Chapter Five: Student Research: Using Online Data and Primary Sources to Promote Critical Thinking

The Research Process - Scientific Inquiry

What is research?

- It all starts with a question!
- Curiosity...Why?
- What is the problem?
- What is the relationship?

Scientific Inquiry

- We search for knowledge by using recognized methods and disciplined inquiry
- Two Major Paradigms
    - Quantitative
        - Numbers and Statistics
        - Emphasis of unit three on collecting numerical data and picturing the data with graphs and charts.
    - Qualitative
        - Uses Words - Text
        - Real-life Narratives
        - Common emphasis when discussing information literacy
        - Searching textual databases for information

Scientific Method

- Define a problem
- State the hypothesis to be tested
- Collect and analyze data
- Interpret the results
- Draw conclusions about the problem

Information Literacy and Developing Internet Research Skills - The Big 6 Skills Approach - http://www.big6.com/index.php

The BIG 6™ *Overview*

Go to: http://www.big6.com/showarticle.php?id=16

A Big6™ Skills Overview by: Mike Eisenberg

The Big6™
Developed by Mike Eisenberg and Bob Berkowitz, the Big6 is the most widely known and widely used approach to teaching information and technology skills in the world. Used in thousands of K-12 schools, higher education institutions, and corporate and adult training programs, the Big6 information problem-solving model is applicable whenever people need and use information. The Big6 integrates information search and use skills along with technology tools in a systematic process to find, use, apply, and evaluate information for specific needs and tasks.

Why Big6™?
We all suffer from information overload. There's just too much "stuff" out there, and it's not easy to keep up. At the same time, there's an irony—yes, we are surrounded by information, but we can never seem to find what we want, when we want it, and in a form we want it so that we can use it effectively.

One solution to the information problem—the one that seems to be most often adopted in schools (as well as in business and society in general)—is to speed things up. We try to pack in more and more content, to work faster to get more done. But, this is a losing

proposition. Speeding things up can only work for so long. Instead, we need to think about helping students to work smarter, not faster. There is an alternative to speeding things up. It's the smarter solution—one that helps students develop the skills and understandings they need to find, process, and use information effectively. This smarter solution focuses on process as well as content. Some people call this smarter solution information literacy or information skills instruction. We call it the Big6.

The Big6™ Skills
The Big6 is a process model of how people of all ages solve an information problem. From practice and study, we found that successful information problem-solving encompasses six stages with two sub-stages under each:

1. Task Definition
1.1 Define the information problem
1.2 Identify information needed in order to complete the task (to solve the information problem)

2. Information Seeking Strategies
2.1 Determine the range of possible sources (brainstorm)
2.2 Evaluate the different possible sources to determine priorities (select the best sources)

3. Location and Access
3.1 Locate sources (intellectually and physically)
3.2 Find information within sources

4. Use of Information
4.1 Engage (e.g., read, hear, view, touch) the information in a source
4.2 Extract relevant information from a source

5. Synthesis
5.1 Organize information from multiple sources
5.2 Present the information

6. Evaluation
6.1 Judge the product (effectiveness)
6.2 Judge the information problem-solving process (efficiency)

Resource: http://www.big6.com/showarticle.php?id=16

Big 6 Research Organizers

- Grades 3-6 - http://www.standrews.austin.tx.us/library/ElementaryOrganizer.htm
- Grades 7-12 - http://www.standrews.austin.tx.us/library/Assignment%20organizer.htm
- Research Paper Organizer - http://www.standrews.austin.tx.us/library/ResearchPaperOrganizer.htm

Big 6 Resources

- Chart - ISTE Information Literacy Skills - http://www.surfline.ne.jp/janetm/big6info.htm

- Elementary Big 6 Information Problem Solving - http://www.squires.fayette.k12.ky.us/library/research/big6.htm

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Lesson Template for Online Research Using the Big 6 Skills Format

Title		
Grade:	Subject:	
Overview		
Standards	Subject Matter: Technology:	
	Assignment	**Big 6 Skills**
Essential Question	What questions frame the main theme or idea you want students to explore and grapple with? (2-5) Create a graphic organizer as a part of task definition in order to help students brainstorm ideas and organize concepts and ideas.	1. Task Definition 1.1 Define the information problem 1.2 Identify information needed in order to complete the task (to solve the information problem)
Subsidiary Questions	These may be more factual knowledge or comprehension questions that provide information supporting the essential questions. (Can be part of your graphic organizer).	2. Information Seeking Strategies 2.1 Determine the range of possible sources (brainstorm) 2.2 Evaluate the different possible sources to determine priorities (select the best sources)
Student Tasks Activities Procedures	Locate the Data Internet Data Collection: (List websites and describe data you want students to collect for research and comparison in Excel). Choose one of the following Excel Spreadsheet Assignments and Include a thorough assignment hand-out with a step-by step tutorial for students on how to use Excel to complete the assignment. See examples and instructions in unit 3 course document folder. 1. Excel Spreadsheet and Graph Assignment (Outline the assignment for entering and graphing data and include a step-by-step tutorial for students) 2. Excel Spreadsheet Database for Recording Data - Layout with borders, colors, fonts.	3. Location and Access - Locate the Data 3.1 Locate sources (intellectually and physically) 3.2 Find information within sources 4. Use of Information - Collect the Data 4.1 Engage (e.g., read, hear, view, touch) the information in a source 4.2 Extract relevant information from a source 5. Synthesis - Create the Spreadsheet Picturing the Data in Excel 5.1 Organize information from multiple sources 5.2 Present the information
Assessment	How will students demonstrate understanding of the issues and questions raised in the text and in the essential question? Describe how you will asses the student learning, the criteria you will use, a checklist - or include rubric (optional).	6. Evaluation 6.1 Judge the product (effectiveness) 6.2 Judge the information problem-solving process (efficiency)

Lesson Planning: Integrating Technology Using Primary Sources

Primary Sources on the Web

WHAT ARE PRIMARY SOURCES?

