

Teaching Youth to Navigate the Literacy Contexts of School and Life:

*The Case for Disciplinary Literacy Instruction
in the Middle Grades*

Elizabeth Birr Moje

*From General Language Literacy to Literacy in
Middle School Subject Matter*

The Initiative for Applied Education Research
Israel Academy of Sciences and Humanities

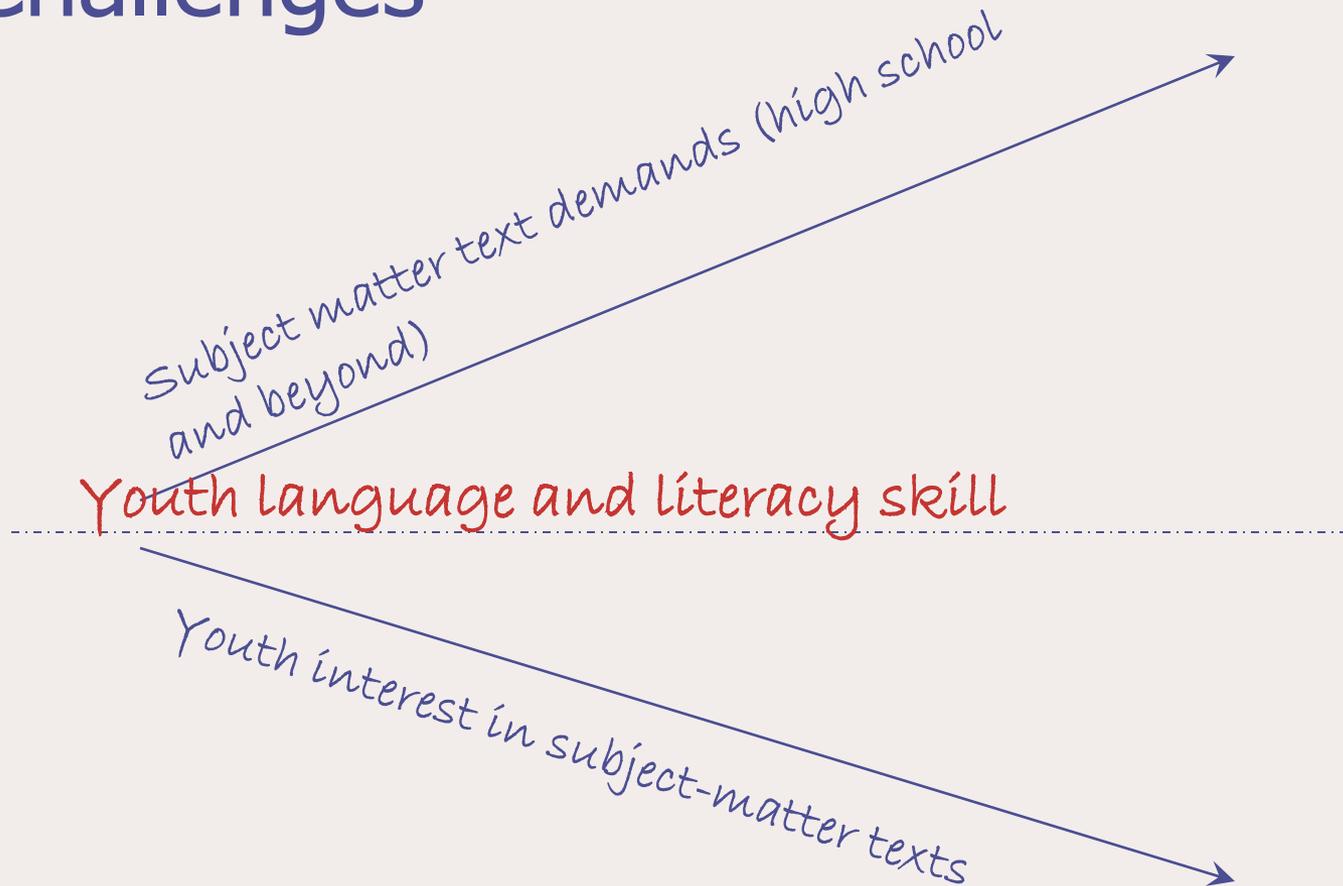
Jerusalem

June 30, 2011

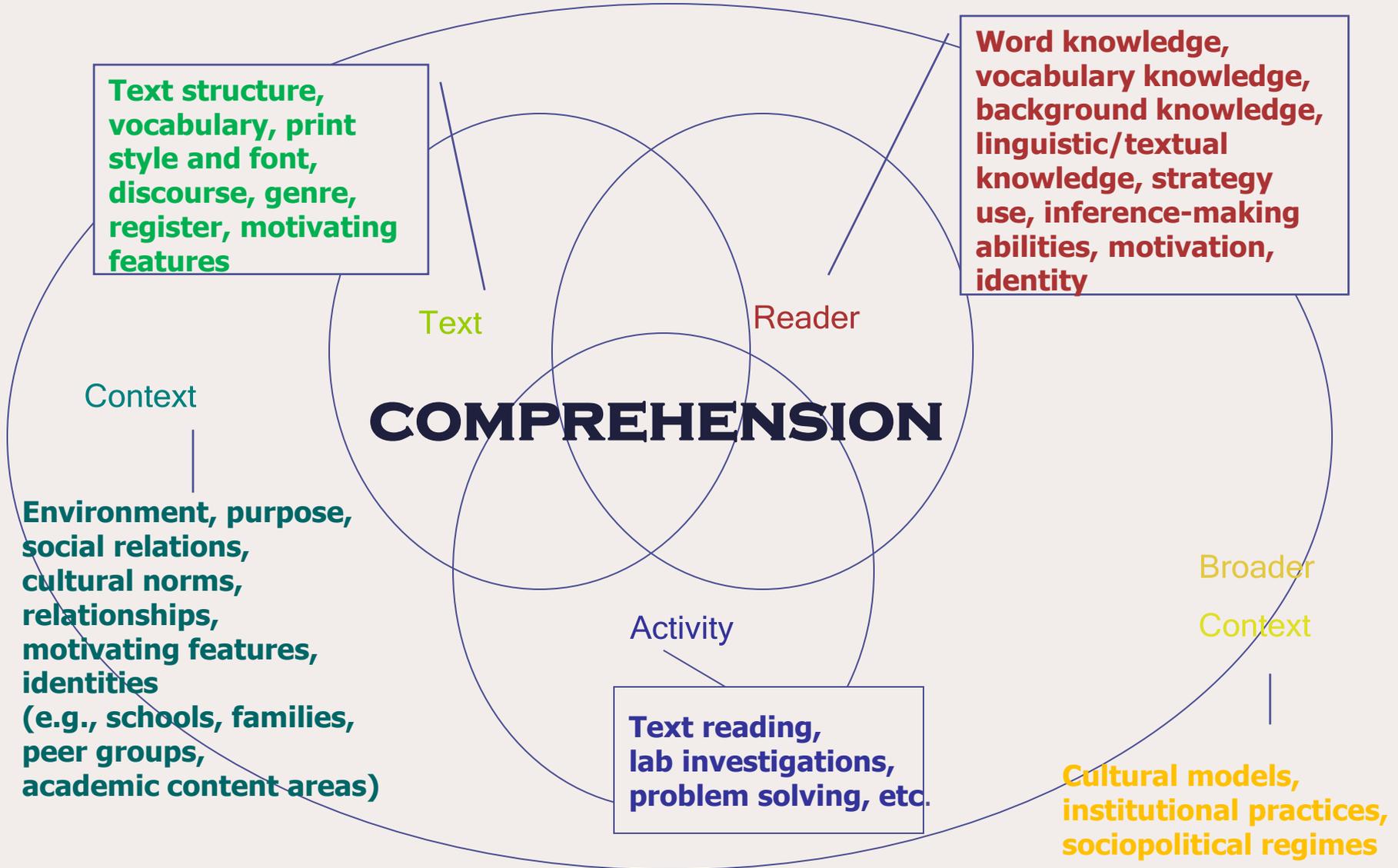
My promises for the session

- Draw from data collected in a large-scale, mixed methods research study and from classroom-based design research;
- Warrant the need for disciplinary literacy instruction;
- Illustrate differences in ways of speaking, reading, and writing in different subject areas; and
- Demonstrate teaching practices for making students aware of differences while supporting subject-area reading and writing development.

