

# Supporting Metacognition with Social Annotation

Nance Wilson, SUNY Cortland

Brittany Adams, SUNY Cortland

Jennie Baumann, Michigan State University

Linda Smetana, CSU East Bay

Ann Van Wig, Eastern Washington University

Shuling Yang, East Tennessee State University

# What is social annotation?

- Makes reading active, visible, and social, enabling students to engage with their texts, teachers, ideas, and each other in deeper, more meaningful ways
- Takes a normally solitary act of reading and thinking about a text and allows students to do it in community with one another.
- Allow multiple students to simultaneously mark, comment, ask questions, or otherwise annotate a text and interact with others' annotations
- Create visual representations of text that help them to extract important information during reading to improve comprehension
- Provides a glimpse into the thinking of a reader during the reading process.

# Social Annotation and Metacognition

## Craft

- Highlighting/Underlining
- Paraphrasing
- Summary
- Commenting
- Descriptive



## Benefits

- Reflective
- Metacognition
- Community practice

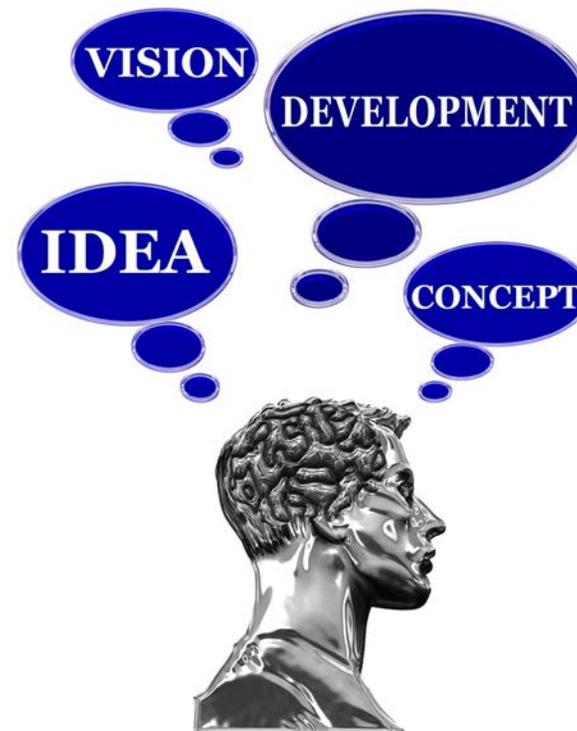
# Explicit and Implicit Aspects of Social Annotation

Explicit → Craft

- Underlining
- Highlighting
- Drawing

Implicit → Process

- Synthesizing
- Connecting
- Questioning



# Benefits of Social Annotation

- Reader response (Rosenblatt, 1994)
- Seeing the transaction **during** the process
  - Noting the types of transactions taking place
    - Surface level
    - Deep discussion with peers
- Slows down reading process
- Deeper interaction with the text
- Reading with a purpose
- Building connections with peers

