Designing Backwards from College to High School: Practical Insights about Teaching Threshold Concepts

Susan Smith  
_Harker School_, Susan.Smith@harker.org

Debbie Abilock  
_NoodleTools_, dabilock@gmail.com

Follow this and additional works at: https://digitalcommons.georgiasouthern.edu/gaintlit

Recommended Citation
https://digitalcommons.georgiasouthern.edu/gaintlit/2015/2015/23

This presentation (open access) is brought to you for free and open access by the Conferences & Events at Digital Commons@Georgia Southern. It has been accepted for inclusion in Georgia International Conference on Information Literacy by an authorized administrator of Digital Commons@Georgia Southern. For more information, please contact digitalcommons@georgiasouthern.edu.
Designing Backwards from College to High School:
Practical Insights about Teaching Threshold Concepts

Georgia International Conference on Information Literacy

Sue Smith
Director of Libraries,
The Harker School, San Jose

Debbie Abilock
Co-founder NoodleTools, Inc.

SusanS@harker.org  S

debbie@noodletools.com  D
Goals for the session

• To "unpack" Scholarship is a Conversation so that we can lead students across the threshold of understanding how to read, research, and write in different disciplines.

• To rethink how we teach the info lit skills by:
  – Contextualizing skill-based lessons in a conceptual approach so that
  – Students see themselves as participants in a disciplinary conversation and can
  – Understand how new knowledge is created in their field.
Sample threshold concepts
ACRL Framework, Feb 2015

• Scholarship is a Conversation
• Research as Inquiry
• Authority is Contextual and Constructed
• Format as a Process
• Searching as Exploration
• Information has Value
TCs to Conceptual Teaching

• Threshold Concepts and Conceptual Teaching

• Understanding by Design
  – Core Concepts (in Info Lit)
  – What do you want your students to know and understand?

Tension between Skills and Concepts

• Skills
  – How to [search a database, find a peer-reviewed article

• Conceptual teaching
  – Context for skill-based lessons
  – Results in transference

Do Skills (examples)

- Citation format/Style sheets
- Components of citation
- Product: Use the language, evidence and genres of the discipline

Why? Concepts

- Style of the discipline
- What matters (chronology, authority, etc.) to your audience
  So they can re-find, verify
- Enter the dialogue appropriately
  Gain credibility with this community of discourse
Modern International Affairs (MIA) Senior Elective

• Semester long project -> 15 page policy paper
• Propose a solution to a complex emergency

Define the Conversation

• Geo-political* POV
  Publishing format; editorial process
• Disciplinary lens; language; audience

* to define for students

Ex: Same author, different audience

http://noodle.to/dreamlanguage
What do we mean by conversation?

Kenneth Burke writes:

“Imagine that you enter a parlor. You come late. When you arrive, others have long preceded you, and they are engaged in a heated discussion, a discussion too heated for them to pause and tell you exactly what it is about. In fact, the discussion had already begun long before any of them got there, so that no one present is qualified to retrace for you all the steps that had gone before. You listen for a while, until you decide that you have caught the tenor of the argument; then you put in your oar. Someone answers; you answer him; another comes to your defense; another aligns himself against you, to either the embarrassment or gratification of your opponent, depending upon the quality of your ally's assistance. However, the discussion is interminable. The hour grows late, you must depart. And you do depart, with the discussion still vigorously in progress (110-111).”

Conversation is "expert" behavior

Expert (in a subject/topic)

• Stage 3: **Knowledge is reasoned**
  There are multiple perspectives. I can learn to weigh competing claims, draw reasonable conclusions and open-mindedly consider new arguments.

• Stage 2: **Knowledge is opinion**
  There are multiple answers, and everyone's ideas are equally valid. It’s difficult to draw my own conclusions.

• Stage 1: **Knowledge is concrete truth**
  I can find “the” answer often from an authority. I’ll know more of the answers eventually.

Novice (in a subject/topic)

Learning Objectives

1. Seek multiple perspectives, e.g. military vs. diplomatic solutions; East vs. West
2. Understand “who is talking” as they research
3. Seek out opposing viewpoints, e.g. conservative/liberal
Where do Students Contribute?