Resource: http://www.lib.berkeley.edu/TeachingLib/Guides/PrimarySources.html

"Primary sources enable the researcher to get as close as possible to what actually happened during an historical event or time period. A primary source reflects the individual viewpoint of a participant or observer."

- Diaries, journals, speeches, interviews, letters, memos, manuscripts and other papers in which individuals describe events in which they were participants or observers.
- Memoirs and autobiographies. These may be less reliable than diaries or letters since they are usually written long after events occurred and may be distorted by bias, dimming memory or the revised perspective that may come with hindsight. On the other hand, they are sometimes the only source for certain information.
- Records of or information collected by government agencies. Many kinds of records (births, deaths, marriages; permits and licences issued; census data; etc.) document conditions in the society.
- Records of organizations. The minutes, reports, correspondence, etc. of an organization or agency serve as an ongoing record of the activity and thinking of that organization or agency.
- Published materials (books, magazine and journal articles, newspaper articles) written at the time about a particular event. While these are sometimes accounts by participants, in most cases they are written by journalists or other observers. The important thing is to distinguish between material written at the time of an event as a kind of report, and material written much later, as historical analysis.
- Photographs, audio recordings and moving pictures or video recordings, documenting what happened.
- Materials that document the attitudes and popular thought of a historical time period. If you are attempting to find evidence documenting the mentality or psychology of a time, or of a group (evidence of a world view, a set of attitudes, or the popular understanding of an event or condition), the most obvious source is public opinion polls taken at the time.
- Research data such as anthropological field notes, the results of scientific experiments, and other scholarly activity of the time.
- Artifacts of all kinds: physical objects, buildings, furniture, tools, appliances and household items, clothing, toys.

WHAT ARE SECONDARY SOURCES?

"A secondary source is a work that interprets or analyzes an historical event or phenomenon. It is generally at least one step removed from the event. Textbooks and encyclopedias are examples of secondary sources."

PRIMARY SOURCE RESOURCES

- Library Research Using Primary Source Documents (UC Berkeley) - http://www.lib.berkeley.edu/TeachingLib/Guides/PrimarySources.html
- Yale Primary Sources Research - http://www.library.yale.edu/ref/err/primsrcs.htm
- Examples:
    - California Heritage K-12 Lesson Planning Using Primary Sources - http://sunsite.berkeley.edu/calheritage/k12/primary_lesson.htm
    - The Learning Page - Library of Congress - http://memory.loc.gov/ammem/ndlpedu/lessons/index.html
        - http://memory.loc.gov/ammem/ndlpedu/educators/workshop/discover/primary.html
        - http://memory.loc.gov/ammem/ndlpedu/lessons/primary.html
    - National Library of Canada - http://www.nlc-bnc.ca/6/32/s32-1110-e.html
- Primary Sources on the Web (Optional Resources - Additional primary source web addresses included in course documents).
    - Library of Congress - http://www.loc.gov/
    - Primary Sources on the Web - http://www.lib.berkeley.edu/TeachingLib/Guides/PrimarySourcesOnTheWeb.html
    - America's Story from America's Library (Library of Congress) - http://www.americaslibrary.gov/cgi-bin/page.cgi
    - Virtual Museums - http://vlmp.museophile.com/
    - California Heritage Collection - http://sunsite.berkeley.edu/CalHeritage/k12/
    - The Digital Classroom - http://www.archives.gov/digital_classroom/index.html
    - Repositories of Primary Sources - http://www.uidaho.edu/special-collections/Other.Repositories.html
    - Museums in the USA - http://palimpsest.stanford.edu/icom/vlmp/usa.html
    - Museums around the World - http://archive.comlab.ox.ac.uk/other/museums/world.html
    - The Virtual Library - http://www.vlib.org/

Lesson Plan Using Primary Sources

Primary Source Lesson Plan	
Subject Area:	Grade Level:
Objective: Learners will demonstrate knowledge of/understanding of/ability to:	
Content Standards: (California - http://www.cde.ca.gov/standards/)	
Technology Standards: (NETS for Students - http://cnets.iste.org/students/s_stands.html) • Basic operations and concepts • Social, ethical, and human issues • Technology productivity tools • Technology communication tools • Technology research tools • Technology problem-solving and decision-making tools	
Lesson Task/Activities: What will the students do? What tasks and activities will you have the students complete that will meet the lesson objective? List the student processes, questions you want answered, projects to be completed, class and/or individual activities, step-by-step instructions, etc. How will you use primary sources to meet your lesson objectives?	
Primary Sources: List the primary source documents you want the students to use along with the web addresses. What types of primary sources are they? What secondary resources might also be helpful for this lesson?	
Assessment: Describe the assessment you would use for this assignment. In what ways will the use of the primary sources promote student learning and how will you know that both content and technology standards have been met?	
Reflection: How would these activities fit in your overall lesson planning and unit planning? Would this lesson be part of an anticipatory set, the main lesson content, or an extension of a lesson topic?	

