Applying Guided Inquiry in the Common Core Curriculum

AASL 2015
Concurrent Session
Friday
November 6
2:30-3:30
Guided Inquiry Design is a valuable tool to assist with Common Core implementation and provides a vehicle for students to become experts.

- Showcase a high school unit where physical science topics are addressed through a Guided Inquiry Design
- Collaborative team teaching approach provided depth of learning that differs from the typical compilation based projects
- Easy to implement assessment measures
Journal Reflection and Share:

● What do your current research projects currently look like in your course?
● Are you satisfied with the outcomes?
● Are students engaged and thinking critically? How do you know?

Share your thoughts with a shoulder partner.
Research in the CCSS

The Common Core State Standards repeatedly uses the word *research*, but it is explained in a way that school librarians have often defined as *inquiry*. This is a shift to deeper, process-based learning; differing from the typical compilation based research that has historically taken place in the K-12 setting. It requires a shift from predetermined questions and fact finding - to an inquiry approach which typically contains:

- Student generated meaningful questions
- Student connection to self, previous knowledge, gain background knowledge
- Student construction of new understandings - thinking deeply
- Student reflection on own learning - ask new questions
- Student sharing/expression of new learning
Collaboration - Learning Team

- Students
- Community Resources
  - Community members
  - Specialists: Scientist, Doctor, etc.

(Adapted from Guided Inquiry Design (2012) Kuhlthau, Maniotes, Caspari)
Success in embedded research: Working with your teachers

Co-teaching

• Know your teachers
• Know your school culture
• Tension between teacher control of content and students asking their own questions
• Experience with process
  — So that we can be agile and flexible- to be able to use current resources within the process
What is Guided Inquiry Design?

Guided Inquiry is...

“A fluid flexible model that helps you guide students through the flow of discovery in the process of learning from a variety of sources of information to prepare them for successful learning and living in the information age.”

(Kuhlthau, Maniotes, Caspari, *Guided Inquiry Design*, 2012, p xiii)
Guided Inquiry Design Framework

- Cross Curricular Learning
- Embedded Literacy
- Embedded Research

Build deep content knowledge
Academic vocabulary

Student engagement
Invitation to learn

Creating Content
Synthesizing Ideas
Evidence to back claims

Learning how to learn

Presentation Skills

Authentic Close Reading
Embedded Information Literacy Instruction

Students identifying their own research Q’s

Time to explore and browse to develop a rich focus

## Five Kinds of Learning

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
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<tbody>
<tr>
<td>Information Literacy</td>
<td>Concepts for locating, evaluating and ethically using information</td>
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<tr>
<td>Learning how to learn</td>
<td>Self directed learning &amp; personal interaction within the inquiry process</td>
</tr>
<tr>
<td>Curriculum content</td>
<td>Gaining new knowledge, interpreting, synthesizing &amp; applying</td>
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<tr>
<td>Literacy competence</td>
<td>Reading, writing, speaking, listening &amp; viewing for a purpose</td>
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<tr>
<td>Social</td>
<td>Cooperating, collaborating, habits of mind, dispositions in action</td>
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Strategies for Learning & Guiding Inquiry

Embedded Inquiry Tools

Plus - Pair Share Protocols

Conferring with Students

● Teacher /Student Conferences
● Library Teacher - Student Interviews

Kuhlthau, C., Maniotes, L., Caspari, A. Guided Inquiry Design: A Framework for Inquiry in Your School (2012). Fig. 3.3 Page 47
Inquiry provides a vehicle for students to become experts!

A collaborative teaching approach of the Content teacher, Library teacher and Tech Integration Specialist is an effort to provide depth of learning - through research that differs from the typical compilation based projects.