Adapted from http://k12onlineconference.org/?p=149 *Casper Grathwohl as qtd in “Questions for Niko Pfund OUP blog 4/8/08
Not this...
. . . THIS!
Student Question

“What should China do to decrease the political violence and attacks in the Xinjiang Province between the Uyghur minority ethnic group and the Han majority group?”

Modeling the Activity


The article gives a recent update on the difference of policies between the Hui ethnic group and the Uighur ethnic group, where both groups are Muslim. Specifically, the differences are disparate as the Chinese government had initiated two different initiatives when handling the assimilation of both of these groups. This source will be used to demonstrate how to effectively integrate a Muslim group as the Hui population has peacefully lived with the Han.
Learning Objectives

1. Seek multiple perspectives, e.g. military vs. diplomatic solutions; East vs. West
2. Understand “who is talking” as they research
3. Seek out opposing viewpoints, e.g. conservative/liberal
Try this...

https://goo.gl/9t8zaT
How did the analysis help you think differently about bibs?
Bibliographic Analysis
(NoodleTools)

Breakdown by Specific Citation Type:

- Web Site
- Journal
- Book
- Map or Chart (Born Digital)
- Reference Source

Currency
One Course; Subtle Change

“Old Lesson”
 – How to find and read journal articles

“New Lesson”
 – Why we search and read to find “the conversation” through journal articles, news, reference, blogs, and opinion.

Moving toward critical annotations...
Bibliographic Results
Also reflected in annotations and writing

- Searching Silos of Info
- Authentic Inquiry

*Image 1:*

*Image 2:*
Reframe teaching

How can I cover vs. how can I make visible?

- **Discipline**
  - History
  - Science
  - English

- **Genuine questions**
  - History: What happened in the past - and why?
  - Science: What are solutions to real-world problems?
  - English: What is revealed about being human?

- **Unique conclusions**
  - History: Use corroboration to support a theory
  - Science: Accumulate evidence to support a hypothesis
  - English: Identify language and behavior that support a thesis

- **Comprehension, analysis, evaluation**
  - Evaluate the source
  - Contextualize the evidence
  - Corroborate points of view
  - Predict, observe, record, and replicate to evaluate evidence and build a model
  - Propose implications of figurative language and word choices

- **Genres**
  - Primary sources (maps, speeches, photographs)
  - Visual representations (charts, video, data, models)
  - Interpretations (essays, editorials, reviews)
Definition

“... **disciplinary literacy** is defined as the confluence of content knowledge, experiences, and skills merged with the ability to read, write, listen, speak, think critically and perform in a way that is meaningful within the context of a given field.”

A literary “conversation”

Quotation from the literary work

Paraphrase from the literary work

Quotation attributed to the author (from someone else’s criticism)

Quotation from criticism

Paraphrase of criticism

Creative Commons License CC-BY

The Portrait of Male Foods in Jane Austen’s Pride and Prejudice

A literary “conversation”

Quotation from the literary work

Paraphrase from the literary work

Quotation attributed to the author (from someone else’s criticism)

Quotation from criticism

Paraphrase of criticism
... or a scientific report
...looks different than historical analysis

Quotation from historical analysis
Paraphrase of historical analysis

A pen “quill” to John Royce
Formative Assessment
How do you know what they know?
How does the “conversation” look and sound?

- Specialized vocabulary
- Nuances in syntax specific to the subject
- Disciplinary styles of reasoning
- Subject-appropriate evidence
- Disciplinary criteria for evaluating evidence (credibility!)
- Disciplinary genres, products
- Expert audiences, subject-specific purposes...
Single source assignment
Each chapter is organized...
(text structures)

› Discussion of chemical make-up – description
› Effects on human body - enumeration
› Historical events – narrative
› Gettler’s reasoning – cause / effect
› History of the chemical’s discovery - sequence
› Norris’ political strategies – problem / solution
“The Blues songs telling of poison started in 1930. From Tennessee came a mournful plaint of paralysis, a man who couldn’t walk or talk after drinking with friends. From Wisconsin sounded a bitter ode to the drink Ginger Jake. The writer worried that everyone he knew was now messed up by the cocktail.

The same year, from Mississippi, singer Willie ‘Poor Man’ Loftus wailed, ‘Mama cried out and said, Oh Lord, there’s nothin’ in the world poor daddy can do, ‘cause he done drank so much jake, he done got the limber leg, too.”