Creating a Powerpoint Presentation Using Primary Sources

- You can create a Powerpoint presentation to introduce your primary sources to your students.
- Right click (Windows) or hold down mouse button (MAC) to save images from your primary source web pages.
- Save the web links as well for your Powerpoint presentation.
- Create a Powerpoint presentation introducing your students to the primary sources. See Powerpoint tutorials.
    - Include at least three images from your primary sources.
    - Include links to each website included in your primary source lesson plan.
    - Include curriculum questions related to these documents, key points, tasks, processes, or other information related to your primary sources.
    - Include at least 5 slides - title, 3 subtopic pages, and a final page including the content standard and technology standard met through this lesson plan.
- Tutorial Online - http://www.chapman.edu/soe/faculty/piper/teachtech/power.htm

Tutorials

- Microsoft In and Out of the Classroom XP - http://www.microsoft.com/education/?ID=OfficeXPTutorial
- Microsoft In and Out of the Classroom 2000 - http://www.microsoft.com/education/?ID=PPTTutorial
- MAC Microsoft Office - http://www.microsoft.com/education/?ID=MacOfficeTutorial
- Powerpoint in the Classroom - http://www.actden.com/pp/
- Electric Teacher - http://www.electricteacher.com/tutorial3.htm
- Powerpoint Tutorials - http://www.abacon.com/pubspeak/deliver/ppoint.html
- Powerpoint Basics - http://www.iupui.edu/~webtrain/tutorials/powerpoint2000_basics.html
- Powerpoint Tutorial - http://www.mum.edu/helpdesk/tutorials/powerpoint-tut.html
- Learn.com - http://www.learn.com (You have to register to use tutorials)
- Freeskills - Locate articles on your own operating system (Microsoft or MAC) and the desktop - http://www.freeskills.com/

Great Primary Source Websites

America's Story

Visit the America's Story from America's Library website - http://www.americasstory.com/cgi-bin/page.cgi. Share primary source documents, pictures, sounds, etc. that you locate that you could use in your classroom. How would you use these resources with your students? What would you have them do with these primary sources? Include grade level, subject matter, and content standards you think would be appropriately met by using this website.

Library of Congress

Go to the Library of Congress website - http://www.loc.gov/. Not only does the LOC have great American resources, but also world collections of primary source documents, photos, recordings, etc. Visit the Global Gateway - http://international.loc.gov/intldl/intldlhome.html and share primary source documents you find useful for you classroom instruction. In particular, take a look at the digitized global treasures (take a look at the The South Asian Literary Recordings Project), or the Portals to the World website - http://www.loc.gov/rr/international/portals.html. How might these global projects, artifacts, exhibitions, and documents contribute to a greater understanding of world cultures?

Virtual Museums

View the primary sources list in unit two and locate other websites that you might feel could be virtual fieldtrips for your classroom. Share ways you might use these primary resources with your students. How would you plan a virtual field trip to museums or exhibitions?

- Go to the Virtual Library Museums page - http://vlmp.museophile.com/,
- Museums in the USA - http://palimpsest.stanford.edu/icom/vlmp/usa.html
- Museums and Exhibitions from Around the World - http://vlmp.museophile.com/world.html
- Art History Resources on the Web - http://witcombe.sbc.edu/ARTHLinks.html
- Egyptian Art and Archeology - http://www.memst.edu/egypt/main.html
- Smithsonian American Art Museum - http://nmaa-ryder.si.edu/
- California Heritage Project - http://sunsite.berkeley.edu/CalHeritage/k12/

A few possibilities might be:

- NASA Museum - http://www.nasm.si.edu/nasm/NASMexh.html
- Museum of the History of Science, Oxford - http://www.mhs.ox.ac.uk/exhibits/index.htm

- Mathematics Archives - http://archives.math.utk.edu/topics/history.html
- Internet Medieval Sourcebook - http://www.fordham.edu/halsall/sbook.html
- Martin Luther King Jr. Papers Project - Stanford - http://www.stanford.edu/group/King/

Lesson Planning to Develop Higher Order Thinking Skills

Research and Teaching

An additional course document presenting a review of traditional learning theories is located in Unit Three Course Documents. A Powerpoint presentation on Research and Teaching is also included in Unit Three Course Documents.

"It may be dangerous to teach as you were taught."

This may be a typical quotation - but Harry and Rosemary Wong included it in their book - First Days of School as a warning to those who think they can jump right into the classroom and teach exactly as they were taught in years past. The following includes some additional ideas from that book - which I highly recommend for great ideas on classroom management and organization for the new teacher! Reflect on your own experience. How were you taught? Think back at your experiences through primary and secondary school? How about college? Did you spend much of your time memorizing facts and preparing for tests? What experiences supported the most "enduring" knowledge you have acquired today? Were you taught to think critically? What was your most effective mode of learning? Who was your most effective teacher? Why? What influence did that teacher have on you as a student?