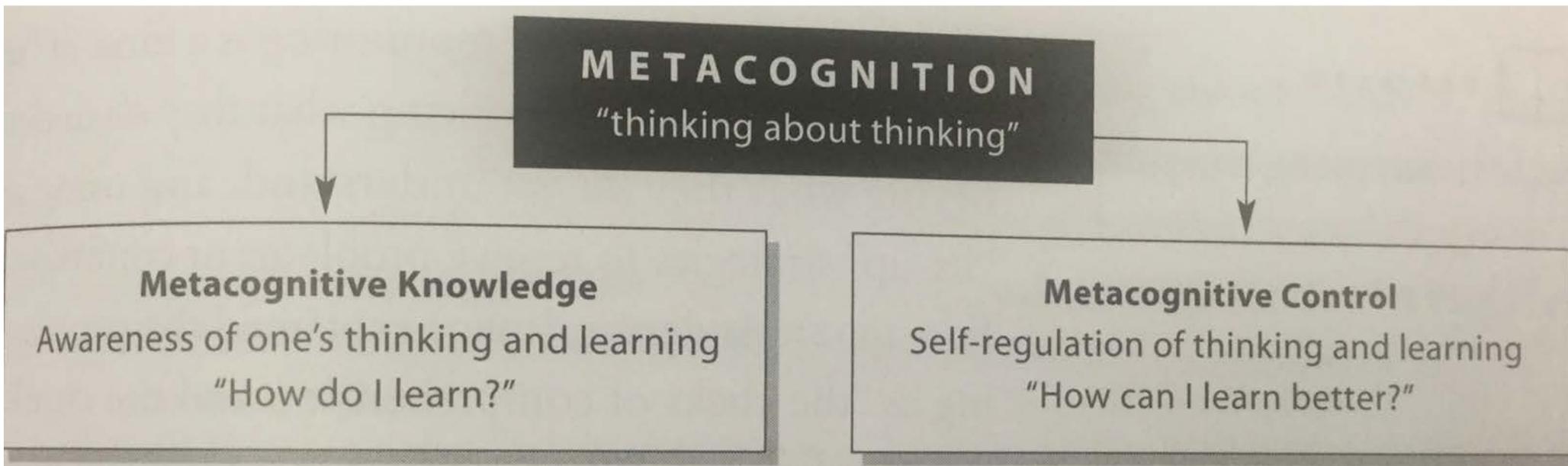
# Annotation Tools

- [Perusall](#)
- [Hypothesis](#)
- [Kami](#)
- [Now Comment](#)

The screenshot displays a digital reading interface. On the left, a page of text is shown with several annotations. A yellow highlight is placed over the word "everywhere" in the sentence "They looked everywhere." Another yellow highlight is placed over the word "away" in the sentence "They called the parents of every kid in Aidan's class, even the ones who'd moved away." A yellow highlight is also placed over the word "game" in the sentence "It was a game of hide and seek that got old after five minutes, alarming after an hour, and the scariest thing that had ever happened to any of us after that." A yellow highlight is placed over the word "found" in the sentence "Aidan couldn't be found." On the right side of the interface, a comment sidebar is visible. It contains four comments from a user named "Nance Wilson". The first comment, posted 4 months ago, says "Today will be working on questioning and summarizing as we read to improve our understanding." The second comment, posted a month ago, says "Thank you." The third comment, posted 4 months ago, asks "Who is they? Where are they looking?" and has a "Show 1 more replies" link below it. The fourth comment, posted 4 months ago, says "Asking questions about the text can help me to make predictions and keep focused on my reading." The fifth comment, posted 4 months ago, says "As indicated by the title of the book it appears that Aidan is missing and they have looked everywhere for him."

# Thinking About Thinking

Thinking about, monitoring one's actions during the reading process.



# Metacognition During the Reading Process

## Before Reading

- Set purposes for reading
- Preview the text
- Predict what the text will say

## During Reading

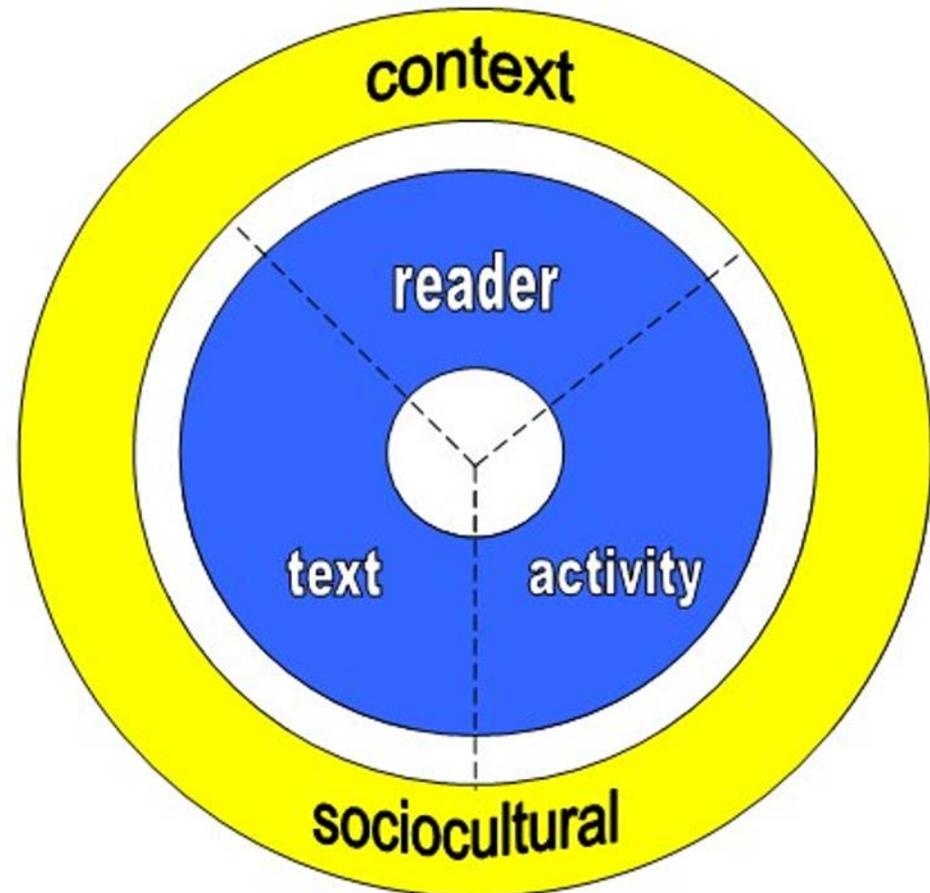
- Read sequentially, skim some parts, slow down for others
- Check and adapt prediction
- Connect to world knowledge to make inferences
- Tune in to main ideas
- Reread some sections
- Monitor and repair comprehension
- Paraphrase and summarize
- Respond to and evaluate text