Adolescent Literacy—Unique Challenges

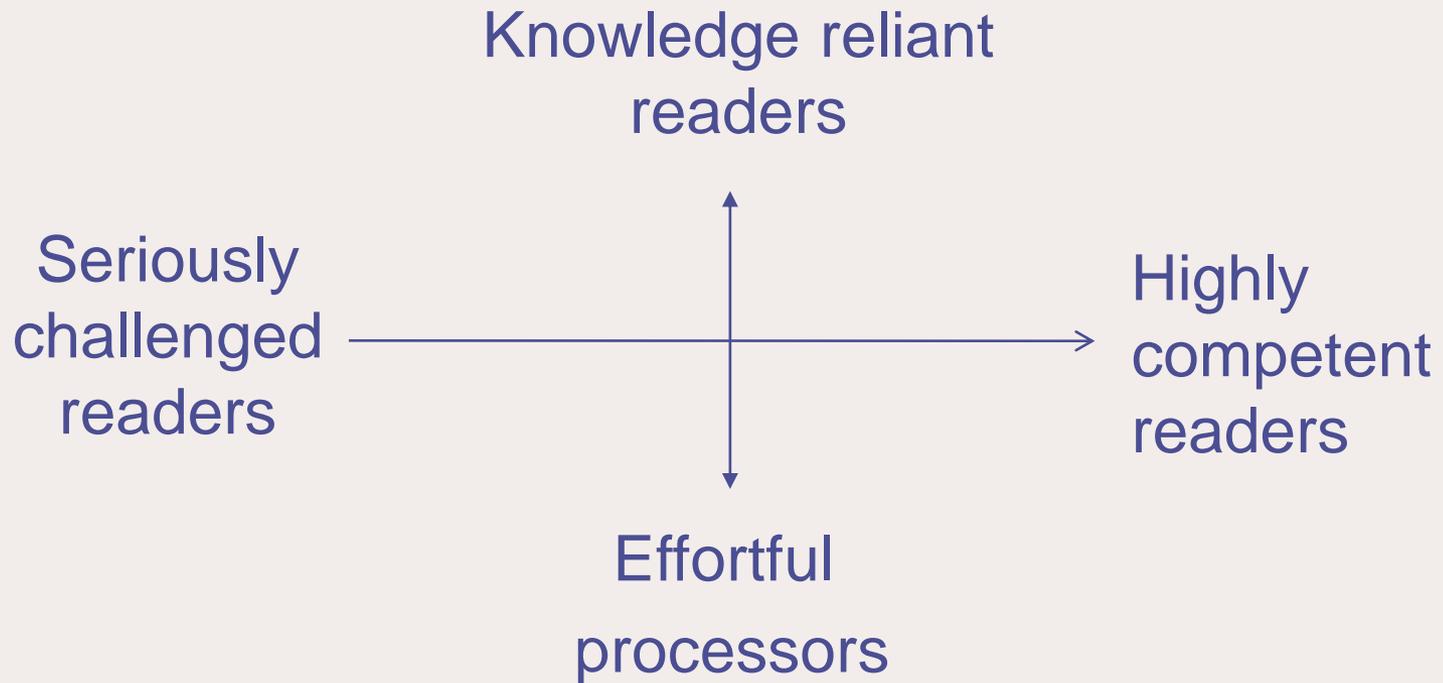


Model of Literate Practice

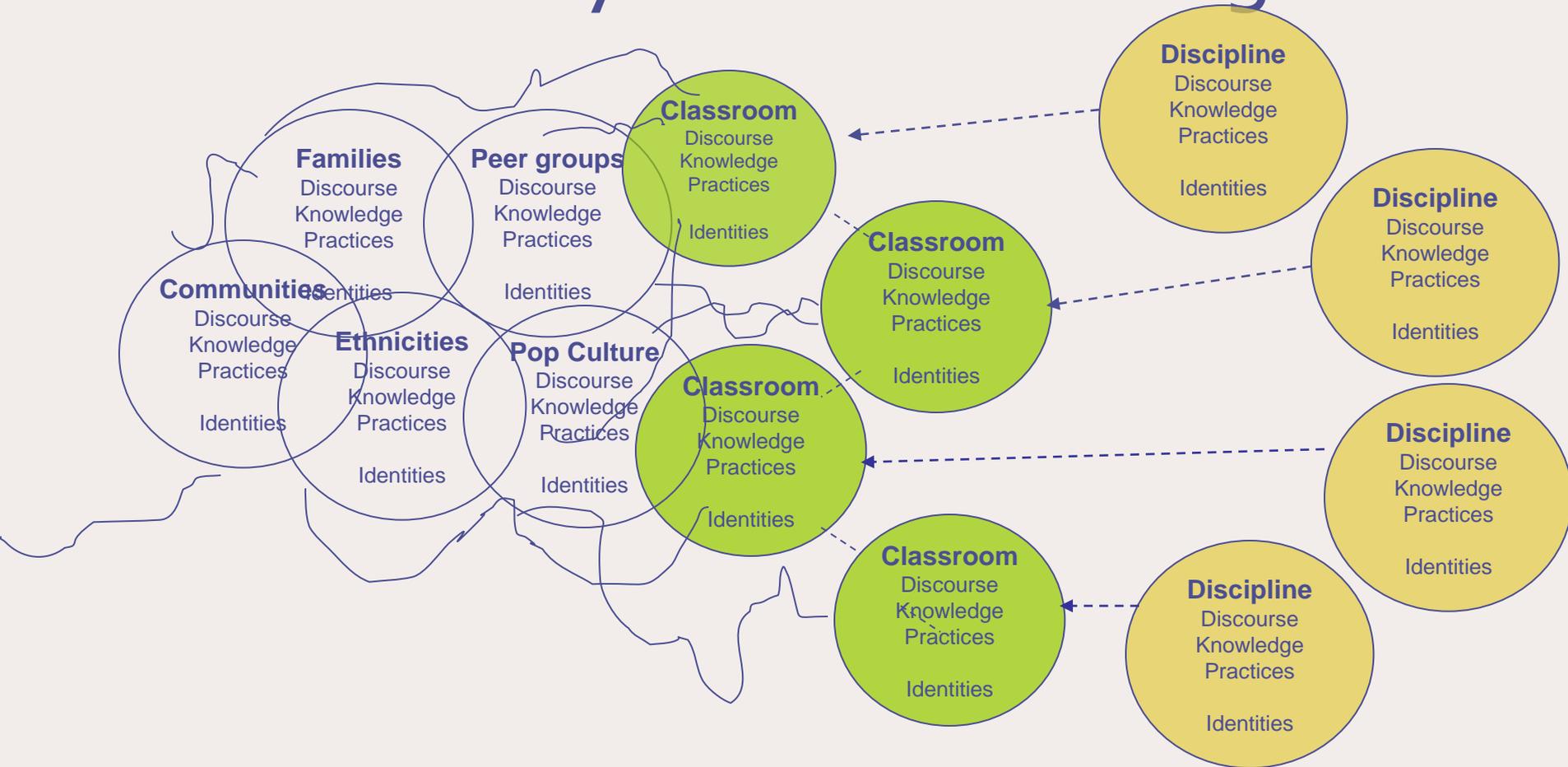


Developmental Profiles

Alexander, 2003



Navigations Demanded by Secondary School Learning**

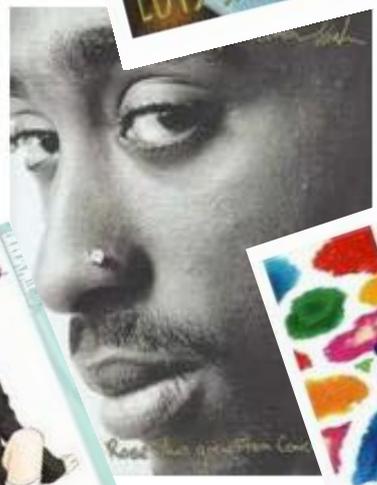
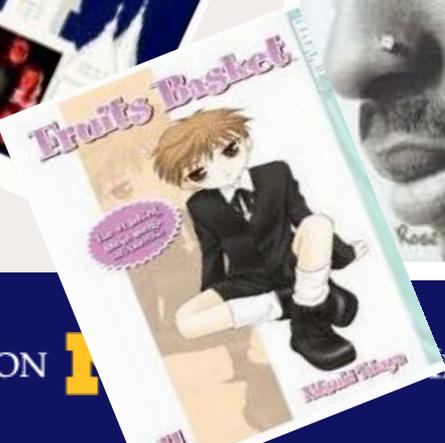
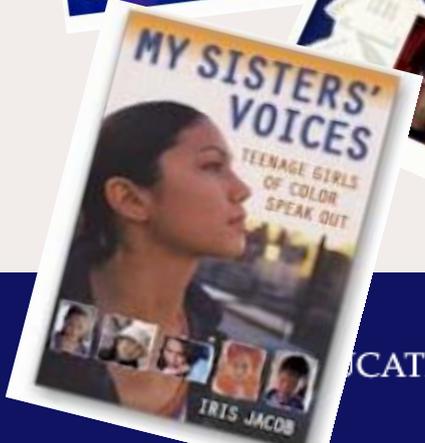
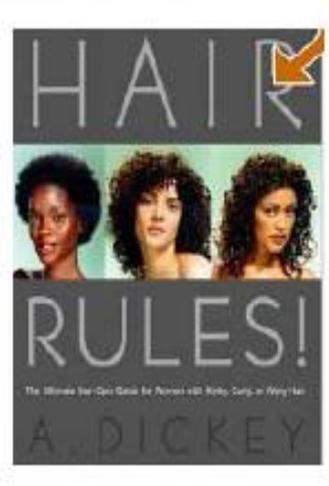
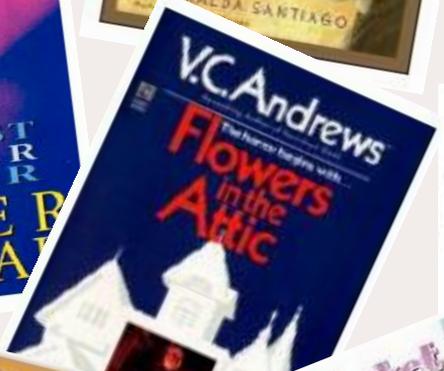
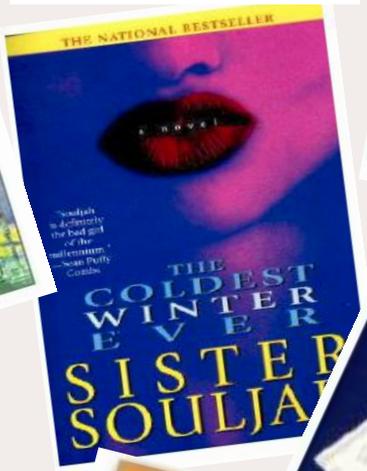
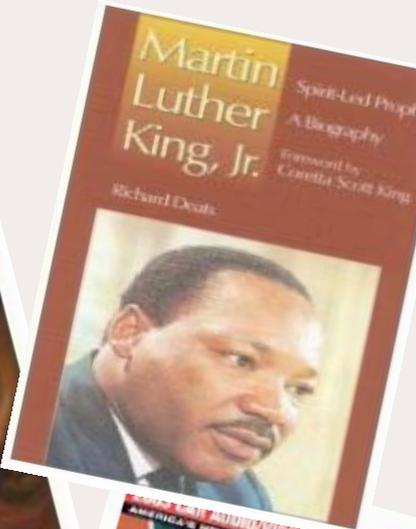
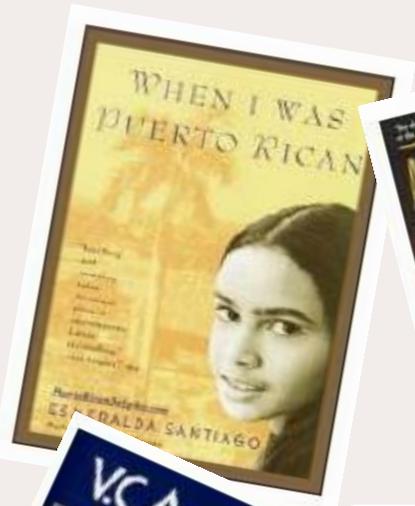
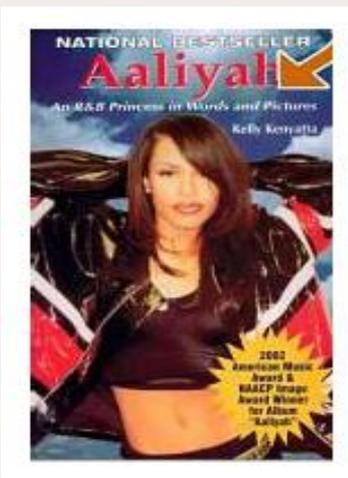
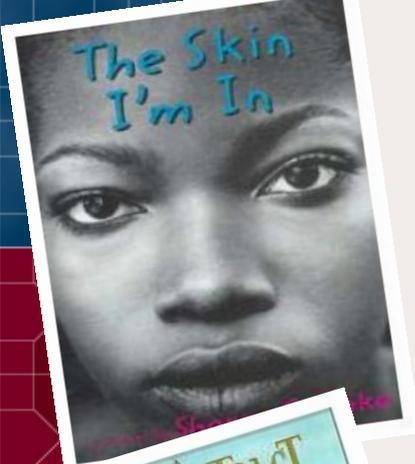


**An admittedly simplified (and messy) representation

Why Navigating?

- Learning is about acquiring skills, knowledge, and practices
- Learning is about changing (taking on) identities
- Learning is about hybridizing
- Learning is about navigating
 - Discourses
 - Knowledge bases
 - Practices

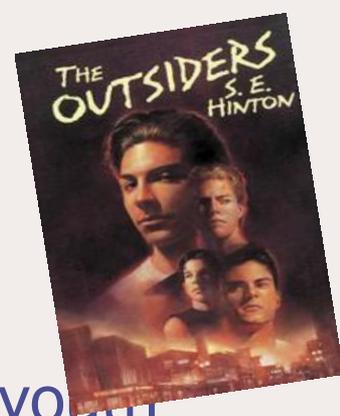
Reading Outside School



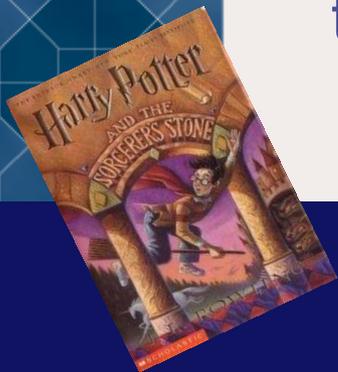
Who are Youth as Readers?

- 92% of the 743 youth surveyed in one Detroit community reported reading some kind of text 3-4 times a week or more
- Most common reading genre (among this group)
 - Websites (changed from Y1)
 - Letters, notes from other people
 - Email
 - Music lyrics
 - Novels, short stories
 - Magazines

Who are Youth as Readers and Writers?



- 241 participants in year one of our Detroit youth literacy study responded to our request to describe a favorite book and indicate why it was a favorite~~
 - 77% of survey respondents nominated a favorite book by name
 - Fiction books accounted for 68% of all nominated books; nonfiction accounted for 8%
- The same 241 were asked if they considered themselves writers~~
 - 86% said, "Yes, I am a writer."



Everyday Text: *Performance Auto & Sound*

The Touring exhaust is a single straight-through design specifically tuned for the 2.4L engine. It is made in the USA with 304 100% mandrel-bent Stainless Steel and features Corsas' patented Reflective Sound Cancellation (RSC) technology. What RSC means is that the muffler is designed with a paper running straight through the muffler that incorporates a full 360-degree air gap that allows sound pressure waves to escape. The waves are channeled and then returned to the gap 180 degrees out of phase, cancelling specific unwanted sound frequencies, commonly referred to as drone.



Everyday Text: *Swift as Desire: A Novel*

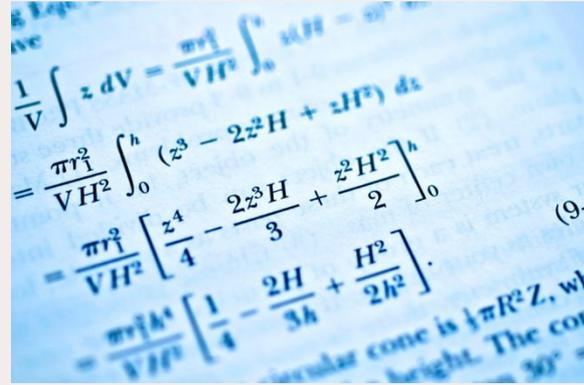