"Education must bring the practice as nearly as possible to the theory." (Horace Mann)

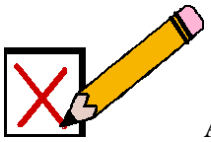
Why research?

- Research is the process of critical thinking and solving problems - the use of the human mind to search for and seek answers and "the truth."
- People who know what to do and people who know how to do it will always be working for those who know why it is being done.

Effective Teaching and Research

- Since the 1960's, much research has been done on education.
- Until that time, teaching was based on myths, hearsay, and traditions handed down or recollections of how they were taught.
- Many teachers tend to teach as they were taught throughout their schooling.

- Most teachers tend to teach as their academic college professors taught them.



A Model of Teaching that has NO Research to Support it!

- Assign chapters to read
- Answer questions at the back of the chapter or worksheet
- Deliver a lecture and have students take notes
- Show a video or do an activity
- Construct a test based on a number of points.

Research for Teachers

- Do what the research tells us is most effective.
- Use proven research-based practices.
- Understand the research process
    - Problem - What do I want to know?
    - Prediction - What do I think is the case?
    - Procedure - How will I solve the problem?
    - Data - What will I look for?
    - Conclusion - What do the results tell me?
- Using this process with students generates high order thinking skills as well.

Bloom's Taxonomy

Professor's Note

My emphasis for this lecture is on learning how to design lesson plans that focus on developing higher order thinking skills in our students. In 1956, Benjamin Bloom, along with a group of educational psychologists, developed a classification of thinking behaviors that moved in a continuum from simple to complex. Not only is this theory significant for understanding the process of learning, but it also is important in terms of assessment. Bloom determined that 95% of all test questions that students encounter require only the lowest level of thinking - recall of information! In order to help our students develop the skills to think critically, we need to emphasize not only knowledge and comprehension, but the ability to apply, analyze, synthesize and evaluate. In terms of technology, we are bombarded with an endless supply of information through the internet and the media. The question is - "What do we do with it?" How do we help our students move beyond facts, dates, names, lists, and even trivia - to comprehend complex concepts, ideas, and possibilities for the future?

Bloom's Taxonomy

Click for NY Institute of Technology Page on Bloom - http://www.nyiteez.org/EDIN777/bloom.htm (OPTIONAL)

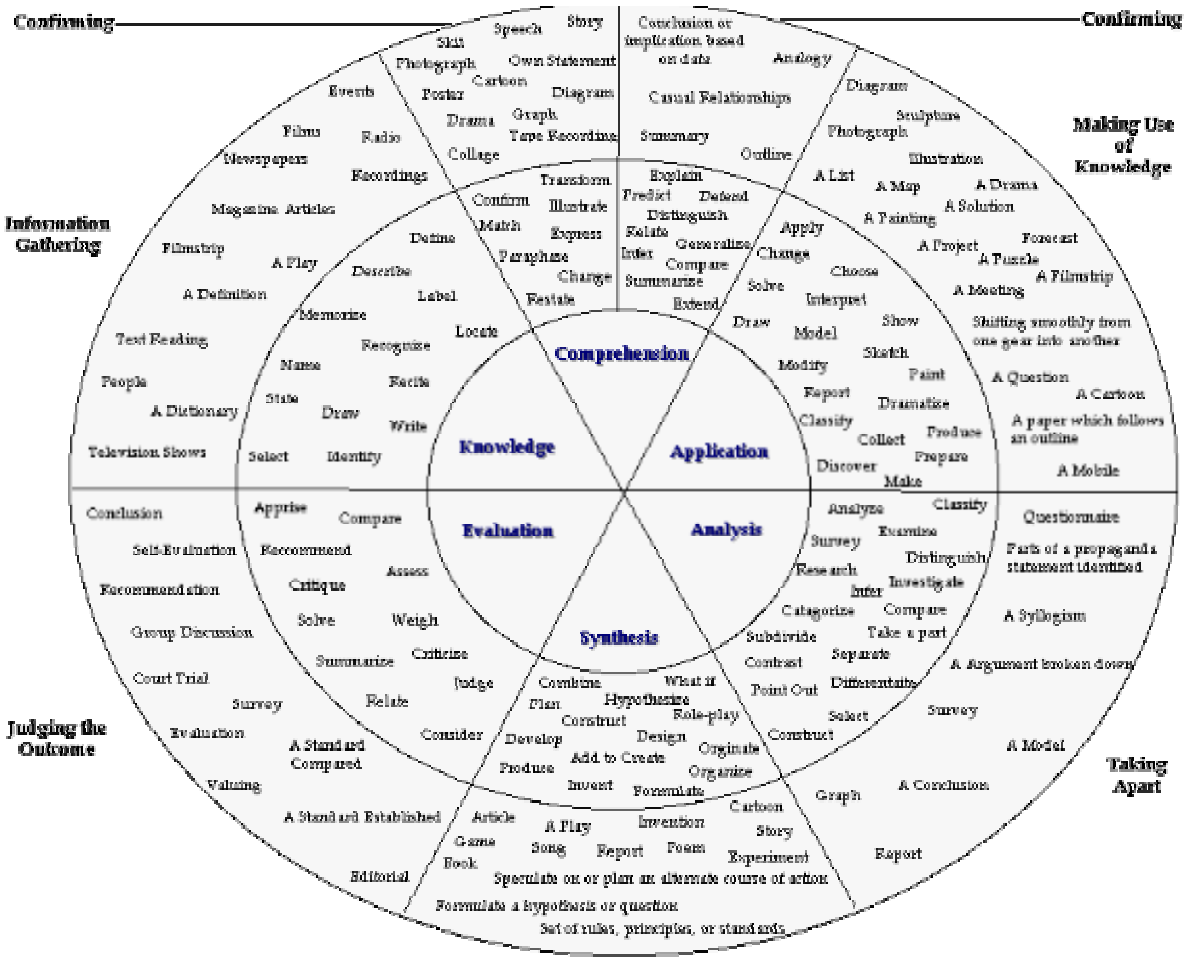
- KNOWLEDGE: define, list, name, memorize
- COMPREHENSION: identify, describe, explain
- APPLICATION: demonstrate, use, show, teach
- ANALYSIS: categorize, compare, calculate
- SYNTHESIS: design, create, prepare, predict
- EVALUATION: judge, assess, rate, revise

