The Difference that Inquiry Makes:
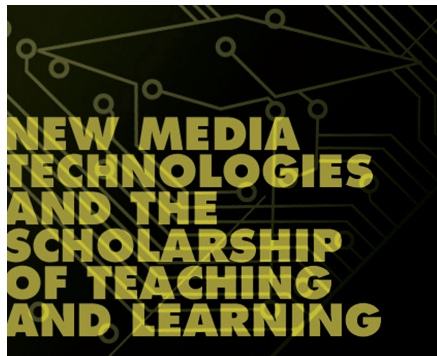
A Collaborative Case Study of Technology and Learning, from the Visible Knowledge Project.

Edited By Randy Bass & Bret Eynon

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"The Difference that Inquiry Makes: A Collaborative Case Study of Technology and Learning, from the Visible Knowledge Project," *edited by Randy Bass and Bret Eynon*

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A Collaborative Case Study on Technology and Learning, from the Visible Knowledge Project

Reading the Reader

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From The Difference that Inquiry Makes: A Collaborative Case Study on Technology and Learning, from the Visible Knowledge Project[1], *edited by Randy Bass and Bret Eynon*

> "[T]he truth is that reading is one of the more complicated of the higher cognitive functions using attention and rate-of-processing and sequencing and memory and the linguistic systems and the visual system and it's having to coordinate this dance that's going on."
>
> --Paula Tallal, "Neuroscience, Phonology and Reading:
> The Oral to Written Language Continuum," Children of the Code (2003)
> http://www.childrenofthecode.org/interviews/tallal.htm

Reading is the active construction of meaning. Because there is no inherent meaning in the words or marks themselves, meaning can only arise at the nexus of what the reader brings to the text, the text, and the situation within which the text is placed.

Most reading process analyses incorporate the following three components: pre-reading, during reading, and post-reading. Pre-reading is the foundational stage. If the reader does not have the background knowledge (the schema) to reference the vocabulary, ideas, allusions, etc.; if the reader is unengaged; if the reader has little direction or purpose for the reading; if the circumstances under which he or she is reading the piece are non-conducive--in other words if the reader has no context for or commitment to the text--understanding cannot take place. At the second stage, during reading, the reader makes the connections between ideas and other texts and experiences, analyzes structural and rhetorical elements, and begins to sense authorial biases and intentions. The proficient reader recognizes when reading is succeeding (metacognition) and has a coping mechanism for when it fails (fix-up or problem-solving strategies). In the post-reading stage the reader grapples with the ideas, implications, and connections of the text, placing it into a wider and/or more personal context, moving beyond the immediate text to larger issues and communities.

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[1] About VKP: In all, more than seventy faculty from twenty-two institutions participated in the Visible Knowledge Project over five years. Participating campuses included five research universities (Vanderbilt University, the University of Alabama, Georgetown University, the University of Southern California, Washington State University, and the Massachusetts Institute of Technology), four comprehensive public universities (Pennsylvania's Millersville University, California State University (CSU)--Monterey Bay, CSU Sacramento, Ohio's Youngstown State University, and participants from several four-year colleges in the City University of New York system, including City College, Lehman, and Baruch), and three community colleges (two from CUNY--Borough of Manhattan Community College and LaGuardia Community College, and California's Cerritos College). In addition to campus-based teams, a number of independent scholars participated from a half dozen other institutions, such as Arizona State and Lehigh University. The project began in June 2000 and concluded in October 2005. We engaged in several methods for online collaboration to supplement our annual institutes, including an adaptation of the digital poster-tool created by Knowledge Media Lab (Carnegie Foundation), asynchronous discussion, and web-conferencing. The VKP galleries and archives (https://digitalcommons.georgetown.edu/blogs/vkp/) provide a wealth of background information, including lists of participants, regular newsletters, and reports and essays by participants, as well as a number of related resources and meta-analyses. For this article, the author gratefully acknowledges the students whose work is cited here. All students whose work is included have granted the author permission to use the material.

How then do we evaluate whether students have successfully read a text? Unlike writing or speaking where mistakes are evident, reading has to be indirectly assessed by a product that implies the process at best. We usually ask students to discuss the reading orally or in writing, assign homework or test questions, and require them to relate it to a previous or upcoming issue or text. There is no mechanism to open their heads and see which neurons are firing while they are reading. But if there were, we still wouldn't know how to interpret what we were observing; that is, we wouldn't know how to read them reading. But that is precisely what I am asked to do: it's my job to shift the focus from product to process and look at the connections between the two.

Students were placed into my Academic and Critical Reading classes when they failed the reading placement test. These students were ESL students, weak test-takers, uncomfortable with computers, had learning disabilities, were alliterate, older, and/or returning students. Most were unprepared for the rigors of academic literacy. The class followed the Critical Inquiry method developed by the SEEK (Search for Education, Elevation, and Knowledge) Department of Brooklyn College, CUNY. [2] Critical Inquiry trains students "to regard reading as an activity that requires multiple drafts in much the same way that they are trained to write multiple drafts of an essay." Critical Inquiry encourages students to become active participants responsible for their own learning. They ask questions, not answer them. By centering the class on their experiences of the text, the underlying premise is that they belong in the academy, not outside of it.

The heart of Critical Inquiry is annotation. Students annotate anything they feel is important, confusing, surprising, or inconsistent; anything that connects to previous texts, classes or experiences, or anything that generates a strong positive or negative response. Students annotate with pen or sticky notes. Using their annotations, students generate questions. These form the basis for class discussion and assignments. This process is particularly productive with "inconsiderate texts"--texts that are difficult for reasons such as poor organization, difficult vocabulary, or unfamiliar cultural assumptions, i.e., the type of texts often encountered in their studies.