## After Reading

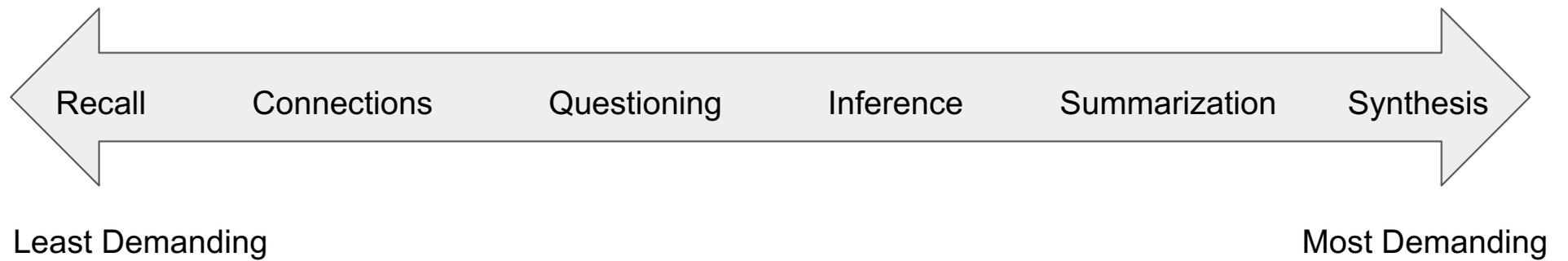
- Reread some parts
- Summarize
- Reflect
- Consider how information might be used

# Monitoring Comprehension

- Inferencing
- Summarizing
- Questioning
- Connecting
- Monitoring
- Synthesizing
- Criticality



# Spectrum of Metacognition



# Connecting

When students make connections to the texts that they are reading, it helps them to make sense of what they read, retain the information better, and engage more with the text itself.

Students make connections between:

- The text and prior knowledge
- The text and themselves (personal experiences)
- The text and other texts
- The text and the world around them

## Example: Connecting

“This is so sad to see. What can we as teachers do to ensure that our students have access to the books and materials they need? As I think about this, it reminds me of how irritated the way we fund our schools makes me. Part of this ‘rich get richer’ thinking is that the rich also get a better education. The poor get a poorer education. Which, in turn, only furthers the achievement gap we are seeing.”

been declining during the same period (Reardon, 2011). Particularly troubling is that income inequality in the United States is also increasing (Congressional Budget Office, 2007), suggesting that the offline reading achievement gap may get even larger over time.

Reading is an important gateway to learning and success in school (Anderson, Hiebert, Scott, & Wilkinson, 1985). Children who fall behind in reading achievement are unlikely to catch up later (Annie E. Casey Foundation, 2010; Snow, Burns, & Griffin, 1998). The result of falling behind in reading is a loss of opportunity, both for individuals and for our larger society (NCES, 2013). The persistent achievement gap in reading, based on income inequality, may contribute to stagnating economic mobility in the United States; economic mobility is now less than in Europe and other developed nations (Chetty, Hendren, Kline, & Saez, 2014).

Science

# Inference

When students make inferences, they use what they know to read between the lines. They use clues in the text along with their own experiences to help them figure out what is not directly said.

Inferencing looks like:

- Drawing on information from the text and background knowledge to understand what the text is about
- Filling in details missing from the text
- Elaborating on what is discussed in the text

## Example: Inference

“Students who do not have access to the Internet at home have major challenges when they can’t access assignments and materials outside of school. The parents and families of these students are also challenged by many schools choosing to communicate with families digitally. I think that as teachers and school professionals, it is our responsibility to bridge the gaps that form and do our best to ensure that all of our students are being given the same opportunities.”

### ***Internet Access at Home***

According to the National Telecommunications and Information Administration (2011), 32% of all households with incomes of less than \$15,000 had a minimum level of broadband access (200 kbps) compared with 90% of families with incomes over \$150,000. A home access gap has also been reported by the Pew Research Center (2012), which showed that 38% of lower income households (<\$30,000 in household income per year) do not use the Internet, compared with only 3% of upper income households (>\$75,000 in household income per year) in the United States.