Three overlapping domains

- Cognitive – Knowledge, recall, comprehension, analyzing/synthesizing data, problem solving, etc.
- Psychomotor – physical skills, fine or gross motor skills, coordination, dexterity
- Affective – attitudes of awareness, interest, attention, concern, responsibility, respect, enjoyment, appreciation, motivation

Thinking Levels - Ask Students to:

- Knowledge - recall information in original form
- Comprehension - show understanding
- Application - use learning in a new situation
- Analysis - show s/he can see relationships
- Synthesis - combine and integrate parts of prior knowledge into a product, plan, or proposal that is new
- Evaluation - assess and criticize on basis of standards and criteria



Blooming Questions for Literature

Knowledge – Recalling Information

- Where – What – Who – How many – Point to…

Comprehension – Understanding, Meaning

- Tell me in your own words – What does it mean?
- Give me an example, describe, illustrate

Application – Using learning in a new situation

- What would happen if…? Would you have done the same…? How would you solve this problem?
- In the library, find information about….

Analysis – Ability to see parts/relationships

- What other ways…? Similar/Different (Venn)
- Interpretation – What kind of person…? What caused the person to react in this way…? What part was most exciting, sad…?

Synthesis – Parts of information to create original whole

- What would it be like if…? Design, pretend, use your imagination, write a new ending…

Evaluation - Highest Level of Questioning

- Judgment based on Criteria - Literature
- Would you recommend this book – WHY or WHY not?
- Select the best – WHY?
- Which person in the story would you most like to meet – and WHY?
- Is the quality good or bad? WHY?
- Could this story have happened? WHY?

Optional Sites on Bloom's Taxonomy

- DLRN - http://www.dlrn.org/library/dl/guide4.html
- City College of SF - http://fog.ccsf.cc.ca.us/~nmaffei/Syllabus/bloom.htm
- Office Port - Home of the graphic - http://www.officeport.com/edu/blooms.htm
- Old Dominion - http://web.odu.edu/webroot/instr/ED/llschult.nsf/pages/blooms
- Overview - http://chiron.valdosta.edu/whuitt/col/cogsys/bloom.html
- UT - Austin - http://www.utexas.edu/student/utlc/handouts/1414.html
- Eduscapes - Critical and Creative Thinking - http://eduscapes.com/tap/topic69.htm

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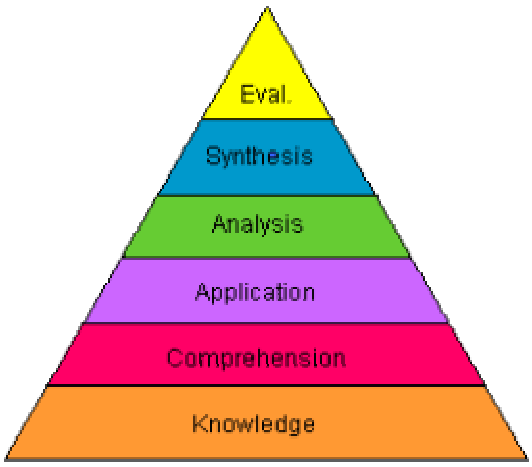
Framing Essential Questions



Essential Questions are at the top of Bloom's Taxonomy

- Evaluate – make a thoughtful choice between options, with the choice based on a clearly stated criteria
- Synthesize – invent a new or different version
- Analyze – develop a thorough and complex understanding through skillful questioning.

Typical Process of Student Research

- Send students to library to "find out about" something
- Information gathering but little analysis or thought
- Tedious and waste of time without meaningful activity

Essential Questions

- Spark our curiosity and sense of wonder
- We have a desire to understand
- Something that matters to us

Answers to Essential Questions can NOT be found

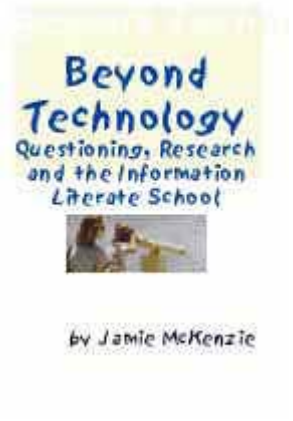
- Students must construct own answers
- Make their own meaning from information they have gathered
- Create insight
- Answering such questions may take a lifetime!
- Answers may only be tentative
- Information gathering may take place outside of formal learning environments
- Engage students in real life applied problem solving
- Essential Questions lend themselves to multidisciplinary investigations.

