What do we do with all of these questions generated at the beginning of a curricular unit?

KWHLAQ

Prior to embarking upon this approach we usually will provide students with an Initial Inquiry Experience similar to ours. This may involve a field trip, examining artifacts, news stories and the like. In other words, we will need to stimulate students' prior knowledge and interest beforehand during these initial, invitational experiences (anticipatory set/motivational experiences)

K What do we think we already know? Explore prior knowledge. (May be elicited from Observe, Think and Question approach)

W What do we want and *need* to find out?

H How will we proceed to investigate our questions? How will we organize time, access to resources and reporting? How will we self-assess our progress (e.g. with a scoring rubric)?

L What are we learning (daily)? And what have we learned at the end of our investigations?

A How and where can we apply the results of our investigations—to this and other subjects/to our daily lives?

Q What new questions do we have now? How might we pursue them in our next units?

Sources**: J. Barell 2007 2/e *Problem-Based Learning: An Inquiry Approach*, Corwin. And 2003 *Developing More Curious Minds,* ASCD.**

Long Term Curriculum Development

There are many ways to foster and include inquiry within a long term units in all subjects. Here are several suggestions:

I**. Start Small:**

A**. Model** own Inquisitiveness

B. Bring in artifacts of importance for **OTQ** and reflections on kinds of questions generated—objects, pictures, written descriptions. . . .

C. Commence using **Inquiry Journals** wherein students can observe, think and question. Where they can use a framework such as:

Record—what they observe, read. . .
Relate—to self
Reflect—generate questions

D. Practice with **3 Story Intellect**. Challenge students to pose questions and align/classify them in accordance with 3 Story. Use Question Frame for same purpose.

E. Post **students' questions** about room as models.

F. Develop good critical questions as with **SEADS.**

II. **Longer Term:**

A. Plan for Content Concepts, Standards, Objectives, **Problematic Scenarios** and Authentic Assessments. See p. 30.

B. Use **KWHLAQ** approach with Problematic Scenario, see. P. 27.

C. Integrate above (I) strategies within unit of inquiry wherever possible.

D. Continuously reflect on progress: What have we learned about our inquiry process, about the concepts/ideas we're learning?

Planning for Long Term Curriculum Development

"How do we plan for students' questions, use of local/state standards, objectives, strategies and authentic assessments?"

I. Identify major content topic/issue/concepts within your unit
(Consult State Curriculum Standards)

II. Web out major elements/factors:

III. Identify concepts/ideas/principles of major importance, ones you must teach consulting local, state and subject matter standards, as well as students' needs, interests and abilities:

IV. Identify initial problematic scenarios ("You are a paleontologist. . .) A good initiating problematic scenario can answer these questions: 1. "What will spark students' interest? 2. How is it complex, fascinating, mysterious, inviting of inquiry? 3. How will ps transition from/build upon prior knowledge?" (Determine how this IPS can serve as Authentic Assessment) Consult elements that foster curiosity, p. 29)

V. Objectives. Students will be able to (Include intellectual challenges from Levels II and III of Three Story Intellect):

VI. Strategies:

VII. Assessments—Directly related to and dependent upon Problematic Scenario.

Elements of experience that foster curiosity, thinking and investigations (according to researchers Berlyne, Dewey and others):

Novelty, Complexity, Ambiguity, Conflict, Perplexity, Doubt, Difficulty and Uncertainty

Characteristics of Problematic Scenarios

Doubt, difficulty, uncertainty, novelty and mystery—That which fosters curiosity and invites exploration and challenges us to think productively.

Complexity—Possesses many facets, elements or ways of investigating

Boundarylessness; open to question at many different levels, problem solving and critical thinking. (Based on GE's Jack Welch)

Robust—Concepts within are significant within the unit and curriculum (e.g. dependence, interdependence, ocean ecologies and conservation).

Researchable—Information is available from a variety of sources.

Transferability—Concepts may have meaning within other subjects and contexts.

Fascination—Captures imagination of our students.