The lack of Internet access at home may be one important source of an achievement gap in online research and comprehension (Henry, 2007). When compounded with lower achievement levels in offline reading between these same two groups of students, as demonstrated by NAEP (NCES, 2013) data, students who come from lower income families may be doubly disadvantaged (Leu, Kinzer, et al., 2013). In this study, we asked students from both districts to report on their Internet access at home and at school.

# Monitoring

When students monitor, they are noticing their thinking as they read. They notice their confusions. They use their background knowledge and recognize when something is new, what questions they have as they read, and what inferences they make. They sift through what they think is important to pay attention to and notice how it all comes together into big ideas.

Monitoring looks like:

- Confirming or clarifying their understanding
- Looking up and defining words used in the text
- Restating what is in the text (in their own words)

## Example: Monitoring

“I think the term ‘new’ here refers to new to us. Once upon a time, almost everything we saw and experienced was new and we had to learn to adapt and row (sic). The only difference now is we can form our own conclusions and perceptions within the given information we have since we’re older and our brains are more developed.”

was used (cf. Coiro, 2011; Coiro & Dobler, 2007; Henry, 2007; Leu, Kinzer, Coiro, & Cammack, 2004). Unfortunately, the term has led to some confusion because it contrasted offline reading comprehension with online reading comprehension within a new literacies context. This implied that the two were separate and completely different, whereas evidence shows that there is a complex mixture of both offline and new online elements that take place during online reading (Coiro, 2011; Coiro & Dobler, 2007).

There is also a question as to whether anything is really “new.” Perhaps this is because individuals first encountering the construct assumed a limited online reading activity. There are many situations in which we might read online, such as when we read an e-mail message, an online newspaper, or a single webpage. When these occur as isolated reading acts, they do not appear to differ in substantial ways from offline reading comprehension except for the online context; there is likely to be little that is substantially new (Leu, Kiili, & Forzani, in press). Usually, however, online reading does not take place within isolated contexts (Leu, Kinzer, et al., 2013). Instead, online reading typically occurs within a richly integrated and complex process of inquiry and problem solving as we seek answers to questions large and small and use the Internet to comprehend and learn, almost always from informational

# Questioning

Good readers challenge the text by asking questions as they read. Students stop and ask questions when something they read does not make sense, to understand the author's intent, or to seek deeper meaning of the text.

Questioning looks like:

- Asking questions of the text
- Asking questions that extend the text

## Example: Questioning

“The authors note that "reading initiated by a question differs in important ways from reading that is not" but don't go into detail about how it is different. In what ways do you think this type of reading differs? In my opinion, I think this differs because when you are reading to answer a question, you are more focused on finding a specific piece of information. This changes the way we read and allows us to skim to pick out the important pieces of information.”

### Reading to Define Important Questions

We read on the Internet to solve problems and answer questions. How a problem is framed or how a question is understood is a central aspect of online research and comprehension. Work by Taboada and Guthrie (2006) within traditional texts suggests that reading initiated by a question differs in important ways from reading that is not.

# Summarizing

When students summarize, they are able to determine the most important ideas of a text, carry them forward during reading, and succinctly restate those ideas while consolidating details that support those ideas.

Summarizing looks like:

- Restating key ideas from some unit of text (e.g., chapter, page, section)
- Determining what is most important to remember in a unit of text

## Example: Summarizing

“When I think of literacy regarding online readings and research, I don’t typically think of synthesizing as an essential skill. This is one of those things that is inherent in the research process, but is something that is not necessarily explicit. In order to fully comprehend online readings and resources, it is necessary to be able to relate the ideas in the readings to other, similar ideas and information that comes in various forms (i.e. multimedia resources).”

### Reading to Synthesize Online Information

Successful online research and comprehension also requires the ability to read and synthesize information from multiple online sources (Jenkins, 2006). Synthesis, or the integration of separate and unique ideas, is thought to be the most challenging of offline comprehension strategies (Keene & Zimmermann, 1997) because it requires the reader to bring together an awareness of the reading processes and an underlying understanding of the text (Dole, Duffy, Roehler, & Pearson, 1991). The Internet introduces additional challenges for coordinating and synthesizing vast amounts of information presented in multiple media formats from a nearly unlimited and disparate set of sources (Leu, Kiili, & Forzani, in press). Thus, our assessments sought to capture students’ ability to synthesize multiple texts for a particular reading need.

# Synthesizing

Synthesizing text is the process of pulling together background knowledge, newly learned ideas, connections, inferences and summaries into a complete and original understanding of the text. When students synthesize, they are made aware of how their thinking changes and evolves as they read a text.