A loud burst of laughter filled the dining room and everyone enthusiastically applauded the happy occasion. Her husband, Librado Chi, raised his arms and exclaimed, “¡Qué júbilo!”—“What joy!”

And that was what they named him. In truth, they could not have chosen a better name. Júbilo was a worthy representative of joy, of pleasure, or joviality. Even when he became blind, many years later, he always retained his sense of humor. It seemed as if he had been born with a special gift for happiness. And I don't mean simply a capacity for being happy, but also a talent for bringing happiness to everyone around him. Wherever he went, he was accompanied by a chorus of laughter. No matter how heavy the atmosphere, his arrival, as if by magic would always ease tension, calm moods, and cause the most pessimistic person to see the brighter side of life, as if, above all else, he had the gift of bringing peace. The only person with whom this gift failed him was his wife, but that isolated case constituted the sole exception to the rule. In general, there was no one who could resist his charm and good humor.

Excerpt from: Esquivel, Laura (2001) *Swift as Desire: A Novel*. New York: Crown Publishers. pp. 13-14

Patterns in Themes of Favorite Books

- Reflection of “real life” in relation to space, socioeconomic status, gender, race, and age
- Texts’ ability to impart life lessons (e.g., resilience/survival, inspiration)
- Utility/practical knowledge
- Exploration of relationships with friends, family, and romantic partners
- Writing style/subject matter
- Interest inspired by movie/television show



READING IN SCHOOL



Key Differences Across School and Out-of-School Texts

- Out-of school texts are situated in social networks
- Youth choose to read and write out-of school texts for social and cultural purposes (building social capital)
- OOS texts are rich with voice
- OOS texts are rich with situated meanings (concrete—abstract)
- In and out-of school texts often differ in quality of writing

Summary of Diagnostic Findings

- Majority of students are in the instructional-independent levels on decoding
- Majority of students recognize words rapidly
- Majority of students read at average to above-average fluency levels . . .
 - Unless reading grade-appropriate, subject-matter texts
- Students still struggle to comprehend the complex texts of the subject areas

In-School Reading

- Word recognition and fluency do not appear to explain their challenges, but what does?
 - Motivation to engage in the assessment?
 - Lack of strategies for dealing with higher-level concepts represented in the texts?
 - Lack of domain and world knowledge?
 - Quality of the texts young people are asked to read in school?

