Scaffolding Research Skills in K-12 to Support an Inquiry-Based Curriculum

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Learning Objectives

Review the nature of an inquiry-based curriculum

Understand how “digital natives” conduct research in order to help them become more effective consumers and creators of information

Articulate the Inquiry and Research skills our students must demonstrate in all areas of the curriculum by exiting 10th grade in order to be successful in the IB DP

Evaluate how we as educators can revise our current approach to Inquiry and Research at various levels (scaffolding) to meet the objectives of IB-preparedness
What is Inquiry?

“… students will not simply pass through a course like water through a sieve, but instead leave their own imprint in the learning process” (Holmes et al.)

Constructivism:
Piaget and Vygotsky

IB Learner Profile:
Inquirers, Thinkers, Communicators

Preparing a 21st century learner to work in a knowledge-based economy

Source: Am Assoc of School Librarians website
The Inquiry Process

1. Pose Real Questions
   - What do I want to know about this topic?
   - What do I know about my question?
   - How do I know it?
   - What do I need to know?
   - What could an answer be?

2. Find Resources
   - What kinds of resources might help?
   - Where do I find them?
   - How do I know the info is valid?
   - Who is responsible for the info?
   - What other info is there?

3. Interpret Information
   - How is this relevant to my question?
   - What parts support my answer?
   - How does it relate to what else I know?
   - What parts do not support my answer?
   - Does it raise new questions?

4. Report Findings
   - What is my main point?
   - Who is my audience?
   - What else is important?
   - How does it connect?
   - How do I use media to express my message?

Source: Staten Island-South Brooklyn Professional Development
http://titleidgrants.wikispaces.com/Planning+for+Inquiry-based+Learning
### Variations

<table>
<thead>
<tr>
<th>Essential Feature</th>
<th>More</th>
<th>Less</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learner engages in scientifically oriented questions</strong></td>
<td>Learner poses a question</td>
<td>Learner engages in question provided by teacher, materials, or other source</td>
</tr>
<tr>
<td><strong>Learner gives priority to evidence in responding to questions</strong></td>
<td>Learner determines what constitutes evidence and collects it</td>
<td>Learner given data and told how to analyze</td>
</tr>
<tr>
<td><strong>Learner formulates explanations from evidence</strong></td>
<td>Learner formulates explanation after summarizing evidence</td>
<td>Learner provided with evidence and how to use evidence to formulate explanation</td>
</tr>
<tr>
<td><strong>Learner connects explanations to scientific knowledge</strong></td>
<td>Learner independently examines other resources and forms the links to explanations</td>
<td>Learner given possible connections</td>
</tr>
<tr>
<td><strong>Learner communicates and justifies explanations</strong></td>
<td>Learner forms reasonable and logical argument to communicate explanations</td>
<td>Learner provided broad guidelines to sharpen communication</td>
</tr>
</tbody>
</table>

| More → Amount of Learner Self-Direction → Less | **Learner directed to collect certain data** | **Learner guided in process of formulating explanations from evidence** | **Learner given possible ways to use evidence to formulate explanation** | **Learner provided with evidence and how to use evidence to formulate explanation** |

| Less → Amount of Direction from Teacher or Material → More | **Learner given data and asked to analyze** | **Learner given data and asked to analyze** | **Learner given data and asked to analyze** | **Learner given data and asked to analyze** |

Our Job:
Link Inquiry with Research

Students feel connected with the material – there is a purpose to learning (“So What?”)

+ Students understand how information is created, stored, disseminated, retrieved and used.

Source: Bollysite.com
How is THIS combining research and inquiry?
How we connect from K-12

Building upon, and reinforcing, **skills**

both vertically throughout the students’ school career and horizontally across the curriculum.