Synthesis looks like:

- Making connections to multiple points in a text
- Making connections between multiple sources

## Example: Synthesizing

“@Student1: I think this concept of a “lack of opportunity” is one that plagues many students in our country in general, especially with the number of students that come in at a disadvantage because of circumstances that are out of their control. I agree with you that money is a major factor that puts students at a disadvantage, especially when you think about the issue of having access to technology at home.”

Lack of opportunity in every nation is important to consider. Piketty (2014) has recently argued that rising income inequality is rapidly taking place in both the United States and on a global basis as the rate of return on capital has exceeded the rate of economic growth. The fact that the 85 richest people in the world have acquired as much wealth as the poorest half of the entire world's population (Credit Suisse, 2013) seems to confirm this observation. Most importantly, Piketty suggests that if unchecked, this increasing inequality could lead to deep political and social disruption.

# Criticality

Students analyze and evaluate the meaning of texts through a lens of equity, power, privilege.

“Criticality enables us to question both the world and the texts within it to better understand the truth in history, power, and equity” (Muhammad, 2020, p. 118)

“When youth have criticality, they are able to see, name, and interrogate the world not only to make sense of injustice but also to work toward social transformation” (Muhammad, 2020, p. 120).

## Example: Criticality

“...money gives you access to tools that can help educate you better. Money is what makes the world spin and it's why the 1% exists. When you don't grow up around a lot of it, becoming rich or famous is the exception not the rule. The inequality at which wealth is distributed contributes to the inequity that takes place in schools. Education and opportunity need money... If there is one thing I take away it's this - Money buys you access.”

### ABSTRACT

Is there an achievement gap for online reading ability based on income inequality that is separate from the achievement gap in traditional, offline reading? This possibility was examined between students in two pseudonymous school districts: West Town (economically advantaged) and East Town (economically challenged;  $N = 256$ ). Performance-based assessments were used within a simulation of the Internet developed as part of a larger project. Seventh graders completed two online research and comprehension assessments, which evaluated four skill areas (locate, evaluate, synthesize, and communicate) and two knowledge domains in science. Students also completed an assessment of prior domain knowledge and a short Internet use questionnaire. Standardized state reading and writing test scores served as measures of offline literacy skills. Results indicated that there was a significant achievement gap favoring West Town students in offline reading scores, offline writing scores, and online research and comprehension scores. A significant gap persisted for online research and comprehension after we conditioned on pretest differences in offline reading, offline writing, and prior knowledge scores. The results of the questionnaire indicated that West Town students had greater access to the Internet at home and were required to use the Internet more in school. These results suggest that a separate and independent achievement gap existed for online reading, based on income inequality. Current estimates of this gap, which rely solely on measures of offline reading, may underrepresent the true nature of the U.S. reading achievement gap in an online age. Policy implications are explored.

## Community (Collective Sense-Making)

Use of social and socialized practices to negotiate texts by oneself and with others

By reading the same piece and building on one another's ideas, students create community as they negotiate meaning.

In real life, literacy practices are almost always fully integrated with and interwoven into the very texture of wider practices that involve talk, interaction, values, and beliefs

## Example: Community (Collective Sense-Making)

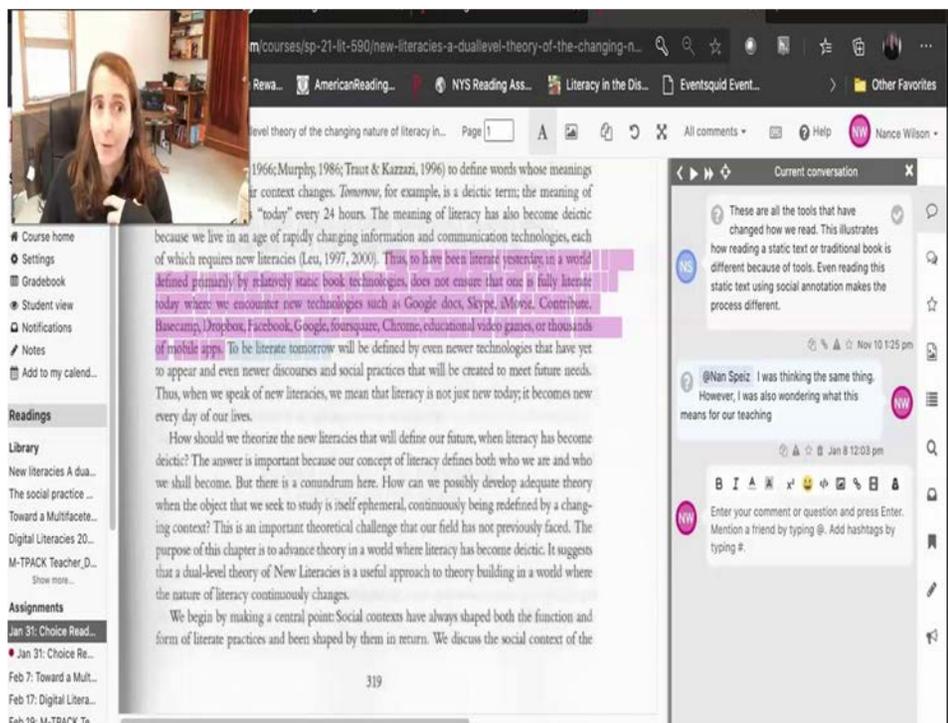
“I completely agree @Student1. I wasn't surprised to read the results either, since students who use technology less are less likely [to] understand how to use it to meet their needs. Also @Student2 you always comment the most interesting videos. How do you find all these links? The video really opened my eyes to how important it is to know which of your students has access to internet at home...”