Seriously challenged readers

- Knowledge, discourse, and identity* compromised texts, contexts, practices

- Knowledge-rich contexts
- Culturally situated and mediated practices and texts
- Domain-specific strategy instruction

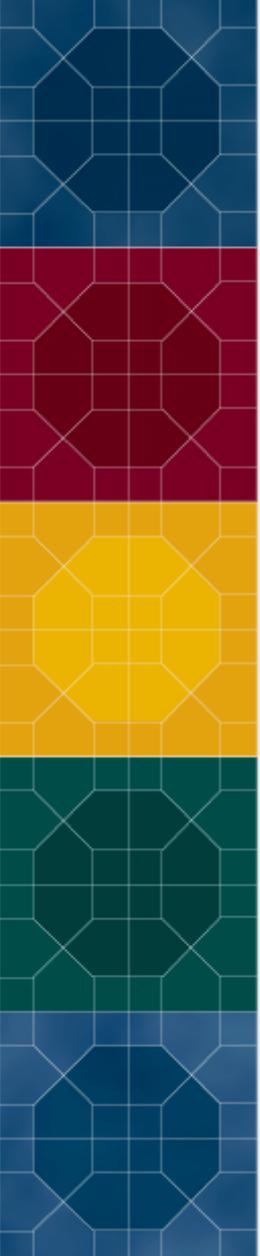
Knowledge reliant readers

Highly competent readers

- Waning intrinsic motivation
- Poorly written text
- Dull or disconnected text
- Unsupportive contexts

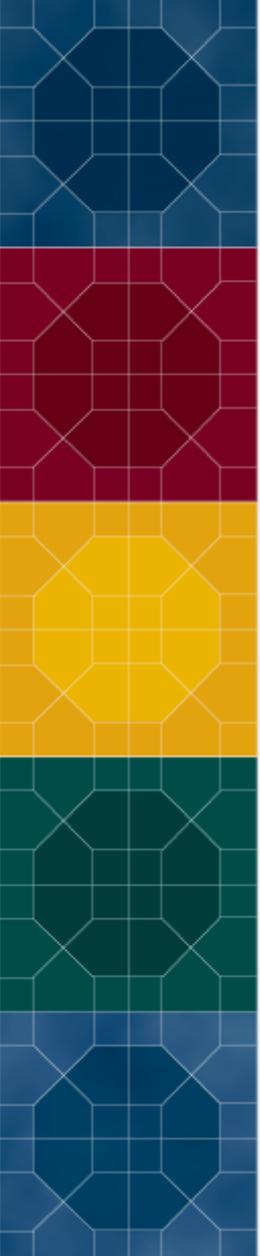
Effortful processors

- Domain-specific strategy instruction
- Accessible texts
- Identity-as-reader supports



How do we teach navigations?

DISCIPLINARY LITERACY



Conceptualizing Disciplinary Literacy

Conceptualizing Disciplinary Literacy

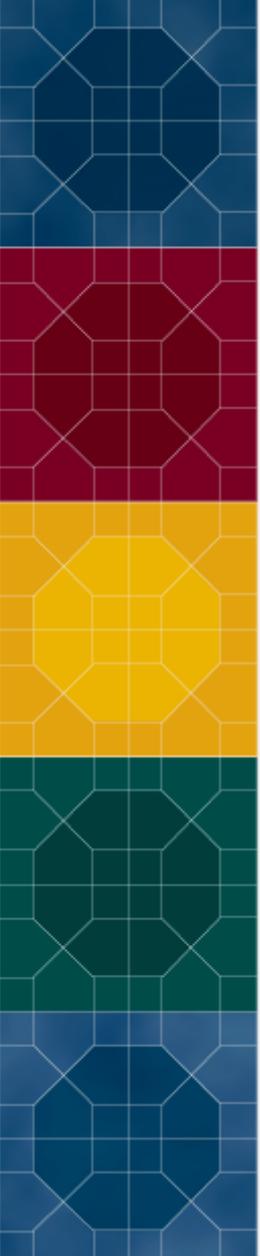
What Disciplinary Literacy IS:

An Example of Disciplinary Literacy



What Disciplinary Literacy is NOT:

A Formal Definition of Disciplinary Literacy



FORMAL DEFINITIONS

of Disciplinary Literacy

Formal Definitions

- “To develop deep conceptual knowledge in a discipline, one needs to use the habits of thinking that are valued and used by that discipline. . . . The ultimate goal of Disciplinary Literacy is that all students will develop deep content knowledge and literate habits of thinking in the context of academically rigorous learning in individual disciplines.” (<http://www.instituteforlearning.org/dl.html> , 2007)

Formal Definitions

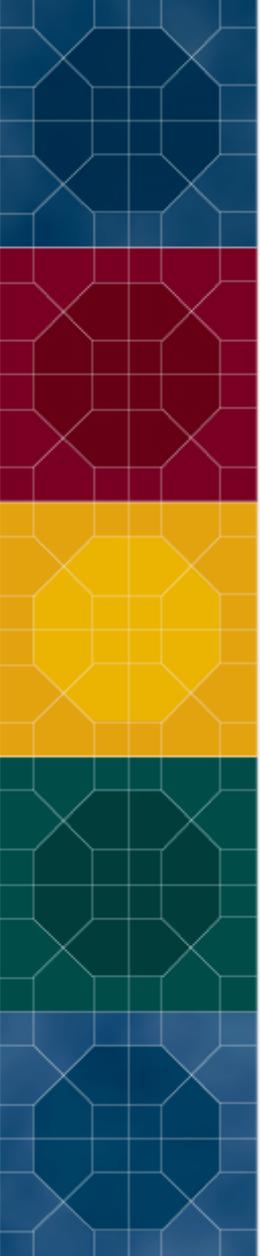
- “By disciplinary literacy we mean the specialized skills and codes that someone must master to be able to read and write in the various disciplines (science, math, literature, history) and technical fields. Basic reading skills tend to be highly generalizable, but various scholars have shown that increasingly, with development, literacy involves language skills and cognitive processes (and even values) that are specialized.”

Cyndie and Tim Shanahan

Formal Definitions

- “Disciplinary ways of producing knowledge *via oral and written texts.*”
- “Uncovering, examining, practicing, challenging, and rebuilding the tools of knowledge production and critique (in both disciplines and beyond).”
- “Subject matter learning is not merely about learning the stuff of the disciplines; it is also about the processes and practices by which that stuff is produced Some of the power of knowledge comes from *being an active part of its production, rather than from merely possessing it.*”

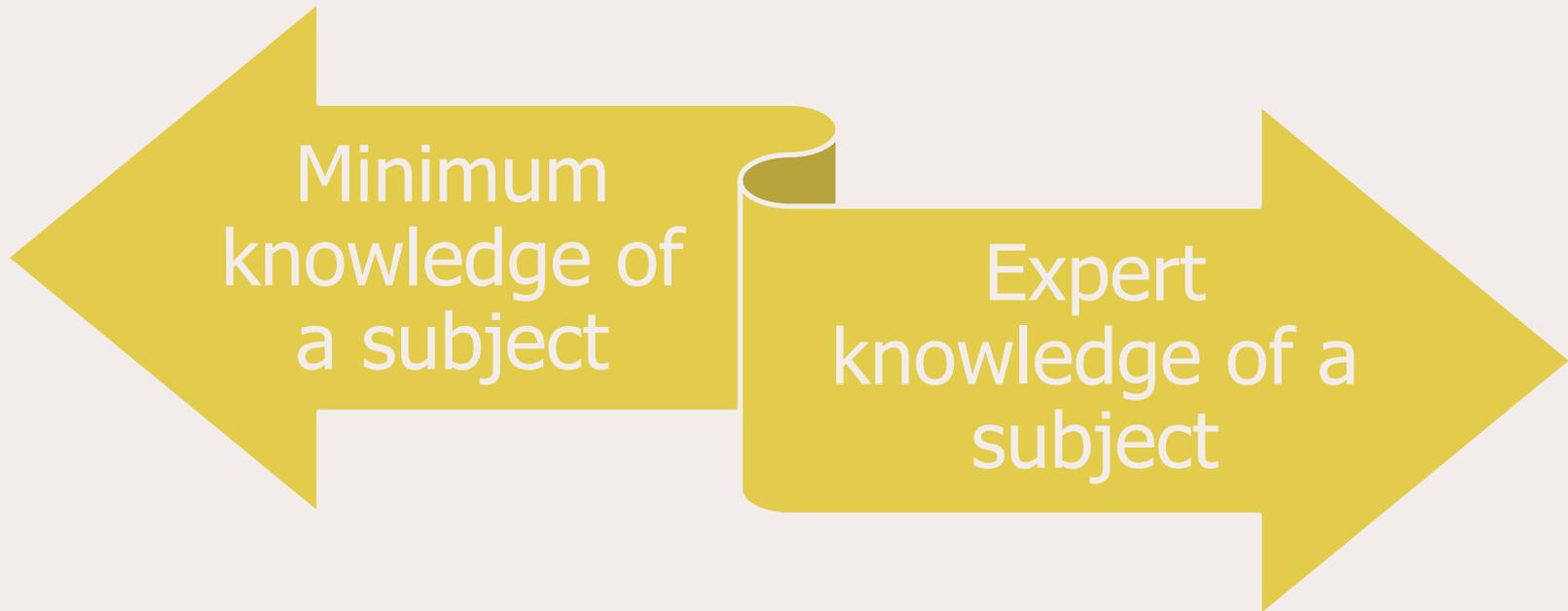
Moje, 2007



What Disciplinary Literacy

IS NOT

What Disciplinary Literacy is NOT



. . . Is Not



Minimum
knowledge
of a subject



Expert
knowledge
of a subject



. . . Is Not

- Just . . .
 - Learning academic or specialized language
 - Reading or writing a subject-matter text
 - And it is most certainly NOT just reading a subject-matter textBOOK
 - Comprehending facts or claims in a text
 - Knowing a certain amount of subject matter
- Antithetical to generic literacy or content literacy strategy instruction