From Brooklyn arose another kind of sound – the angry crash of a raid, that May of 1930, when enraged Prohibition agents arrested a local operator who’d concocted a uniquely poisonous alcoholic drink in his small factory – barrels and barrels of Ginger Jake, shipped to southern states, the very drink that had inspired all those mournful songs.” (Blum 203)
“The primary alcohols, including methyl and ethyl, are straightforward arrangements of carbon, hydrogen, and oxygen. In the curious way of chemistry, the deadlier of the two compounds is more simply constructed. Methyl alcohol is CH$_3$OH. It begins with a cluster of three hydrogen atoms encircling one of carbon. That cluster is firmly linked to an oxygen-hydrogen pair called a hydroxyl radical. Ethyl is a slightly bulkier compound: C$_2$H$_5$OH. Two carbons and five hydrogens form a chunky arrangement, once again attached to that highly reactive hydroxyl radical.” (Blum 199)
...and science hypotheses use conditional verbs.

“The cadavers tended, for reasons not quite clear to the pathologists, to stiffen in death, sometimes remaining rigid for days, while the other bodies in the morgue softened like wax on a summer day.

Perhaps, the medical examiners speculated, that was because the high alcohol content suffusing the bodies preserved them, even pickled them.” (Blum 200-201)
Language

Vocabulary, syntax, style...
“The primary alcohols, including methyl and ethyl, are straightforward arrangements of carbon, hydrogen, and oxygen. In the curious way of chemistry, the deadlier of the two compounds is more simply constructed. Methyl alcohol is $\text{CH}_3\text{OH}$. It begins with a cluster of three hydrogen atoms encircling one of carbon. That cluster is firmly linked to an oxygen-hydrogen pair called a hydroxyl radical. Ethyl is a slightly bulkier compound: $\text{C}_2\text{H}_5\text{OH}$. Two carbons and five hydrogens form a chunky arrangement, once again attached to that highly reactive hydroxyl radical.” (Blum 199)
personal belief exemption

Web News Images Shopping Videos More ▼ Search tools

About 497,000 results (0.44 seconds)

[PDF] PERSONAL BELIEFS EXEMPTION To REQUIRED ...  
eziz.org/assets/docs/CDPH-8262.pdf ▼
State of California—Health and Human Services Agency California Department of Public Health. PERSONAL BELIEFS EXEMPTION To REQUIRED ...

Personal Belief Exemptions for Vaccines « Science-Based ...  
https://www.sciencebasedmedicine.org/personal-belief-exemptions-for-v... ▼
Mar 4, 2015 - Twenty states allow for exemptions from vaccines based on personal belief (called philosophical or personal belief exemptions). These laws ...

California State Vaccine Requirements - National Vaccine ...  
www.nvic.org.../california.aspx ▼
Feb 10, 2015 - Quick Fact. In 2012 the personal belief exemption became more restrictive in that there is an additional requirement of a signature from a health ...

New Personal Belief Exemption Form for Childhood ...  
www.cdph.ca.gov.../NR13-051.a... ▼
Oct 30, 2013 - The California Department of Public Health (CDPH) today made available the Personal Belief Exemption (PBE) form parents or guardians are ...

States With Religious and Philosophical Exemptions From ...  
www.ncsl.org.../school-immun... ▼
National Conference of State Legislatures ▼
In recent years, state legislatures have considered numerous bills to either expand or restrict the personal belief exemptions. In Washington, California and ...

CDC - Requirements and Laws Home Page - Imz Managers ...  
www.cdc.gov.../la... ▼ United States Centers for Disease Control and Preve...

vaccine hesitancy

Web News Shopping Images Videos More ▼ Search tools

About 63,900 results (0.32 seconds)

Scholarly articles for vaccine hesitancy

... a survey to identify vaccine-hesitant parents: the parent ... - Opel - Cited by 33
... vaccine hesitancy around vaccines and vaccination ... - Larson - Cited by 26
... parental vaccine refusal and vaccine hesitancy - Seda...

www.immunizeusa.org/media/.../making_the_case_for_vaccines_mmaa... ▼
Learning Objectives. • Relate a new approach to vaccine hesitancy. • Identify each of its 4 components. • Describe how it works in 3 common scenarios ...