Source: Gettyimages
Skills our students need

Source: techtalk.ddsbschools.ca
## ISOI’s goals by end of 10th grade

<table>
<thead>
<tr>
<th>Research</th>
<th>Writing</th>
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</thead>
<tbody>
<tr>
<td>Using on-line subscription databases and the OPAC (library system)</td>
<td>What makes “good writing” regardless of the discipline (6-traits)</td>
</tr>
<tr>
<td>Understanding how search engines work to construct effective keyword searches</td>
<td>Adjusting writing expectations for each discipline</td>
</tr>
<tr>
<td>Understanding the organization of the library (complementary books and sections)</td>
<td>Maintaining one's own voice in the writing process</td>
</tr>
<tr>
<td>Understanding the organization of a book (indexes, chapter organization, “skimming”, bibliographies)</td>
<td>Articulating original thesis (effectively transitioning from thoughts to paper)</td>
</tr>
<tr>
<td>Framing the Research Question to direct research</td>
<td>Logical sequence of argument</td>
</tr>
<tr>
<td>Determining validity of sources</td>
<td>Effective integration of quotes and statistics</td>
</tr>
<tr>
<td>Evaluating evidence (primary, secondary, scientific research, visual arts)</td>
<td>Creating tables, charts and other graphic organizers from research (own or others)</td>
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<tr>
<td>Critical analysis of perspective (beyond simple attribution)</td>
<td>Integrating evidentiary support</td>
</tr>
<tr>
<td>Time management (establishing internal benchmarks, creating Gantt charts, etc)</td>
<td>MLA (complementary nature of in-text and Works Cited/Works Consulted)</td>
</tr>
<tr>
<td>Organization of research findings for use in the writing process</td>
<td>Annotated bibliographies (why and how)</td>
</tr>
<tr>
<td>Plagiarism avoidance in the research process</td>
<td>Writing an abstract</td>
</tr>
<tr>
<td>Synthesis of research to develop an original argument</td>
<td>Plagiarism avoidance in the writing and editing process</td>
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<tr>
<td></td>
<td>Formatting for publication</td>
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</table>
Why inquiry, research and writing MUST be a component of all courses

From IBO: This is the top markband from the rubric of an Internal Assessment in History. What areas are NOT specific to the subject, but are evidence of information/inquiry skills training?

On your handout, please indicate the skills (not content) needed to successfully earn a 14 or above according to this rubric.
Now, if we were to strike “historical,” how would this fit your discipline?

17–20 The question is addressed in a clearly structured and focused essay that indicates a high level of awareness of the demands of the question. Arguments are clear, coherent, relevant and well substantiated. The answer demonstrates an in-depth understanding of the history of the region through the selection and effective use of knowledge. Different approaches to, and interpretations of, events and topics are explained and placed in their context. The causes and effects of continuity and change are explained and explanations are presented. At the upper end of this markband the answer will in addition display at least one of the following features: a highly developed awareness of historiographical issues; a critical examination of a wide range of evidence; a high level of conceptual ability; a successful challenge to the assumptions implied in the question.
SO....
HOW DO WE DO THIS???
Some basic ideas to integrate now
Digital natives are like the young person who finds a bicycle in his garage and learns to ride it himself. He may become very adept at riding the bike, but without training he will never be able to compete in the Tour de France.
How students “research”

“Thinking is not demonstrated by how many answers students know; rather, it is demonstrated by how they behave when they don’t know” (Costa).

“I get my facts from the Internet” (McTavish)

“physical” internet v. “intellectual” internet

Reporting ≠ Research
Information ≠ Knowledge

Source: wordpress.com
The BIG 6

1. Task Definition
2. Information Seeking Strategies
3. Location and Access
4. Use of Information
5. Synthesis
6. Evaluation

Source: Big6.com
Training your “spiders”: learning to control the internet


YouTube video regarding Search Engines: http://www.youtube.com/watch?v=jUNIpYPw66o&feature=related
http://library – our school library on your lap(top)
Combine Inquiry with Research

<table>
<thead>
<tr>
<th>Topic</th>
<th>(Fact Question)</th>
<th>(Concept Question)</th>
<th>(Skill Question)</th>
<th>What questions do I have?</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do I (we) already know?</td>
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<tr>
<td>Text Source 1</td>
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<tr>
<td>Text Source 2</td>
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<tr>
<td>Primary Sources:</td>
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<tr>
<td>Other Sources</td>
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<tr>
<td>Summary</td>
<td></td>
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“I don’t know what to write about!”: understanding students’ fear of the research process

Kuhlthau, “Information Search Process”
Avoiding Plagiarism - MLA

Research Process –
  Bibliography Sheets
  Key Word Search Logs

Writing Process –
  Include quick citations as one writes
  Notecards (e-versions available)

Editing Process –
  OWL Purdue
“Are you serious?!?!”: verifying validity of information

Source: allaboutexplorers.com
Ask Your Librarian (that’s me 😊)

Even if it is rocket science...

ASK a Librarian
library.wisc.edu/ask

Source: www.williamcronon.net
Let’ go to the film…
An Elementary School example: Building a Library Class

- Review the curriculum maps for each topic within the specific grade level for that week
- Collaborate with the classroom teacher on content focus
- Review library skills standards for that grade level
- Find appropriate reading material for story time that engages student interest while reinforcing content
- Develop an activity that teaches the library skill focus for the week while supporting classroom curricular content
- Integrate into a one-hour program