The Montgomery Bus Boycott

In December 1955 Rosa Parks, an African American woman, was sitting down on a bus in Montgomery, Alabama. She was arrested when she refused to give her seat to a white man. The law required African Americans to sit in the back of public buses. Parks was arrested when she refused to give up her seat.

The African American community in Montgomery grew angry about the arrest of Rosa Parks. Led by a minister, Dr. Martin Luther King, Jr., they began to boycott, or stop using, the city's buses. They wanted the unfair law changed. Dr. King believed that nonviolent resistance was the best way to end segregation.

During the boycott African Americans refused to ride on the city's buses. Many people walked to work even in cold, rainy weather. The boycott lasted almost a year. The bus company lost money because before the boycott more than half of the bus riders had been African Americans.

In November 1956 the Supreme Court declared that segregation on public transportation was illegal. African Americans were allowed to sit anywhere on buses. The bus boycott ended. The boycott made Dr. King the most famous African American leader in the nation.

How was this situation resolved?

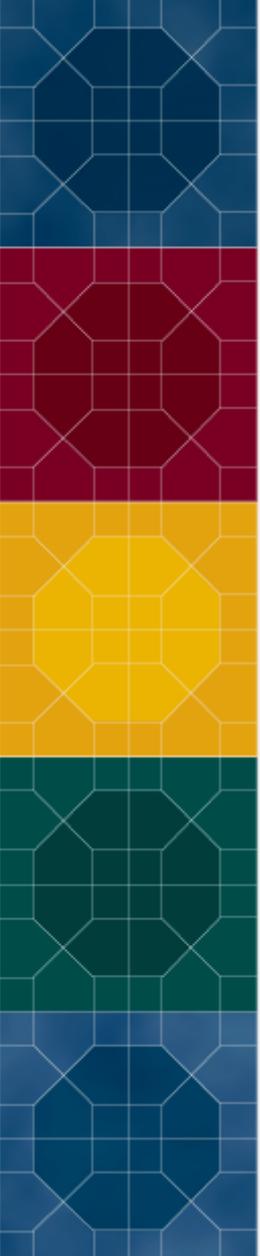
What is a "boycott"?

Why did the boycott begin?

Who were the main characters?

When did it happen?

Where did this take place?



What Disciplinary Literacy

IS

What Disciplinary Literacy IS

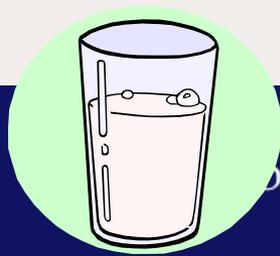
- An examination of what words, phrases, and symbols mean in a given discipline

What is a substance?

Sometimes people need to talk about a particular type of stuff, instead of talking about all stuff. Some stuff is made of only one material throughout. Scientists call this type of stuff a “substance.” A substance has a definite composition, which means that **a substance is made of only one material.**

For example, pure gold or 24 karat gold is a substance. 24 karat gold is only made of one material throughout. But 24 karat is rarely used for jewelry because it is so soft. Instead, jewelry is usually made from 14 or 18 karat gold. This is because 14 and 18 karat gold have other metals, like silver and copper, added to the gold to increase the hardness. 14 or 18 karat gold is not a substance. Instead 14 and 18 karat gold are often made of three different materials: gold, silver, and copper.

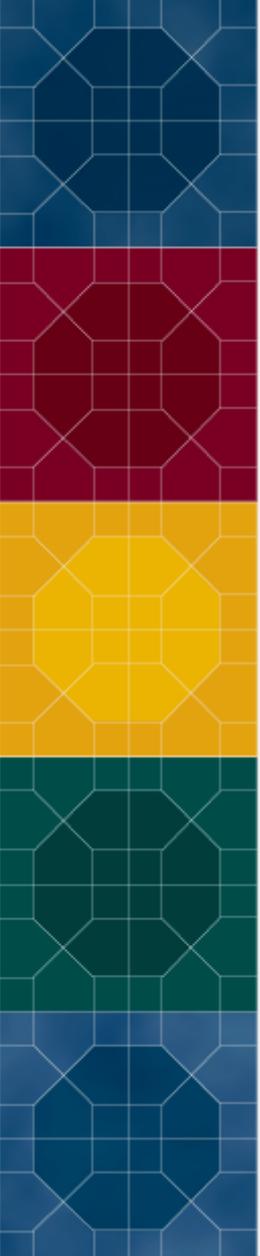
Water is a substance because it is made of only one material. But if you added some salt to it, it would not be a substance.



+

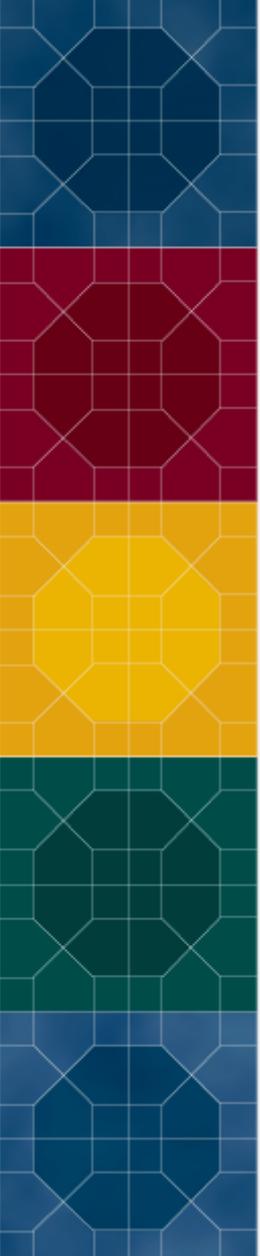


Is not a substance. Why?



What Disciplinary Literacy IS

- Engagement in and exploration of the *practices* for generating and communicating knowledge



Key Disciplinary Differences and Similarities

History and Mathematics Practices: A Comparison

HISTORIANS' PRACTICES

- **FRAME** historical problems
- **LOCATE** and use residues/evidence from past
- **ANALYZE AND USE EVIDENCE** through "sourcing, corroborating and contextualizing"
- **DETERMINE significance** of evidence and events
- **LOOK FOR PATTERNS** in welter of facts
- **PERIODIZE** and/or use the periodization schemes of others
- **READ** others' historical accounts
- **PRODUCE** historical accounts
- **PRESENT/PUBLISH** historical accounts
-

(adapted from R. B. Bain, 2007)

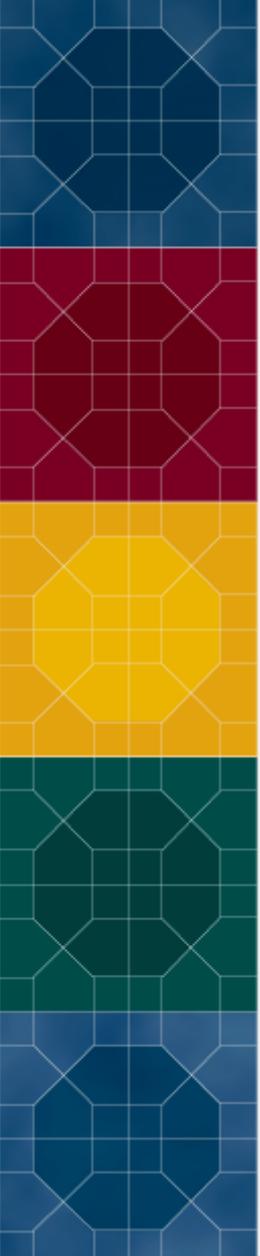
MATHEMATICIANS' PRACTICES

- **ASK** "natural questions" in a given mathematical context
- **EXPLORE AND EXPERIMENT** with the context
- **REPRESENT THE CONTEXT** and examine the representation
- **LOOK FOR ORGANIZING STRUCTURE** or pattern
- **CONSULT** with colleagues orally or in the literature
- **LOOK FOR CONNECTIONS**
- **SEEK PROOFS OR DISPROOFS**
- **FOLLOW** opportunities
- **ANALYZE** proofs (proof analysis)
- **WRITE** finished exposition of a proof
- **PRODUCE AESTHETICALLY PLEASING RESULTS**
- **PRESENT/PUBLISH** proofs