Vaccine hesitancy: Journal collection investigates ...  
www.sciencedaily.com/releases/2015/.../150225142456.htm ▼
Science Daily ▼
Feb 25, 2015 - Vaccines are thought to be one of the most successful public health measures, but some individuals are hesitant to vaccinate their families for a ...

NVAC Vaccine Hesitancy Working Group Charge | HHS.gov  
www.hhs.gov/... ▼ United States Department of Health and Human Servi...

The National Vaccine Advisory Committee (NVAC) is charged with reporting on how confidence in vaccines impacts the optimal use of recommended childhood ...

“Vaccine Hesitancy”: The PLOS Currents Collection ...  
blogs.plos.org/.../2015/.../vaccine-hesitancy-plos-currents-collec... ▼ PLOS ▼
Feb 25, 2015 - Peter Hotez (@peterhotez), President of the Sabin Vaccine Institute and Texas Children’s Hospital Center for Vaccine Development, ...

[PDF] Need help responding to vaccine-hesitant parents? Scienc...  
www.immunize.org/catg/d/p2070.pdf ▼
“Alternate Vaccine Schedules: Helping Parents Separate Fact From ... IAC has developed several patient handouts for vaccine hesitant parents. These include:
Reasoning

What “counts” as strong evidence, how is evidence used, rhetorical moves...
Source evaluation from a disciplinary lens

Citation and source annotation relate
Christie clarifies comments on measles vaccine after call for ‘balance’ causes stir

By Philip Barker

February 3, 2011

Pool Politics

Can cause death and misery, never did the

by by be... it’s so easy for some public figures to

Christie, the governor of New

York, has his own vaccine lab in Cambridge, England,

where he can’t do so much as to whether shots for measles and other diseases should be mandatory—in other

words, let your infectious children roam at will. Rand Paul, the Kentucky senator and doctor, went on a couple of television programs and said that

most vaccines should be voluntary, to help avoid the risk of “many tragic cases of walking, talking, normal children who wound up with profound mental

disorders after vaccines.”

Christie and Paul, perhaps because they want to be taken seriously as

Presidential candidates, are already backing off, if only a little. (Paul said that

he was not asserting causality, just a “temporal association.”) They may have

realized that they were sounding a bit like the former Minnesota Representative

Michele Bachmann, who, after a 2012 Republican debate, expressed her view

of the HPV vaccine, which offers protection against cervical cancer, when she

said, “There’s a woman who came up crying to me and said she’s never heard of the HPV vaccine. She told me her daughter was diagnosed with cervical cancer. She was very dangerous consequences.

Bachmann’s Political Contagion

BY MICHAEL SPECTER

in “Contagion,” Steven Soderbergh’s film about a virus that decimates the planet, Jude Law plays a conspiracy-minded freelance video blogger who

regards vaccines as scams churned out by a medical establishment interested only in profits. Instead, he claims, with no evidence, that a homeopathic

treatment based on the plant fomysyria cured him of the infection that was killing nearly everyone else. His comments cause a panicked stampede of pharmacies, leading to many more deaths, since healthy people inevitably mix with those who are sick.

If you think this scenario seems a bit far-fetched, read Michele Bachmann’s

February 4, 2011
The rumors began in the summer of 1926. Government chemists were developing a secret project in the aid of Prohibition, people whispered. Dry officials issued warnings that drinking was about to become more risky. The Great War had taught people that chemists could be more dangerous than other scientists. A new chemists’ war was brewing, it was said, pitting government scientists against those employed by the country’s powerful bootlegging empires.

It was no secret that the federal government seemed with frustration over the flouting of anti-alcohol laws. When Prohibition went into effect, backed by a Constitutional amendment no less, its supporters had assumed citizens would, however reluctantly, obey the law. The succeeding years had proved them wrong. Many now drank more than ever, more recklessly, more adventurously. In Washington, D.C., where the Volstead Act—which provided for enforcement of the Eighteenth Amendment—had been militantly approved, the police reported nearly a ten-fold increase in drunk driving arrests since the legislation was enacted.