- Fundamentals of creating this type of collaboration
- Benefits to teachers
  - DDMs
  - Assessment measures
Inquiry Week Objectives

- Explain the Inquiry Process
- Apply the Inquiry Process to understanding the uses of Isotopes in our world.
- Access and utilize the LibGuide
- Create and use a Keyword list
- Properly link and create citations using NoodleTools
- Utilize NoodleTools to record and organize note cards
- Utilize note-taking strategies when creating note cards
- Reflect on research through written reflections and inquiry circles
- Apply the inquiry process and isotope knowledge through the creation of a final product
“AS NATURE MADE THEM”

- 80% of processed foods contain genetically modified ingredients
- Genetically modified foods can be resistant to bugs, high heat, drought
- 91% of soy in the US is genetically modified
- 85% of corn in the US is genetically modified
- 88% of cottonseed in the US is genetically modified
- Corn syrup, cottonseed oil, sweeteners
FRUIT HYBRIDS

- Grapple—Apple+Grape
- Lemato—Lemon+Tomato
- Pomato—Potato+Tomato
- Boysenberry—Blackberry+Loganberry+Raspberry
- Tangor—Mandarin Orange+Sweet Orange
- Ugli Fruit—Grapefruit+Orange+Tangerine
- Limequat—Lime+Kumquat
- Pluot—Plum+Apricot
- Jostaberry—Black Currant+Gooseberry
- Nectacotum—Apricot+Plum+Nectarine
- Rangpur/Lemmandarin—Mandarin Orange+Lemon
- Grapefruit—Pummelo+Sweet Orange
- Citrofortunella—Mandarin Orange+Kumquat
- Orangelo—Grapefruit+Orange
- Tangelo—Tangerine+Pomelo
- Tayberry—Raspberry+Blackberry
- Pineberry—Fragaria Chiloensis+Fragaria Virginiana
- Blood Lime—Red Finger Lime+Ellendale Mandarin
- Peacharine—Peach+Nectarine
- Peacotum—Peach+Apricot+Plum
“Effect of Planting Density, Irrigation Regimes, and Maize Hybrids with Varying Ear Size on Yield, and Aflatoxin and Fumonisin Contamination Levels”

- **Corn Hybrids**
  - More Kernels per Ear → More Silk
    - More entryways for Aspergillus flavus infection (especially during silking)
      - Produces aflatoxin & fumonisin
      - Causes illnesses in humans and animals and deteriorates corn
  - Requires Less Water
  - Better Adaption to Ideal Environment
    - Northern & Eastern US
I learned after my original research that I had to be more specific with my keywords to get better and more relevant information.

3. I was frustrated because many of my keywords were not working in the beginning, but as I found better keywords and tried different databases, I found more information. For example, I started off using the Health and Wellness database, but I later found better information for my project in the Kids Infobits database.

4. Yes, a lot of my research has helped answer my project, but there might be more I could do as well. I could probably go more into depth about the actual muscles and bones, rather than just a shallow definition of the food group and some diseases that can come from an unhealthy balance in that food group.

5. How do you define healthy muscles and bones?
What happens to your muscles and bones if you cut out a food group?
Does exercise help them more than healthy diet?
Is there such a thing as too much muscle?
Does steroids affect your eating habits as well as your muscles and bones?

6. I was frustrated with the research in the beginning, but I feel better about it as I got more information.

7. I think that this was a really interesting project, and it helped me gain better researching skills.
But here are some things you may not know: once finished, One World Trade Center will be the most environmentally sustainable building of its size in the world. (Seven World Trade Center, which was completed and opened in 2006, was hailed as New York City's first “green” office tower, but it will be dwarfed by its new companion tower.)

Designed by architect David Childs of Skidmore, Owings and Merrill, LLP, One World Trade Center will incorporate not only new architectural and safety standards, but new environmental standards as well, "setting a new level of social responsibility in urban design," its makers say. Once completed to the U.S. Green Building Council’s LEED (Leadership in Energy Efficient Design) Gold standards (only one removed from Platinum, the most stringent standard), One World Trade Center will set the global standard for sustainability, according to the New York Port Authority. (The completed Seven World Trade Center building has already been certified to LEED Gold.) For starters, the building’s designers intend for it to derive about 35 percent of its power from renewable energy sources. Once the building is fully operational, it’s expected to draw as much as 70 percent of its power from green energy: no small feat in a part of the world as densely populated as the New York metro area.