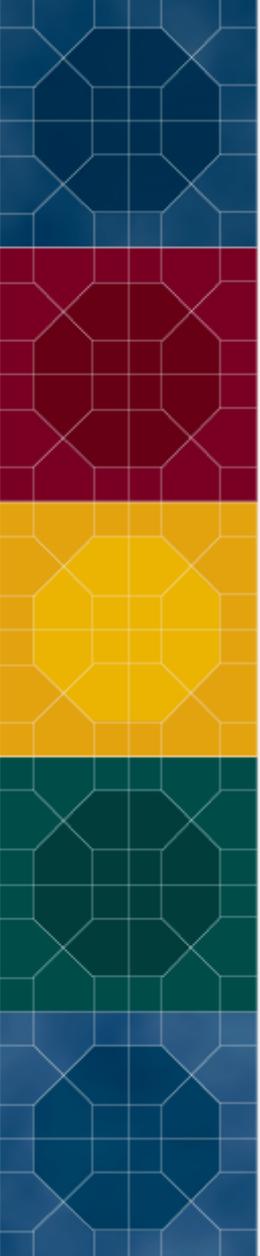
(adapted from H. Bass, 2007)

Science Practices

- **FRAME** problems for investigation
- **READ** other scientific accounts
- **INTEGRATE and SYNTHESIZE** concepts across natural science domains
- **FORMULATE THEORIES and MODELS**
- **DESIGN** empirical investigations to replicate findings or test theories
- **DEVELOP** instruments and systems for recording, documenting, measurement
- **CONDUCT** empirical investigations by observing, recording, measuring, documenting, and analyzing
- **WRITE** scientific logs and reports
- **TALK/CONSULT** with other scientists and with people outside the discipline
- **PRESENT/PUBLISH** findings



BUT THERE'S MORE . . .



Disciplinary literacy is also . . .

- Practice in thinking, *reading, writing, and talking* in the ways valued in the discipline

In history . . .

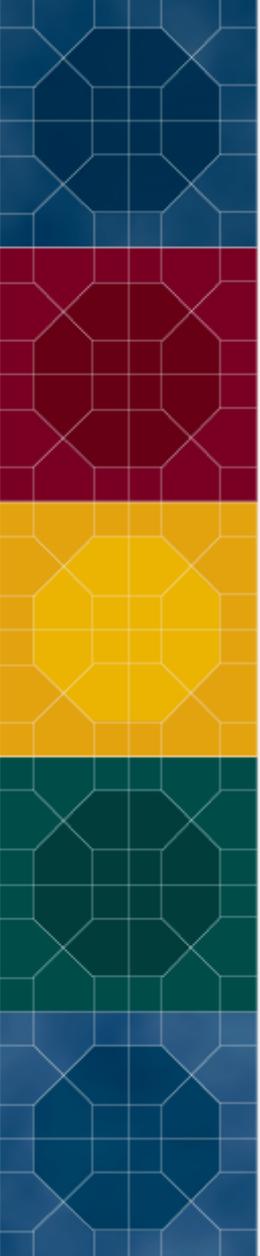
- Define an historical problem or issue
- Locate and select texts related to the problem
- Examine texts for attribution:
 - Who wrote the text? What was the writer's background? What was the writer's perspective or standpoint? (depends on historical empathy)
- Take apart specific phrases and draw inferences about author stance and standpoint
- Search for corroborating or challenging sources or accounts
- Produce accounts that:
 - Explain and reason, attending to questions of purpose, evidence, chronology, causality, and contexts.
 - Build a compelling case or narrative that integrates evidence, chronology, and cause to support and generate hypotheses.

In science

- Predict explanations for natural events or phenomena before reading and test predictions while reading
 - What's my prediction/hypothesis? How is my investigation like or different from the study I'm reading?
- Hypothesize about those predictions based on the best available information
- Design, carry out, and record results of investigations
- Draw conclusions about those results in relation to their hypotheses and the existing literature
- Communicate their findings to others by
 - Illuminating questions and claims,
 - Using evidence to warrant and reason the claims, and
 - Theorizing new ways of understanding the natural world.

And there's still more . . .

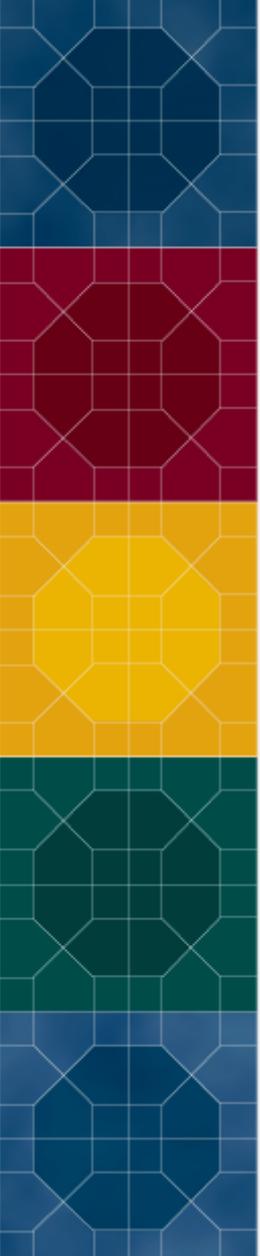
- Explicit discussion of why, when, how these “ways” are useful
- Explicit discussion of why, when, how these “ways” are not useful



Disciplinary Literacy Teaching Practices Ways to Teach Navigations

Disciplinary Literacy Teaching Practices

- Problem Framing
- Knowledge Elicitation/Building
- Close Reading and Questioning
- Visualizing
- Synthesizing Across Texts
- Summarizing
- Producing accounts



In history

EXAMPLES OF DISCIPLINARY LITERACY/ NAVIGATIONS

Based on:

- Moje, E. B., & Speyer, J. (2008). The reality of challenging texts in high school science and social studies: How teachers can mediate comprehension. In K. Hinchman & H. Thomas (Eds.), *Best Practices in Adolescent Literacy*, New York: Guilford Press.

Emergency Quota Act of 1921

AN ACT

To limit the immigration of aliens into the United States.
Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled...

Sec. 2. (a) That the number of aliens of any nationality who may be admitted under the immigration laws to the United States in any fiscal year shall be limited to **3 per centum** of the number of foreign born persons of such nationality resident in the United States as determined by the United States census of **1910**.

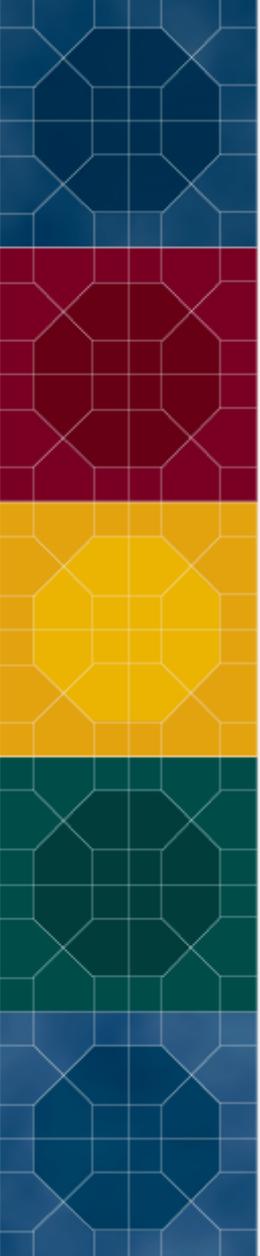
Understanding this text depends on . . .

That the number of **aliens** of any nationality who may be admitted under the immigration laws to the United States in any **fiscal year** shall be limited to **3 per centum** of the number of foreign born persons of such nationality **resident** in the United States as determined by the United States **census** of **1910**. This provision shall not apply to the following, and they shall not be counted in **reckoning** any of the percentage limits provided in this Act . . .

- Knowledge
 - Semantic
 - Mathematical
 - Historical
 - Geographical
 - Discursive
 - Pragmatic

Understanding this text also depends on . . .

- Recognition that one should get information, ideas, perspectives from texts
- Recognition that texts can be questioned
- Skill in asking questions
 - Historical empathy
- Skill in accessing relevant information
- Skill in making sense of relevant information
 - Sourcing, corroboration, contextualization



Problem Framing (Purpose Setting)

- Establish a reason to read and write via inquiry . . .
- Multiple tools:
 - Free writing
 - Advanced organizers
 - Prediction activities (preview guides; anticipation/reaction guides)
 - K-W-L
 - Images

Knowledge Elicitation and Building

- Read texts together
- Talk about the texts (think alouds)
- Make texts visible (make words visible)
- Defining words; interpreting nuanced meanings
- Reading charts and tables

Sonnets.

I.