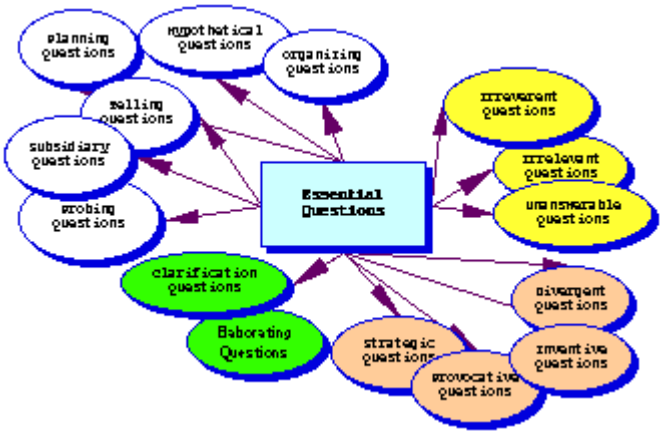
Ideal Essential Questions

- Framed by students themselves!
- Best to start with subsidiary questions that might help support the main question
- Formulate categories of related questions
- "What else do we need to know?
- State suppositions
    - Hypothesizing and Predicting
    - Thought process helps provide a basis for construction of meaning.

From Now On - Check this wonderful website full of resources for framing essential questions.

- "From Trivial Pursuit to Essential Questions and Standards-Based Learning" by Jamie McKenzie - http://www.fno.org/feb01/pl.html
- From Now On: Essential Questions http://www.fno.org/sept96/questions.html
- Question.org - http://questioning.org/index.html
- Questioning Toolkit - From Now On: http://questioning.org/Q7/toolkit.html





On this website, Jamie McKenzie explains:

"Questions may be the most powerful technology we have ever created. Questions and questioning allow us to make sense of a confusing world. They are the tools that lead to insight and understanding."

Optional Websites Emphasizing Essential Questions and Inquiry Learning:

- Essential Schools
    - http://www.essentialschools.org/cs/resources/view/ces_res/112
    - http://www.essentialschools.org/cs/resources/query/q/911?x-r=runnew
- Asking Essential Questions - http://www.standrews.austin.tx.us/library/ResearchPaper.htm
- Asking the Essential Question - http://www.biopoint.com/ibr/askquestion.html

- Galileo - http://www.galileo.org/tips/essential_questions.html
- The Inquiry Page: Learning Begins with Questions - http://www.inquiry.uiuc.edu/
- Exploratorium - Connect Inquiry Learning - http://www.exploratorium.edu/ifi/resources/classroom/connect/
- Inquiry-based Learning - http://www.thirteen.org/edonline/concept2class/month6/index.html

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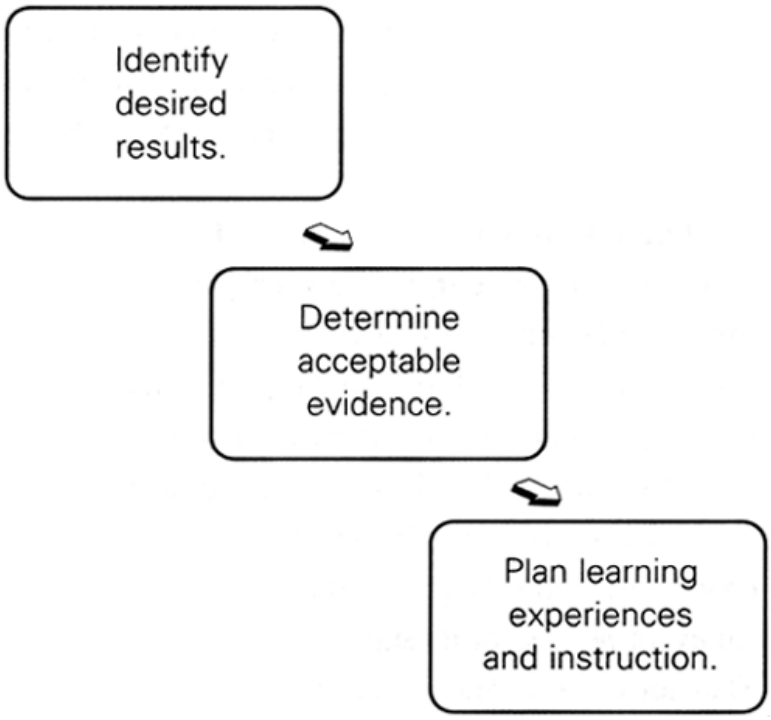
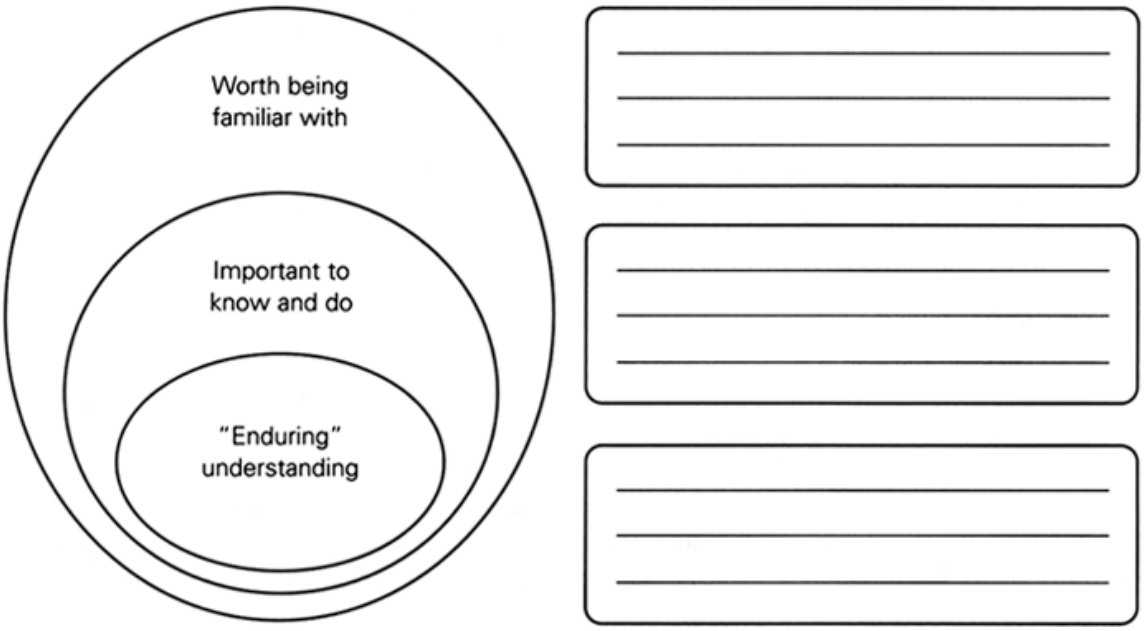
Teaching for Understanding - Understanding by Design by Grant Wiggins and Jay McTighe