The new One World Trade Center will be the tallest building in the U.S. and will also be the most energy efficient. 70 percent of its power is from green energy. 35 percent of its power is from renewable energy sources.

All these statistics listed are answering my question. It mentions what benefits there are to the environment and the latest technology that was used in this building. The building includes so many improvements and impressive things that make it up. I can see how engineers went about building it and making it have the latest technology.
Our Process

Guided Inquiry Design Framework

- Open
- Immerse
- Identify
- Explore
- Gather
- Create
- Share
- Evaluate

Structure

Open and Immerse in science classroom

Explore in Library 4 co-taught lessons

Science and Library Teachers

- Day 1 - overview GID, LibGuide and Webquest, Inquiry Pair/Share
- Day 2 - Use of key words and Search strategies
- Day 3 - NoodleTools set up (Google APP)
  • same article for all students
- Day 4 - Close Reading of an article, note taking and Inquiry Circle
# Keyword Strategies

<table>
<thead>
<tr>
<th>DATE</th>
<th>KEYWORDS (Videos, Articles, Databases, other sources)</th>
<th>ADVANCED SEARCHES (Use of Boolean Operators) AND, OR, NOT</th>
<th>NOTES (How effective was this keyword in your search?)</th>
</tr>
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Tech tools for Inquiry:

- **Edmodo or Google Classroom:**
  Classroom management tool for teaching and learning through assignments such as reflections, assessments and product submission and serves as a qualitative measure of assessment for teacher and library teacher

- **Noodletools:**
  Research platform where students analyze and synthesize information while sharing their work with the teachers

- **T.R.A.I.L.S (Tool for Real time Information Literacy Skills):**
  An easily accessible and flexible tool for school librarians and teachers to identify strengths and weaknesses in the information-seeking skills of their students

- **LibGuides:**
  Library Curation and Knowledge Sharing online management system
Edmodo and Google Classroom

- Teacher collaboration
- Instruction
- Assessment
- Data Collection
- Student communication/check in’s
- Student Reflection
Google Classroom
NoodleTools Dashboard

Research Question: What qualities of the ocean help to determine the environmental adaptations of sea life and how do human interactions affect the sea life?

Thesis / Main Claim / Hypothesis:

History: Project Created: 12/03/13 11:02 AM | Updated: 05/04/14 07:53 PM | 30-day log of work done on this project

Sharing and Collaboration

Public View: Off
Sharing:
- Drip Box
- Bibliography
- Notecards/Outline
- Paper

Components

Works Cited
- MLA Advanced
- 17 entries

Notecards & Outline
- 4 notecards

Paper
- Not Shared

To Do List

- Figure out the qualities of the ocean that influence adaptations - remember that article you read?? FIND IT!!
  - Due Date: 04/19/14
  - Completed (EST): Not completed.

- Ask Mr. Q about the components of the power point and find a rubric!
  - Due Date: 04/19/14
  - Completed (EST): Not completed.

Comments

The following people have commented on your project:

Sent (EST) | Add a comment
NoodleTools Notecard Reflection

**Quotation:**

But here are some things you may not know: once finished, One World Trade Center will be the most environmentally sustainable building of its size in the world. (Seven World Trade Center, which was completed and opened in 2006, was hailed as New York City’s first “green” office tower, but it will be dwarfed by its new companion tower.)

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**Paraphrase:**

The new One World Trade Center will be the tallest building in the U.S., and will also be the most energy efficient. 70 percent of its power is from green energy, 35 percent of its power is from renewable energy sources.