The New Colossus. Not like the brazen giant of Greek fame,
With conquering limbs astride from land to land;
Here at our sea-washed sunset gates shall stand
A mighty woman with a torch, whose flame
Is the imprisoned lightning, and her name
Mother of Exiles. From her beacon-hand
Glow world-wide welcome; her mild eyes command
The air-bridged harbor that twin cities frame.

"Keep ancient lands, your storied pomp!" cries she
With silent lips. "Give me your tired, your poor,
Your huddled masses yearning to breathe free,
The wretched refuse of your teeming shore.
Send these, the homeless, tempest-tost to me,
I lift my lamp beside the golden door."

Emma Lazarus, 1883.
(Written in aid of Bartholdi Pedestal Fund)

Close Reading and Questioning

- Developing questioning skills
 - Problem framing
 - Historical empathy
 - Contextualization
- Pressing for understanding
 - Turning to texts
- Providing specific feedback

Foreign-Born Residents by Selected Country of Origin, 1890-1920

<i>Country/Region</i>	<i>1890</i>	<i>1910</i>	<i>1920</i>
Great Britain	1,251,402	1,221,283	1,135,489
Ireland	1,871,509	1,352,251	1,037,234
Germany	2,784,894	2,311,237	1,686,108
Italy	1,887	1,343,125	1,610,113
Romania	NA	937,884	1,139,979
Poland	48,557	65,923	102,823

Immigration Statistics, 1920-1926

		Country of Origin		
<i>Year</i>	<i>Total Entering U.S.</i>	<i>Great Britain</i>	<i>Eastern Europe</i>	<i>Italy</i>
1920	430,001	38,471	3,913	95,145
1921	805,228	51,142	32,793	222,260
1922	309,556	25,153	12,244	40,319
1923	522,919	45,759	16,082	46,674
1924	706,896	59,490	13,173	56,246
1925	294,314	27,172	1,566	6,203
	304,488	25,528	1,596	8,253

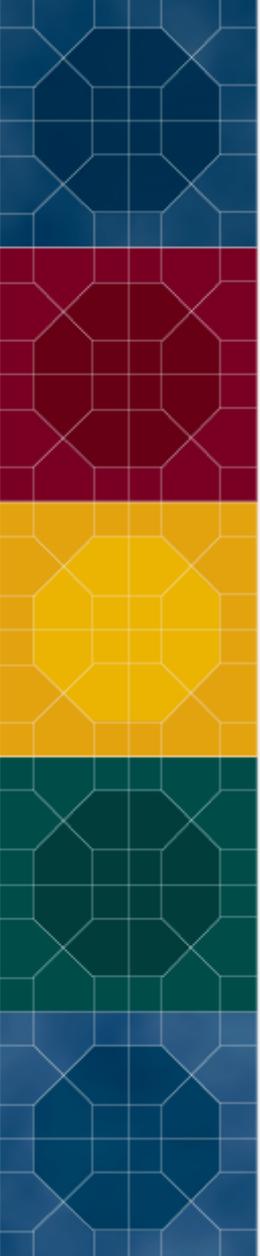
Visualization

- Read texts aloud and ask students to visualize and to describe or to draw what they hear
- Have students illustrate the main points of the text (can serve as assessment tool, as well)
- Provide images to build visualization skills



THE ALEXIS
de Tocqueville
INSTITUTION





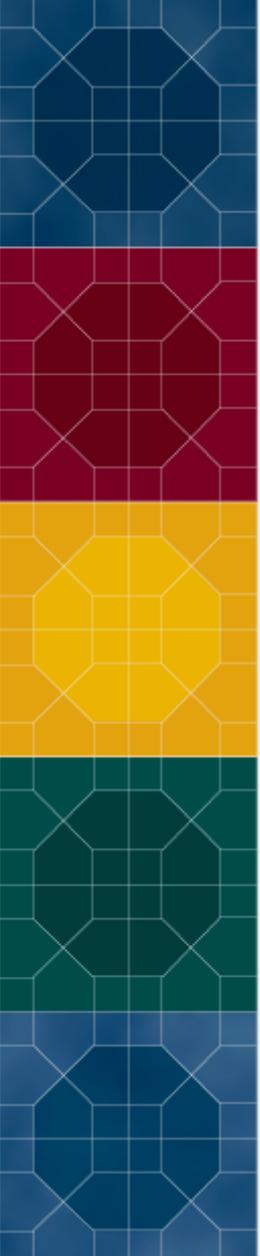
Summarization and Synthesis

- Synthesize across texts
 - “Coming back around”
 - Corroborating information across multiple texts
- Refer back to texts
 - To ideas or concepts
 - To key actors, events, or findings
 - To procedures
 - To words or phrases
 - To images

- The following classes shall be excluded from admission to the United States ... All idiots, insane persons, epileptics, and persons who have been insane within five years previously; paupers; persons likely to become a public charge; professional beggars; persons afflicted with a loathsome or with a dangerous contagious disease; persons who have been convicted of a felony or other crime or misdemeanor involving moral turpitude.

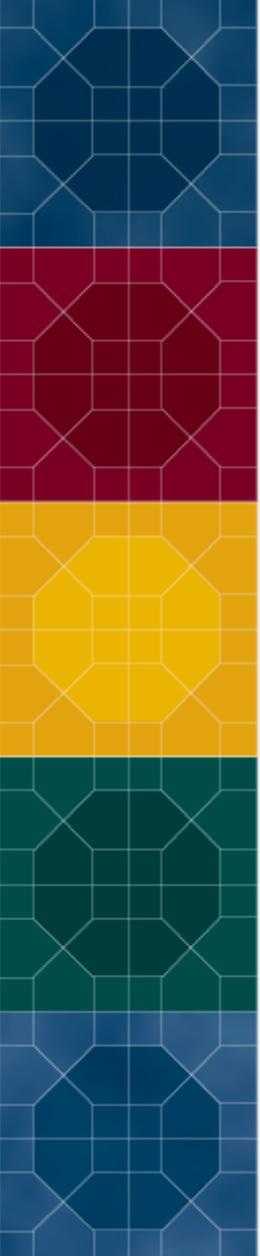
- --32
Stat. 1214, sec. 2 of 1903
US Statutes at Large

- "Give me your tired, your poor, your huddled masses, yearning to breathe free," The wretched refuse of your teeming shore.
Send these, the homeless, tempest-tost to me,
I lift my lamp beside the golden door."
- Lazarus, 1883



In Science

EXAMPLES OF DISCIPLINARY LITERACY/NAVIGATIONS



Close Reading and Synthesizing Across Texts

- Cases of scientific questions
- Expository science texts
- Everyday science texts
- Texts and products of investigations

Chicago Tribune

The silent killer of cars: Early treatment can keep a speck of rust from becoming a scar

Stanley Ziemba. November 3, 1991. Section: Transportation

Rust.

It's metal cancer, a silent killer eating away at its victims from the inside. And like the disease, it's most successfully treated early.

Rust will invade almost anything made of iron or an iron alloy that isn't properly treated with corrosive-resistant materials. It can attack the metal in our garden tools and the metal handlebars on our kids' bicycles whenever they're left in the rain. It can assault the ungalvanized gutters on our houses when we allow them to go too long without a fresh coat of paint. It eventually can eat away at the chain-link or wrought-iron fences surrounding our property. Rust can damage the steering components and exhaust systems of an automobile, causing them to malfunction. It also can reduce the structural integrity of a car.

Rust is an iron oxide, created as a result of a chemical reaction that occurs when iron or metal containing iron is exposed to oxygen. Then the iron in metal comes into contact with oxygen, and electrical flow is generated between them producing a decayed metal coating we call rust. However, it is only after water—particularly water polluted with acids, salts and other deteriorating substances present in the environment—is introduced into the chemical equation that rust becomes the dreaded invader that is all too familiar to us.

In modern times, rust has been and continues to be especially hard on automobiles, despite the use by manufacturers of more rust-resistant materials such as galvanized metal (steel coated with zinc) in car bodies since 1980. A car showing signs of rust may be worth several hundred to several thousand dollars less than a rust-free like vehicle, dealers say.

Rust is, by far, much more of a problem in the northern states like Illinois, Indiana, Wisconsin and Michigan and along the East and West Coasts than in the arid Southwest. Because they are heavily industrialized, the northern states have high levels of sulfur and nitrogen pollutants in the atmosphere, which when combined with airborne moisture produce extremely corrosive acids. An even greater contributor to automobile rust in the North, however, is road salt.

Though rust may be associated with ice and snow, cold weather has little to do with the process, scientists point out. Rust's action on a car is perhaps 20 to 30 times greater in the spring, they note. Heat speeds up the electrochemical rusting process. Consequently, in spring, as temperatures rise, rust and corrosion speed up, the scientists say. Cold air, on the other hand, actually delays the oxidation of metal. In fact, owners who keep their cars in a warm garage in winter actually are doing more harm than good to their cars, unless they first remove the moisture and road salt from their vehicles.