### ABSTRACT

Is there an achievement gap for online reading ability based on income inequality that is separate from the achievement gap in traditional, offline reading? This possibility was examined between students in two pseudonymous school districts: West Town (economically advantaged) and East Town (economically challenged;  $N = 256$ ). Performance-based assessments were used within a simulation of the Internet developed as part of a larger project. Seventh graders completed two online research and comprehension assessments, which evaluated four skill areas (locate, evaluate, synthesize, and communicate) and two knowledge domains in science. Students also completed an assessment of prior domain knowledge and a short Internet use questionnaire. Standardized state reading and writing test scores served as measures of offline literacy skills. Results indicated that there was a significant achievement gap favoring West Town students in offline reading scores, offline writing scores, and online research and comprehension scores. A significant gap persisted for online research and comprehension after we conditioned on pretest differences in offline reading, offline writing, and prior knowledge scores. The results of the questionnaire indicated that West Town students had greater access to the Internet at home and were required to use the Internet more in school. These results suggest that a separate and independent achievement gap existed for online reading, based on income inequality. Current estimates of this gap, which rely solely on measures of offline reading, may underrepresent the true nature of the U.S. reading achievement gap in an online age. Policy implications are explored.

# What is the role of instructor before social annotation?

Provide students with a **model** of how to utilize the software to create annotations and the expectations of the metacognitive strategies.



The screenshot displays a social annotation tool interface. On the left, a video feed shows a woman speaking. The main area shows a document with text about literacy theory, including references to Leu (1997, 2000) and a discussion of 'new literacies'. The text is highlighted in purple. On the right, a chat window titled 'Current conversation' shows a discussion about the tools used for reading and social annotation. The chat includes a question mark icon, a user profile picture, and a message: 'These are all the tools that have changed how we read. This illustrates how reading a static text or traditional book is different because of tools. Even reading this static text using social annotation makes the process different.' The chat also shows a timestamp 'Nov 10 1:25 pm' and a user profile picture for '@Nan Speiz'. Below the chat, there is a text input field with a placeholder: 'Enter your comment or question and press Enter. Mention a friend by typing @. Add hashtags by typing #.'

# What is the role of instructor during social annotation? (1/5)

Feedback in Learning Management Software.

For instance, in response to students' **connections**:

- “I am wondering how this connection is helping you build your knowledge about the purpose of the reading. What are you learning that is new?”
- “I am always looking for how that connections improves your understanding of a reading, your teaching practices, etc. So, I see connections as active ways of building knowledge or leading to action. Thus, when I read a connection I am looking for how is knowledge being built or is action going to take.”

In response to students' **monitoring** or **questioning**:

- “You are interacting with the text a great deal. I need you to expand your interactions to guide me to see how you are developing your understanding of the concepts in the article as well as the content of the class. For instance, make your comment or connection and then say, “This helps me to understand that the author wants me to know.....” “This helps me to understand digital literacy because...” or any other comment like these.