**My Ideas:**

All these statistics listed are answering my question. It mentions what benefits there are to the environment and the latest technology that was used in this building. The building includes so many improvements and impressive things that make it up. I can see how engineers went about building it and making it have the latest technology.
# CLASS REPORT

**Gr 9 Science Inquiry 9/2013 Pretest** (64 students)

**Ninth Grade General Assessment 1**

**August 5, 2014**

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**Maximum Possible Score**: 25 (100%)

**Range of Student Scores**: 11 - 23 (44% - 92%)

**Mean Student Score**: 17 (69%)

**Standard Deviation**: 2.39

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Percent correct (on average) within Category:

- 63% **Develop topic**
- 78% **Identify potential sources**
- 78% **Develop, use, and revise search strategies**
- 65% **Evaluate sources and information**
- 61% **Recognize how to use information responsibly, ethically, and legally**

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Results are reported for each item by number and percentage of students choosing each possible response. Correct responses are in red and bulleted.
LibGuide - Research Guide

Science: Science Inquiry: Grade 9  
Physical Science Grade 9: Guided Inquiry Design Process

Last Updated: Oct 26, 2015  |  URL: http://whte.westborough.libguides.com/physicscienceinquiry

- Project Creation
- Science Articles - RSS Feeds
- Research Lessons
- Standards
- Avoiding Plagiarism
- Assessment - Rubrics
- Guided Inquiry Design Process

Inquiry Project Information

**Objectives:**
- Identify a science topic of interest.
- Research topic and present current research.

Inquiry Databases

Mrs. Cellucci

Anita Cellucci, Teacher Librarian

Contact Info
Dr. Edward E. Kelleheer
Library Media Center
Westborough High School
90 West Main Street
Westborough, MA 01581
508-386-7720

Search the WHS Library Catalog
Building Inquiry Questions

Developing Inquiry Questions

Please submit 3 Inquiry Questions. After reading the "Inquiry Question Building" block on the LibGuide and also receiving assistance from Mrs. Cellucci, develop 3 Inquiry Questions. Your questions should be based on the topics that you identified in the Journal article assignment. Please also identify which question will be the question that you will research. Use the Question starter handout to develop your questions. You should have a total of 4 questions listed in your assignment (one will be a duplicate). 12 points

Research Guide Home - Science: Scientific Inquiry: 514 - LibGuides at Westborough High School
whs.westborough.libguides.com
Reflective Video Conferencing

- Chromebook video capture - Screencastify
- PC video capture - Windows Movie Maker
- Mac Video Capture - Quicktime
- Smartphones
Academic Support Guided Inquiry

- Collaboration: Academic Support, School Counseling Guidance and Library
- Concentrated time in OPEN to motivate and create curiosity
- Students will research an aspect of their IEP to allow students to gain curiosity, awareness and become empowered to self advocate
- Elements of Social Emotional learning

Empowerment in the Transition Process
Through:

- Ownership
- Organization
- Self-Advocacy
- Inquiry
1. Psychology and Literature - Grade 12

The Psych in Lit Inquiry-Based Research is a compilation of skills we have enhanced this semester: psychoanalysis of literary characters, analytical writing based in research on mental health, and reflective writing. Students will create reflective videos to share with Freshmen as a collaboration tool for discussion.

2. English Grade 11

Students researched aspects of Native American culture in US after a study in Native American literature. Students developed inquiry questions related to social, cultural, religious and historical aspects of Native life.
What makes the learning happen?

- Clear expectations
- Routine
- Reflection
- Modeling
- Conferring with students
- Includes all phases of the process
Connections

● Pair Share

Take a moment to reflect on -

● 3 connections
● 2 actions you want to take
● 1 Aha moments
Reflection

What questions do you have:

● about implementing GID?
● the process?
● Common Core?
● Anything else?

Questions
Connection to GI at AASL

• GI Meet Up – Today 4:00- 5:30 Exhibit Hall
  #GImeetup

• Guided Inquiry Design in Action: Strategies for Implementation  Leslie Maniotes, Patty Lambusta & LaDawna Harrington
  Saturday 8:40-9:40  C220-222  Middle School
Guided Inquiry Design Forum

guidedinquirydesign.vbulletin.net

Ask a question

Share units of study

Share ideas

Discuss implementation and best practice

Get great resources
Thank you for attending!
Anita Cellucci
Leslie Maniotes