Shiree and James have lived in Detroit all their lives, and have been friends since they were twelve years old. One of their favorite things to do is talk about cars. Shiree's dad owns an auto body shop, and many times Shiree and James go to the shop after school to watch the team of automotive technicians fixing up cars. One day Shiree and James walked into the shop to find a lot of excitement.

"Hey Dad!" Shiree called out, "What's goin' on? Why is everyone so jazzed?"

"Well, we got somethin' special goin' on for the **Woodward Dream Cruise**" said Shiree's father.

"Waz up?" James asked, "We can hardly wait to cruise in those sweet lookin' old cars!"

"Yeah," Shiree agreed, "it's like you're cruisin' in the old days for one weekend every summer."

"Here's the surprise," Shiree's father almost burst with excitement, "We're puttin' out *two* cars this year!"

"Where are they?" Shiree and James exclaimed at the same time.

"Can we see them?" James asked excitedly.

"Sure!" Mr. Johnson exclaimed as he led Shiree and James into the garage. "They're both 1933 Ford roadsters. **We got one from Detroit, and the other one came up from Arizona.** They're needing lots of love, but they'll be looking good once our team works a little magic."

Shiree and James were excited to see the cars they were going to cruise around town in, but when they saw the roadsters, they about fainted. The cars weren't shiny, hot-lookin' roadsters. In fact, they looked just the opposite! One of the cars looked like it had taken a real beating. The shiny silver metal around the bumpers and wheel wells was brown and orange with rust. Some spots were even worn right through the metal. Some places on the **bottom of the doors showed rust** where the paint had flaked off! It could have been a great car, but it wasn't. The other car didn't look so bad, but it still wasn't what Shiree and James were hoping for. It had lots of little spots where rust had just started to form, but no big, ugly spots like the other car had. **The car from Detroit had way more rust on it than the one from Arizona.**

Shiree and James knew that the metal on cars can rust, but how could two cars, with the same make and year, be in such different shape?

James began to remember **something he had learned about rust in his science** class. One article he had read said that **rust was like cancer, eating a car from the inside out**. Since he hung out at the body shop all the time, and saw lots of rust on cars, he thought it was interesting. But he also knew that water was involved in rusting. Last summer, he'd parked his bike behind his Grandma's house, and then all it did was rain for a whole weekend. When his mom came to pick him up, James got his bike to put in the trunk, and he couldn't believe the little dots of rust on the fender. He wondered if the one roadster was all rusty because it got more rain and snow on it in Michigan than the car from Arizona did.

"I can't believe how bad this one looks," said James. He tried out his idea on Shiree: "Remember what we learned about rust last year? Didn't we learn that it was a **chemical reaction between metal and water**?"

Shiree remembered it differently: "It's not just any metal—it's **just iron**. And I thought it had to do with **oxygen**."

"Oxygen? It can't be oxygen," James said, shaking his head. "**If it's oxygen, then why don't both of these cars have the same amount of rust?** Oxygen is in the air, and there's air in Arizona *and* in Detroit. Something's goin' on with these two cars, that's for sure, but how do we know what? **How can we find out?**"

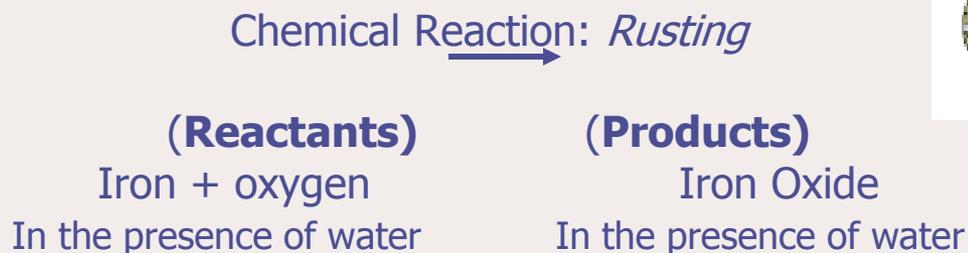
Rust is a product that forms on the surface of metal as a result of a chemical reaction. In that way, rust is like the copper acetate or copper sulfate that forms on copper. Maybe you know that rusting involves metal. Maybe you know that the particular metal involved in rusting is iron. The same chemical reaction causes rust to form on many objects that contain iron like nails, tools, cars, bicycles, cars, and some metal fences.

Rusting is a complex chemical reaction. It involves reactants and products, like all chemical reactions do, but the reaction has to occur in the presence of water. You may already know this. In fact, when you wrote what you know about rust, you may have written that rusting happens when some objects get wet.

For now, you are going to look at the main reactants and products, but not at the water. This is like when you looked at magnesium reacting with oxygen in a sparkler. A flame started the reaction, but the flame was not considered one of the reactants. Water is necessary for rusting to take place, but the water is not considered one of the reactants.

An **open system** is when something is added or allowed to escape in a chemical reaction.

One way to represent the chemical reaction called rusting is this:



Producing Accounts: Navigating audiences and claims

Examine the following data and be prepared to make claims about these artists' sales and their audiences:

Billboard Top 10 for June 28, 2011

1. *Rolling in the Deep*, Adele
2. *Give Me Everything*, Pitbull
3. *Party Rock Anthem*, LMFAO
4. *Last Friday Night (T.G.I.F.)*, Katy Perry
5. *E.T.*, Katy Perry
6. *The Edge of Glory*, Lady Gaga
7. *Dirt Road Anthem*, Jason Aldean
8. *Super Bass*, Nicki Minaj
9. *The Lazy Song*, Bruno Mars
10. *The Show Goes On*, Lupe Fiasco

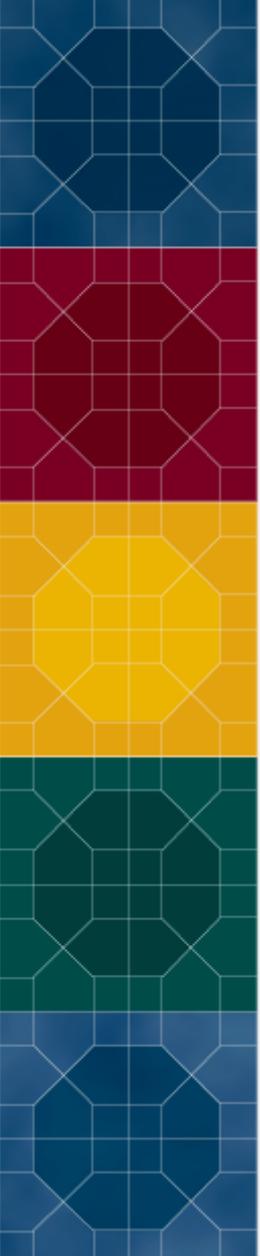
Producing Accounts: Navigating audiences and claims

- Make an argument about which album the following people or groups should buy or how much they should pay/charge (download):

Person/Group	Your claim
You	
Your grandmother	
Your little sister	
The local music store	
iTunes	

Scientific Explanation Writing: An Iterative Practice

- Examination of explanations written by others
- Classroom-based, whole-group generation of rubric using models (i.e., comes from the students; see previous slide)
- Engagement in scientific investigations
- Writing to explain one's own investigations
- Peer review (e.g., poster displays, museum walks)
- Revision of explanations
- New investigations, new explanations, more peer review
- And the cycle continues



THE CHALLENGES

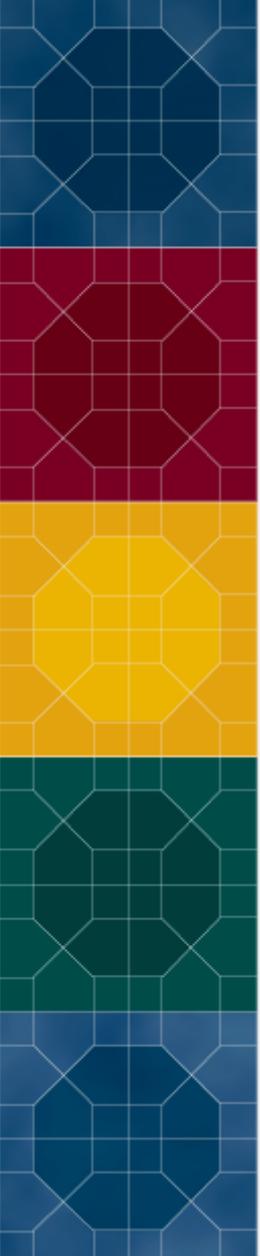
Of teaching disciplinary literacy/navigations

Challenges of Teaching Navigations

- Structural Challenges
 - Time
 - Availability of texts and other resources
 - Testing and accountability pressures
- Conceptual/Cultural Challenges
 - Students' (and parents') perceptions of learning in subject areas
 - Teachers' knowledge
 - Of disciplines
 - Of children and youth
 - Of texts

Challenges of Teaching Navigations

- Pedagogical Challenges
 - Teaching people to navigate requires enormous skill
 - All the basic literacy teaching practices
 - Commitment to problem framing
 - Knowing how to elicit and build knowledge without merely telling
 - Asking good questions
 - Listening well and drawing from what students say and do . . .
 - Recognizing and making connections to disciplinary knowledge and practices. . . navigating



Thank you!

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some published work:

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