## What is the role of instructor during social annotation?

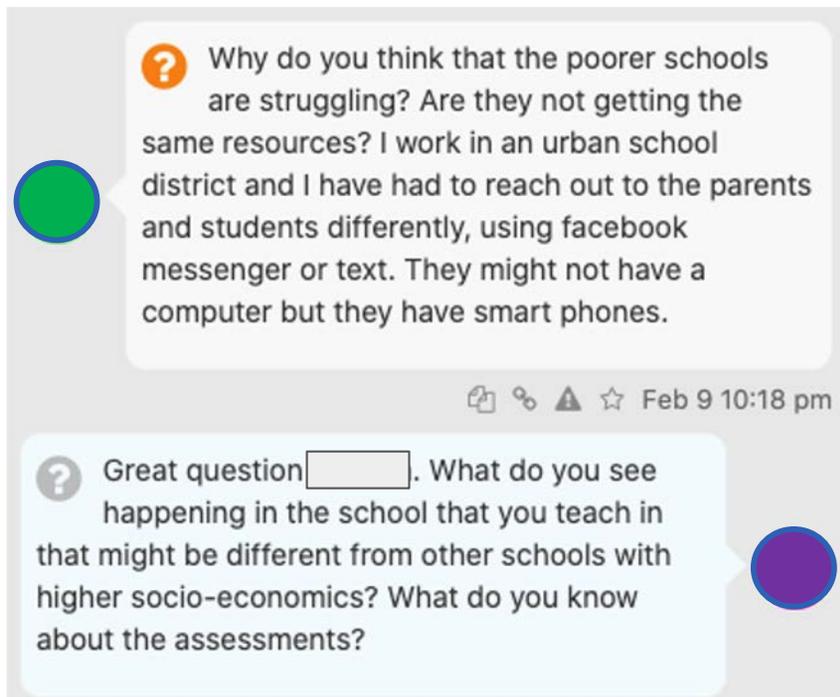
Feedback in Learning Management Software.

In response to students' monitoring or questioning:

- “You are interacting with the text a great deal. I need you to expand your interactions to guide me to see how you are developing your understanding of the concepts in the article as well as the content of the class. For instance, make your comment or connection and then say, ‘This helps me to understand that the author wants me to know...’, ‘This helps me to understand digital literacy because...’, or any other comment like these.

# What is the role of instructor during social annotation?

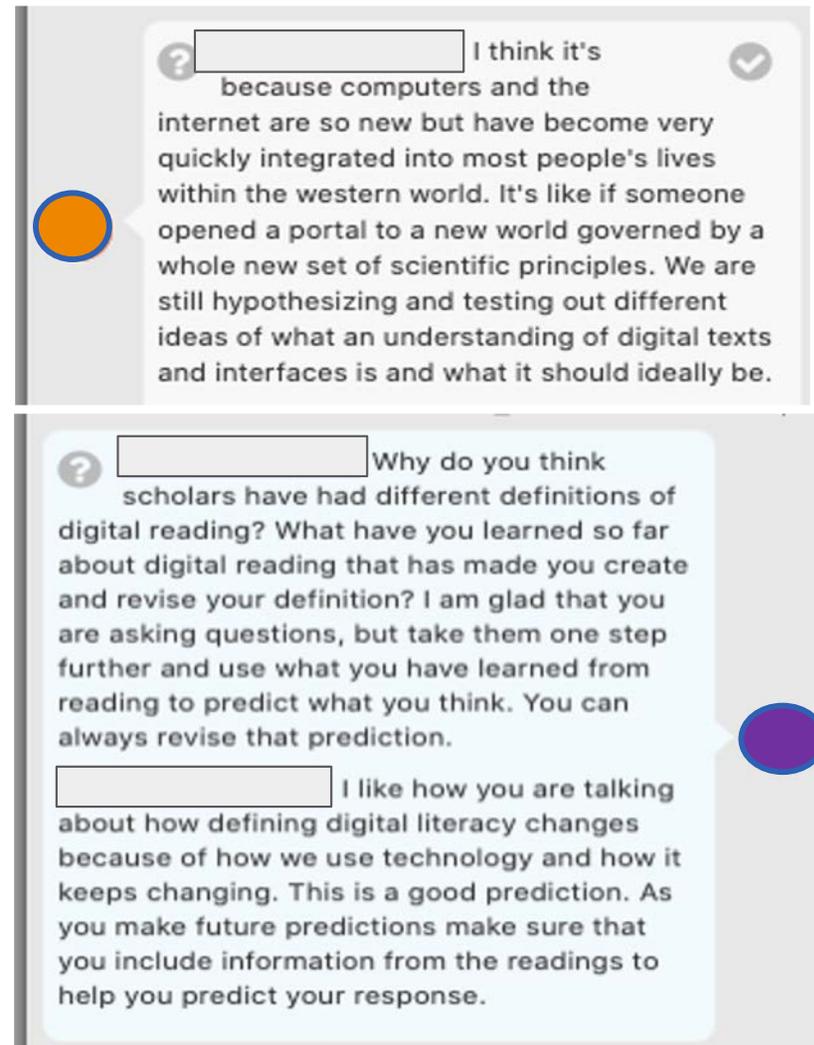
## Feedback on Perusall

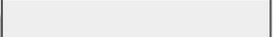


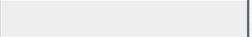
  Why do you think that the poorer schools are struggling? Are they not getting the same resources? I work in an urban school district and I have had to reach out to the parents and students differently, using facebook messenger or text. They might not have a computer but they have smart phones.