Understanding by Design is particularly helpful because you begin by looking at the "desired result." What do you want your students to know and be able to do? What student learning to you want to take place as a result of this lesson? What standards are you trying to meet? Look for information on what is called "backwards design." Start with the desired result - the final assessment - and go backwards through what needs to be done to get there!

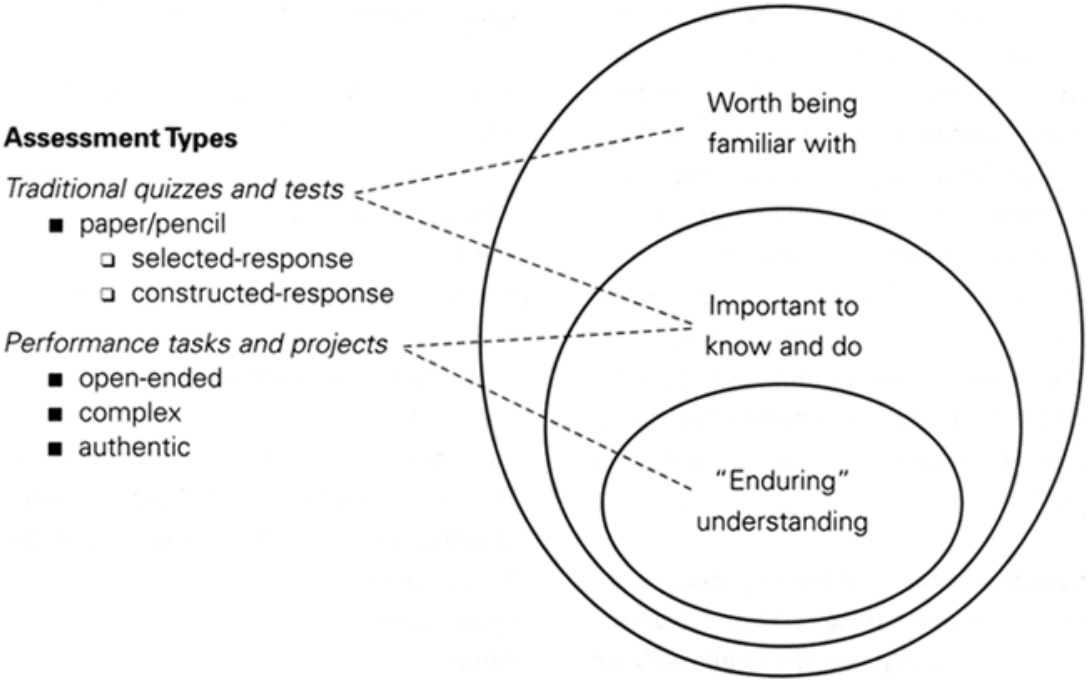
Identify desired results.