K-1 "You are a meteorologist charged with explaining the water cycle. . . "
2 "You are a planner responsible for redesigning our playground. . . ." You are responsible for helping rebuild New Orleans. . .
3 You are responsible for finding ways to solve problems of ocean pollution
5 You are responsible for designing an ABC book on LandForms
6 You must prevent a pyroclastic flow from destroying your town. . .
8 You are responsible for designing a widget factory. . .
9 You are to assess needs of your country and make application to the World Bank
11 You must decide whether to drop the atomic bomb, how to keep colonies within British Empire
12 You must determine extent of bacteria contamination, make recommendations

Creating a Problematic Scenario

Grade Level Subject

1. Identify major curricular concepts/ideas/principles/skills you wish students to work with:

2. Identify major intellectual processes students will use in working through the problem (Consult Levels II and III):

a. Problem Solving
b. Decision Making
c. Hypothesizing/creating experiment/testing
d. Creating a product

3. Identify possible roles, settings and circumstances for the scenario:

4. Create a "You are. . ." situation:

5. What are specific objectives within this scenario?

Formative and Summative Assessments:

". . .students who achieve a deep understanding of science content through inquiry usually do well on conventional tests."
***Inquiry and the National Science Education Standards* (2000)**

A. Formative Assessment:

"The addition of opportunities for formative assessment increases students' learning and transfer, and they learn to value opportunities to revise." (Bransford, 2000)

Ongoing **feedback** on performance, identifying aspects needing improvement, primarily prospective: teacher observations; interviews, inquiry journals and students' self-assessments; quizzes; teacher comments on first drafts of papers/reports/projects; emails; other. .

For example, using students' questions about major concepts (IB) within units. Each student keeps Inquiry Journal of all his/her questions from September to June; monthly reflects to learn about inquiry process, what question she/he has asked over time and where improvement is warranted.

B. Possible Alternative, Authentic and Summative Assessments—Performing/Representing our Understandings (Differentiating Learning and Assessment)

1. These experiences challenge students to find a variety of meaningful ways to express their understanding of content thereby enhancing intellectual flexibility:

Experiments	Solved Problems	Supported Decisions
Written Reports	Dramatic Presentations	Films
Journals/Diaries	Collages	Poetry or Stories
Interviews	News Programs	Dance
Models	Metaphors	Analogies

Each should be accompanied by a written explanation when such will help describe the students' thinking and how she reached conclusions.

These examples, however, do not go far enough. They are the structures within which students demonstrate their understanding. For example, if teachers want students to

demonstrate their understanding of democracy, they can ask students to engage in a number of different and challenging intellectual tasks:

- Define *(e.g., democracy is a form of government)*
- Explain *(e.g., give reasons for how democratic governments function)*
- Exemplify *(e.g., present examples of one or more democracies)*
- Compare and contrast *(e.g., compare and contrast democratic governments with each other and with totalitarian and fascist regimes)*
- Draw conclusions *(e.g., draw conclusions about comparisons and differences between democratic governments and totalitarian and fascist regimes)*
- Identify and analyze problematic situations *(e.g., the conflict between rights of the individual and society at large)*
- Apply *(e.g., apply the concept of democracy to any emerging government in another area, such as Latin America, Africa, or Asia; analyze the strengths of these emerging governments in accordance with the characteristics of a democracy and draw your own conclusions)*

* Create models, metaphors and analogies (*e.g. create a model government in a new country, a model of photosynthesis, an analogy for plate tectonics*)

- Hypothesize *(e.g., What would happen if certain conditions were to prevail within our own (or others') democracies, for example, censorship of the press, curtailment of the right to freedom of assembly, growing intolerance for those who are different, and so on?)*
- Generate or respond to questions *(e.g., What if generals of the army made foreign policy?)*
- Teach the concept *(e.g., teach the concept of democracy to children in elementary school, using examples from the their own lives)*

2. Authentic Assessments

a. Problem-based tasks are "authentic" if they
Are *realistic*, relate to what we do in the world—e.g. solve problems; make decisions; hypothesize and experiment; create

Require *judgment, innovation* and use of knowledge and skill

Ask students to *"do"* the subject

Replicate contexts in which adults are "tested" in the workplace, in civic and personal life

Allow appropriate opportunities to *rehearse, practice, consult resources, and get feedback* on and refine performances and products. (Wiggins, 1998)

b. Afford students opportunities to "engage students in the general forms of cognitive work found in the adult world. . . [with] guided practice in producing original conversation and writing, repairing and building of physical objects or performing artistically." (Neumann, 1996)

3. **Self-Assessment—Informal Learnings/Differentiating Instruction**

We've mentioned several ways in which students can periodically reflect on their own progress. When we ask students to share with us what they've learned and what they find exciting and fascinating, we discover what they have made meaningful in a unit of instruction
Here are a few such informal self-assessments:

Concept Maps—Initially part of the "What do we *think* we know?" at the beginning of a unit, we can continue to add to our concept maps (perhaps using different colors and making entirely new ones) and use these during and after the unit to answer the questions: "What are we and have I been learning? What surprises me? What fascinates me enough to want to continue asking more questions and investigating?"