The illegal alcohol trade had not only flourished but grown more sophisticated. In the mid-1920s much of the available spirits came from stolen industrial alcohol, which was famously poisonous. Since 1906 the U.S. government had required that manufacturers denature (poison) industrial
“The rumors began in the summer of 1926...”
What is common knowledge?
Ask them identify (and justify) an example of when documentation is not needed

“...consider the status of the information and ideas you glean from sources in relation to your audience and to the scholarly consensus on your topic..”(59).

In their own writing…?
A functional analysis of the author’s sources

Despite the prohibition on conscripting children under the age of fifteen, no consensus exists in international law as to the criminal responsibility of children who commit grave violations of international humanitarian and human rights law. The court in the U.S. Office of Military Commissions against Omar Khadr recognized this distinction, holding that “neither customary international law nor international treaties binding upon the United States prohibit the trial of a person for alleged violations of the law of nations committed when he was fifteen years of age.”

Scholars disagree as to what the MACR should be. Some argue that an emerging trend sets the MACR somewhere in the mid-teens (thirteen to fifteen years old), while others claim that international instruments such as the Rome Statute and the Convention on the Rights of the Child set the MACR somewhere between fifteen and eighteen years old. A conservative reading of what scholars claim regarding an international MACR suggests that there is a consensus against prosecuting children aged twelve or less.

30 Grossman - claim
31 Konge - evidence from a court case
32 Happold - some scholars claim
33 Happold - other scholars claim + evidence

Fritz’s own conclusion
Genres
Products, audiences...
How’s and Why’s Skills and concepts

• EX: we can teach how to search JSTOR as a repository of peer-reviewed articles – but it includes books reviews. Why would I omit or include them?

• We identify the components of citation, but why does it matter if an article on nutrition is published in an environmental science journal, a pediatric journal, or a parenting website?
How are these annotations different?

Primary

Secondary
Short, Targeted “Public Projects”  
Same topic and author – different genres

<table>
<thead>
<tr>
<th>Media Type</th>
<th>Citation</th>
</tr>
</thead>
</table>
1. Ask students to use this bibliography
2. Have them create a purpose and audience
3. Select the sources that fit (purpose, audience, etc.)
4. Delete the rest
5. Justify their decisions in the annotation fields
6. Add a new source
Other short formative assessments...

• Compose in one genre for an audience, revise in another genre for a different audience.
• Write a paragraph weighing the potential value of one format to a conversation/audience – or compare two formats and justify choice.
• Contribute a single source to a class bibliography – class rates sources based on value to the purpose.
• "Have I gathered **enough** information and met the requirements?"

• "Is this the **right balance** of print and online sources for my research?"

• "Did I make **full use** of the resources available to me?"

• "Is currency important because I am reporting on a **time-sensitive** issue or evolving topic?"
http://noodle.to/americandream
Your feedback is differentiated (and conceptual)

Expert (in doing academic research)

• Stage 3: **Meta feedback**
  Explain how to self-assess and why

• Stage 2: **Process feedback**
  Describe a type of reasoning and why to use it

• Stage 1: **Task feedback**
  Describe how to do a task (e.g., identify a source type) and explain why it matters.

Novice (in doing academic research)

NoodleTools Dashboard
A systematic way for teachers to interact around instruction
Student as “apprentice”

• Make connections to real life so that students:
  – Apply what they are learning
  – In increasingly complex situations
  – Where they think and act flexibly

• Over time, they incrementally revise their understanding of a concept

• Documentation is the evidence of learning
Our journey with you...

Threshold / Enduring Understanding

- Concepts within a discipline (“bounded”)
- Subject expert
- Learning as constructing
- Back and forth (“liminal”)
- Rhetorical shifts in reading and writing
- Assignment originates with instructor

Library

- Concepts are cross- or uber-disciplinary
- Embedded “handmaiden”
- One-shot designs
- Step-wise (vs. “recursive”)
- Not a reading or writing instructor
- Co-teaching, for-credit, partnership with learning center or other campus partner
From the AP Capstone

• “Selecting and consistently applying an appropriate disciplinary or interdisciplinary approach to form a scholarly argument or aesthetic rationale”

• “Provide a complete list of sources cited and consulted in appropriate disciplinary style”
No More Generic Lessons!

• Research models to fit the task and subject
• Lessons embedded in disciplinary language and ways of knowing
• More respect from colleagues
Questions?

Sue Smith
Susan.Smith@harker.org

Debbie Abilock
debbie@noodletools.com