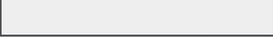
    Feb 9 10:18 pm

 Great question . What do you see happening in the school that you teach in that might be different from other schools with higher socio-economics? What do you know about the assessments? 



  I think it's  because computers and the internet are so new but have become very quickly integrated into most people's lives within the western world. It's like if someone opened a portal to a new world governed by a whole new set of scientific principles. We are still hypothesizing and testing out different ideas of what an understanding of digital texts and interfaces is and what it should ideally be. 

  Why do you think scholars have had different definitions of digital reading? What have you learned so far about digital reading that has made you create and revise your definition? I am glad that you are asking questions, but take them one step further and use what you have learned from reading to predict what you think. You can always revise that prediction. 

 I like how you are talking about how defining digital literacy changes because of how we use technology and how it keeps changing. This is a good prediction. As you make future predictions make sure that you include information from the readings to help you predict your response.

# What is the role of instructor during social annotation?

  I agree with this, however, in areas of poverty with fewer sources of digital literacy how can we expect to have so many different variations of digital literacy for comprehension when it is hard for students to gain access to those resources in the first place?

 That is a great question, and one that many schools need to think about right now. How can we create an equitable environment in which students are able to access a variety of tools needed in the classroom and at home. +1 

I think we need to start by making sure that schools have a connection with each family. Teachers need to know if students have/need devices and if they have/need internet. I know that families can currently apply for free internet at their house, and schools need to help families get this form and submit this form. Although this is only the beginning of creating an equitable environment, it is important.

  Totally agree with you! After reading this second claim, I instantly thought of a few kiddos in my class who would struggle to find resources and availability to access these new and different variations of digital literacy. Maybe the question in return could direct more towards what schools and teachers could do to support these students or to bring these digital readings/activities into the classroom rather than to students homes. 

  I am so glad that you are questioning the assumptions that are made regarding technology and how there are access issues with technology that impacts not only what happens in school but students support beyond school. These issues have an impact on who readers are but they don't make one set of readers less than another. it just makes them different and thus they may need different instruction. 

# What is the role of instructor during social annotation?

  This sentence "With access to technology, learning is in the hands of the students" made me think back to our last assigned article. In that article, it states students should be "designers of their own learning". We should always be empowering our students to take their learning into their own hands. Encouraging them to use technology as a resource is a great way to do so. Students should take responsibility in how they learn, what works best for them, and/or what online/digital tools they enjoy and are proficient in using. Students should be aware of their strengths so they can learn to the best of their abilities. 

  , great    
thoughts on how we can make digital learning more engaging through constructivist principles! I do also think that students need to learn common applications and tools so that they can work socially and create together!

   Feb 18 1:26 pm

  I love how you are connecting to the prior article and then providing specific examples to demonstrate your ideas.  Who determines the common applications? You may be interested in reading this article [How Google Took Over the Classroom - The New York Times \(nytimes.com\)](https://www.nytimes.com/2015/09/02/us/politics/google-takes-over-the-classroom.html)

   Feb 22 4:45 pm

# After social annotation

In order to guide students in synthesis across readings, provide low stakes assignments with comments that explicitly guide them to integrate ideas across readings.

- “Thank you for this wonderful list of words. Please keep your detailed notes handy so that you can apply what you learned from the video to Perusall readings, participation assignments, etc. in the future.”
- “You have listed a lot of navigation tasks. What type of digital literacy thinking skills do students need beyond basic navigation skills to learn from this website? What questions should they be asking themselves? What did you learn from the Coiro and Alexander readings that could help you to add to this?”

# Thank you!

## Contact Information:

- Nance Wilson, [nance.wilson@cortland.edu](mailto:nance.wilson@cortland.edu)
- Brittany Adams, [brittany.adams02@cortland.edu](mailto:brittany.adams02@cortland.edu)
- Jennie Baumann, [povenmir@msu.edu](mailto:povenmir@msu.edu)
- Linda Smetana, [linda.smetana@csueastbay.edu](mailto:linda.smetana@csueastbay.edu)
- Ann Van Wig, [avanwig@ewu.edu](mailto:avanwig@ewu.edu)
- Shuling Yang, [yangs2@etsu.edu](mailto:yangs2@etsu.edu)