Thinking/inquiry Journals—By having students record their questions and brief summaries of their investigations, we can challenge them at various points during a unit to respond to: "What are we learning and what do I need to find out more about? What am I learning about myself as a questioner, as an investigator, as a thinker?"

These journals are excellent records of students' questions asked during the entire year. Depending upon students' ages, they can periodically reflect on the kinds of questions they *do* and *do not* ask and learn from their progress.

Folders/portfolios with writings—These folders might include all of the written materials created during a unit. At unit's end we can ask, "What have we learned about our own ways of thinking, ways of investigating, our own writing and analyzing information?"

Weekly "Wraparounds" --In a circle students take turns telling "something he will use from information or activities learned today. Something he will remember from today." (Gregory and Chapman, *Differentiated Instructional Strategies* (2002) p. 44. See for other "Reflections after learning.")

Letters Home—Barbara M'Gonigle taught mathematics in Dumont, NJ for many years and during that time she would challenge her students to reflect on their grades and performance at key points during a marking period. "How well did you do? What were your goals and did you reach them? If not, what will you

do differently in the future?" Following the reflection, Barbara asked her high school students to write letters home explaining their performance and presenting parents with a plan either for sustaining their excellent performance or for improving their performance. Could we use this approach, with modifications, for younger students?

Application of Assessment Strategies:

Objectives:

1. **Students will identify significant elements of cultural artifacts**
2. **Students will analyze and relate given artifact to significant other cultures**
3. **Students will draw tentative conclusions about the culture, its mores, ways of living and the environment** .

Possible Alternative Assessments

Possible Self-Assessment (Write a letter home. . . .

"Dear Mom and Dad,

This is what we're learning about now. . . .

Possible Authentic Assessment:

a. "You are. . ." problematic scenario involving authentic tasks demanding Levels II and III of Three Story Intellect. Where feasible use Initial Problematic Scenario as one Summative Assessment. See Wiggins' criteria above.

What do we do with all of these questions?

With students:

A. Determine "the best questions."
B. Classify, organize, find common, broader questions.
C. Create list of priority questions.
D. Figure out how to answer—"How will **we** answer questions and manage our classroom time, resources. . ?"
E. Plan use of resources: time, texts, persons
F. Plan direct teaching of key concepts not found in students' questions from problematic scenarios.
G. Plan student work groups to share findings, analyze critically and plan for final authentic assessments (part of problematic scenarios.

"What do we do with all students questions, especially those that do not become part of our unit?"

Here are some teacher-generated suggestions from South St. Paul, MN:

1. Create a template to send home:

> Student Name
> Date
> Class
> Here's my question: "I wonder. . ?"
> Parent responses/ideas/new questions:
> Signed by parent/student

Then have students share responses from home with class.
2. Put students' questions in Newsletters sent home.
3. Put questions in Newsletters shared within the school.
4. Post students' questions in hallways, on white boards
5. Incorporate questions within daily announcements to entire school.
6. Send questions off to resource persons within community.
7. Have students jot them down in Inquiry Journals for their own investigation and sharing of answers.
8. Post flip charts, Question Box and/or white boards around schools for students to jot down questions for all to see.
9. Have students select ones they're all curious about for a "Let's find out" session.
10. Share questions with another class to find answers through a Buddy System.

11. Others. . .

Lesson / Unit Design

Grade: Subject: Topic:

Major Concepts to think about and understand.

Objectives: What do we want students to be able to **DO** upon completion of the Unit: e.g. Demonstrate understanding of concepts/principles/ideas/skills. Select from operative challenges within Levels II and III, p. 22/23.

Problematic Scenario that sets goal of authentic assessment "You are. . ." Can/should contain elements of final assessment.
1.
2.
3.

Resources:

Strategies:

Initiating Experience-- 1. e.g. Modeling own inquisitiveness
2. Initial Inquiry Experience (Complex situations to think about, gather information, OTQ) Students generate questions. . . KWHLAQ

Core Experience—

1. Students' research experiences—group work

2. Direct lessons on key concepts

1. Critical thinking experiences related to plagiarism, determining fact/inference/conclusion, analyzing claims for evidence, assumptions, definitions, slant and bias. . .