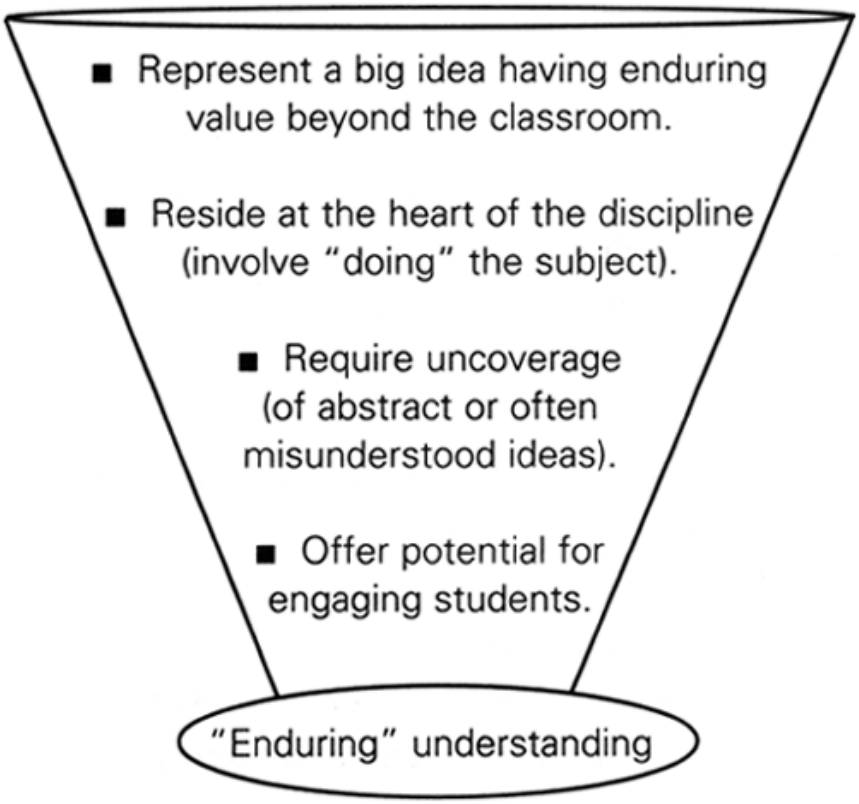
Establish Curricular Priorities



Assessment Types



Filters for Selecting Understandings



Tips for Using Essential Questions **Understanding by Design** Resource (no longer available) - http://www.ascd.org/readingroom/books/wiggins98book.html
• Organize programs, courses, units of study, and lessons around the questions. • Make the content the answers to the questions. • Select or design assessment tasks, up front, that are explicitly linked to the questions. • The tasks and performance standards should clarify what acceptable pursuit of, and answers to, the questions actually look like. • Use a reasonable number of questions per unit (between two and five). Make less be more. • Prioritize content for students to make the work clearly focus on a few key questions. • Edit the questions to make them as engaging and provocative as possible for the particular age group. Frame the questions in "kid language" as appropriate. • Through a survey or informal check, ensure that every child understands the

questions and sees their value.

- Derive and design specific concrete exploratory activities and inquiries for each question.
- Sequence the questions so they lead naturally from one to another.
- Post the overarching questions in the classroom, and encourage students to organize notebooks around them to emphasize their importance for study and note taking.
- Help students personalize the questions.
- Encourage them to share examples, personal stories, and hunches, and to bring clippings and artifacts to class to help the questions come alive.
- Allot sufficient time for "unpacking" the questions—examining subquestions and probing implications.
- Be mindful of student age, experience, and other instructional obligations.
- Use question-concept maps to show relatedness of questions.
- Share your questions with other faculty to make planning and teaching for cross-subject matter coherence far more likely.
- To promote essential questions schoolwide, ask teachers to post their essential questions in the faculty room or in department meeting and planning areas. Circulate questions in the faculty bulletin and present and discuss them at faculty meetings.

- Additional Articles and Resources (Optional)
    - What does teaching for understanding look like?" - http://www.ubdexchange.org/resources/news-articles/article4.html
    - "The Big Idea" - http://www.ubdexchange.org/resources/news-articles/bigidea.html
- Additional Backward Design Resources (Optional) - http://it.spring-branch.isd.tenet.edu/institute/resources.htm
    - Backwards Design Powerpoint Online - http://it.spring-branch.isd.tenet.edu/institute/design/Backward%20Design%20Review.htm
    - Assessment Powerpoint - http://it.spring-branch.isd.tenet.edu/institute/assessment/Assessment%20Review.htm
    - Science Department Faculty Development - http://www.cmscougars.com/~bosterr/admin/backwarddesign.htm

Lesson Template for Essential Question Lesson Plan

Title	
Grade:	Subject:
Overview	
Essential Question	What questions frame the main theme or idea you want students to explore and grapple with? (2-5)
Subsidiary Questions	These may be more factual knowledge or comprehension questions that provide information supporting the essential questions.
Connection to Standards	Subject Matter Standard
	Technology Standard
Activities/Tasks Procedures	What will students and teacher do? Be specific and provide a step-by-step process for of tasks and activities. What technology integration strategies are used?
Assessment	How will students demonstrate understanding of the issues raised in this lesson, particularly in terms of the essential question? (Rubric to be included)
Samples of Student Work	What student work will be generated - particularly in terms of portfolio artifacts for assessment?
Teacher Commentary Reflection	What problems do you anticipate with this lesson? How will this lesson fit into your overall curriculum planning?

Adapted from Urban Dreams Curriculum Template -
http://www.urbandreamsproject.org/forms/CLSG_Guidlines_1_18.pdf