Culminating Experience/Assessment: Demonstrate understanding of concepts by using Problematic Scenario:

Classroom Interaction Inventory

Seldom Often Usually

1. I model my own inquisitiveness. . .

2. Students feel comfortable posing questions

3. Students freely respond to each others' questions/responses. . . .

4. We work collaboratively. . .

5. I ask most of the questions. . .

6. Students ask good questions about content. . .

7. Students learn how to ask better questions. . .

8. Students organize questions for investigations

9. Students conduct investigations using a variety of resources

10. Students think critically when analyzing sources. . .

11. We—my students and I-- develop authentic, alternative assessments (wherein students are thinking at Levels II/III of 3 Story Intellect)

12. We conduct at least one inquiry unit in a major subject every several months

13. We plan sufficient time for inquiry investigations

14. We receive administrative support for our inquiry projects

15. Students communicate with parents about their inquiries

16. Teachers collaborate on inquiry projects

My Goal: To

School Inquisitiveness Inventory

	Seldom	Often	Usually
1. Our school is a community of inquiry			
2. Teachers and administrators model their own inquisitiveness			
3. Our goals and philosophy stress developing independence, cooperation, inquiry and critical thinking			
4. We use faculty meetings to raise questions about instruction, to share good practices. . .			
5. Our leaders share recent readings on good instructional practices			
6. Faculty meet in a variety of settings to work on instructional improvement:			
a. Book study/action research groups			
b. Peer Observations/Critical Friends (teachers observing teachers)			
c. Curriculum planning			
d. Planning school workshops to share good practices			
e. Analyzing students' work—data driven decision-making			
f. Other. . .			
7. Teacher professional development is a high priority. . .			

8. Problem-posing and solving involve teachers, students, parents and administrators. . .

9. People in positions of decision-making focus on inquiry, critical thinking and related instructional processes. . .

10. The school involves parents in decision-making and action. . .

Areas of Strength **Areas to develop a community Of inquiry**

Your Goals:

Your Strategies/Plan:

Your critical friends/colleagues/supporters:

Time Line

Necessary Resources:

Assessment: How will you know you are succeeding?
Effective Professional Development Practices affecting Inquiry:

Establishing high levels of intellectual challenge and performance standards for *all* students

Organizing ourselves into smaller learning communities of inquiry

Teacher Self-Study Groups using current books and/or research articles of importance

Teacher Action Research

Teacher—Teacher Observations/Peer Observations/Peer Coaching

Data Driven PD and Improvement Plans—Examining student work on a regular basis, conducting needs assessments and setting performance goals.

Peers Sharing their Inquiry Journals

Teacher-led workshops (and/or faculty meetings) on Current Practices

Teachers becoming instructional leaders

Teacher Demonstration Lessons with Observation/Feedback from colleagues

Out of school workshops and Presenting at Conferences

Supervision for improvement of instruction

Principal/administrator/teacher Walk-Abouts, modeling inquiry

Principal/administrator sharing key resource articles for discussion

Participation in teacher-teacher networks (electronic and other)

Using Internet websites and resources (e.g. www.oops.bizland.com)

Matriculating in graduate study programs—at colleges/universities and on-line.

Professional Development for parents.

Plan of Action

Which approaches/strategies do you think you will use when you return to the classroom?

1. **Creating the invitational-to-inquiry environment:**

Modeling own inquisitiveness

PME, Planning. . . Monitoring. . . Evaluating

OTQ with objects/stories/poems/pictures/experiences

Inquiry Journals/Parking Lot/WonderWall/Wonder Wednesdays. . .

Magic Bag

Critical Questioning**—"What questions should we ask about these situations?"** Your own acronym/SEADS

Cooperative learning skills and attitudes: listening, responding, building on each others' ideas, brainstorming solutions, decision-making, problem-solving. . .

2. **Developing Teacher-Directed and Teacher-Student Negotiated Units:**

Curriculum Development with Problematic Scenarios, pp. 30-32

KWHLAQ

"Asking better questions." Comparing our initial questions with 3

Story Intellect/Graphic Organizer, with research

Alternative, Authentic assessments pp. 33-37

Creating Rubrics for Understanding

3. **Your personal goals now**:

A Very Short Reference List

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Scallops

A **scallop** (pronounced /ˈskɒləp/ or /ˈskæləp/) is **a marine bivalve mollusk** of the family **Pectinidae**. Scallops constitute a cosmopolitan family, found in all of the world's oceans. Many scallops are highly prized as a food source. Some scallops are valued for their brightly colored shells.

Like the true oysters (family Ostreidae), scallops have a central adductor muscle, and thus the inside of their shells has a characteristic central scar, marking the point of attachment for this muscle. The adductor muscle of scallops is larger and more developed than that of oysters, because they are **active swimmers**; scallops are in fact the only migratory bivalve. Their shell shape tends to be highly regular, recalling one archetypal form of a seashell, and because of this pleasing geometric shape, the scallop shell is a common decorative motif.

Most scallops are **free-living**, but some species can attach to a substrate by a structure called a byssus, or even be cemented to their substrate as adults (e.g. *Hinnites spp.*). A free-living scallop **can swim, by rapidly opening and closing its shell**. This method of locomotion is also **a defense technique**, protecting it from threatening predators. Some scallops can make an audible soft popping sound as they flap their shells underwater, leading one seafood vendor to dub them "singing scallops".

Scallops are **hermaphroditic, or capable of switching sexes**. Both sexes produce roe, whose coloring depends upon the parent's (current) sex. Red roe is that of a female, and white, that of a male. Spermatozoa and ova are released freely into the water during mating season and fertilized ova sink to the bottom. After several weeks, the immature scallop hatches and the larvae drift until settling to the bottom again to grow. They reach sexual maturity after several years, though they may not reach a commercially harvestable size until six to eight years of age. Scallops may live up to 18 years, with their age reflected in the annuli, the concentric rings of their shells.

The scallop shell is the traditional **emblem of Saint James the Greater** and is popular with pilgrims on the Way of St James to the apostle's shrine at Santiago de Compostela in Spain. Medieval Christians making the pilgrimage to his shrine often wore a scallop shell symbol on their hat or clothes. The pilgrim also carried a scallop shell with him and would present himself at churches, castles, abbeys etc. where he could expect to be given as much sustenance as he could pick up with one scoop.

Wikipedia, accessed 16 May, 2008.

Body Art: Marks of Identity is a new exhibition at the American Museum of Natural History (1999-2000) exploring the ways in which human beings around the world, past and present, decorate their bodies. Celebrating both cultural invention and individual artistry, **Body Art: Marks of Identity** presents over 600 objects and many images from around the world dating from c. 3000 B.C. to the present, including superb sculptures, paintings, contemporary and historical photographs, rare books, engravings, and films.

[**This specific object**] The Conibo people of eastern Peru believe the universe was once covered with geometric designs. People painted their houses, clothing, and bodies with delicate geometric patterns. The design patterns were said to come from Ronin, the great World Boa snake upon whose skin all the designs can be found. Conibo pots are used for water and fermented drinks. The coiled construction of the pot is said to resemble the sleeping great World Boa whose body encloses the cosmos.

[**General Information**] The human body is a unique canvas that has been decorated in many ways for millennia by people all over the world. Since the beginning of human history, people have embellished their bodies for many reasons, but there is no known culture in which people do not paint, pierce, tattoo, reshape, or simply adorn their bodies. Whether with permanent marks like tattoos or scars, or temporary decorations like makeup, clothing, and hairstyles, body art is a way of signaling an individual's place in society, marking a special moment, celebrating a transition in life or simply following a fashion.

What messages do these practices carry? How have they been used to identify us as individuals or as members of a group? How have ideas about what people consider beautiful changed over time? Whether permanent or temporary, found on a bowl or on a belly, these designs, patterns, and shapes are all marks of identity. Body art carries powerful messages about the decorated person. Colors, designs, and the use of particular techniques are part of a visual language with specific cultural meanings. To decipher this language, one needs to understand the shared symbols, myths, social values, and individual memories that are drawn on the body. Since body art can draw attention to cultural differences, it is also a means by which people exoticize and sometime ostracize others. But body art in all cultures changes, and it is an ideal canvas for individual creativity and self-reinvention. It can also be a way for people to challenge social values and cultural assumptions about beauty, identity, and the body itself.

Session Evaluation—

NEASCD

5 December, 2008

I. What aspects of these sessions were most beneficial?

II. What would you like to learn more about? What would be helpful resources?

III. What is your primary goal now?

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