I decided to bring the Critical Inquiry techniques to computer-mediated learning by using Microsoft Word's comment feature, an easy and powerful tool for annotating texts. This allowed us to create and share each others' annotations in a digital environment. But only when I joined the Visible Knowledge Project (VKP) did I realize the real power of what we were doing in my classroom. VKP forced me to look more closely and systematically at my pedagogy and methods through the Scholarship of Teaching and Learning (SoTL). I was convinced that the Critical Inquiry method worked, but could I prove it? Here was the chance to examine the annotation process and its effects on student learning. But the SoTL inquiry process took me in a different direction and led to a more exciting and unexpected result. In systematically examining my students' annotations in a digital environment, I opened a window into their reading process as it was happening.

The VKP inquiry community where I constantly described, articulated and justified my ideas, reactions and responses to my students' work drove me to reexamine my assumptions. What I thought I was going to be doing at the start bore little resemblance to what my project became in the end. I originally believed that I would examine students' annotations at the beginning of the semester and then at the end of the semester and see the differences in terms of quantity and quality. This would show that Critical Inquiry "worked." But as I laid out my research design for others, I saw more clearly that the design was flawed. I had set out to look at how students' annotations would change

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2 http://www.brooklyn.cuny.edu/pub/departments/seek/print/seek_iquiry.htm

over the course of the semester while training them how to do it and rewarding them accordingly. So, of course, their annotations would change in quantity and quality--success was built into the design. The only thing I was going to prove was that my assumptions were completely unexamined!

This was a path that many VKP colleagues followed to a greater or lesser extent as we all looked more deeply into our teaching practices and students' learning. Our research questions changed for the better. In laying bare my assumptions both privately and publicly, I had a more interesting and possibly more dangerous question to ask: What was really happening when students annotated, and, therefore, was it worth it? That was the issue I needed to examine. In the end that question yielded a much more profound result than I had envisioned when I first articulated my project. In looking more closely and systematically than I ever had at what students were doing, I confirmed for myself the utility of asking students to commit to the Critical Inquiry annotation method.

Their first annotation assignment was a letter from George Washington. It functioned as a pre-reading assignment that builds the students' interest and background knowledge for the Declaration of Independence. The students were asked to highlight problematic vocabulary in purple (here indicated as bold underlined text) and annotate the text using the comment feature. Compare the following examples of two students' work:

Student A

General George Washington, writing from outside Boston to the Second Continental Congress in September 1775

It gives me great pain to be obliged to solicit the attention of the honourable Congress to the state of this army in terms which imply the **slightest apprehension** of being neglected. But my situation is inexpressibly distressing, to see the winter fast approaching a naked army, the time of their service within a few weeks of expiring, and no provision yet made for such important events. Added to these, the military chest is totally exhausted. The paymaster has not a single dollar in hand. The **commissary-general**, he assures me, has strained his credit for the subsistence of the army to the utmost. The quartermaster-general is precisely in the same situation; and the greater parts of the troops are in a state not far from mutiny [because of] the **deduction** from their stated allowance. I know not to whom I am to impute this failure; but I am of [the] opinion, if the evil is not immediately remedied, and more punctuality observed in the future, the army must absolutely break up.

> Student A 2/11/09 12:47 PM
> **Comment:** Why is in the Washington
>
> Student A 2/11/09 12:47 PM
> **Comment:** why boston
>
> Student A 2/11/09 12:48 PM
> **Comment:** why is 1775
>
> Student A 2/11/09 12:48 PM
> **Comment:** how come is pain
>
> Student A 2/11/09 12:49 PM
> **Comment:** the congress make people become honorable

Student B

General George Washington, writing from outside Boston to the Second Continental Congress in September 1775

It gives me great pain to be obliged to solicit the attention of the honourable Congress to the state of this army in terms which imply the slightest apprehension of being neglected. But my situation is inexpressibly distressing, to see the winter fast approaching a naked army, the time of their service within a few weeks of **expiring**, and no provision yet made for such important events. Added to these, the military chest is totally exhausted. The paymaster has not a single dollar in hand. The commissary-general, he assures me, has strained his credit for the subsistence of the army to the utmost. The quartermaster-general is precisely in the same situation; and the greater parts of the troops are in a state not far from **mutiny** [because of] the deduction from their stated allowance. I know not to whom I am to impute this failure; but I am of [the] opinion, if the evil is not immediately remedied, and more punctuality observed in the future, the army must absolutely break up.

> Student B 2/11/09 12:50 PM
> **Comment:** Was he in army?
>
> Student B 2/11/09 12:50 PM
> **Comment:** Important date to remember
>
> Student B 2/11/09 12:50 PM
> **Comment:** What is the meaning?
>
> Student B 2/11/09 12:51 PM
> **Comment:** What does it means? Does the army was without supplies?
>
> Student B 2/11/09 12:52 PM
> **Comment:** The Army didn't have enough money, how can it be.
>
> Student B 2/11/09 12:53 PM
> **Comment:** I didn't understand this sentence.
>
> Student B 2/11/09 12:53 PM
> **Comment:** The state had allowance.
>
> Student B 2/11/09 12:53 PM
> **Comment:** Who is he referring to? Who is the evil?
>
> Student B 2/11/09 12:54 PM
> **Comment:** Did the Army break up in that time? What does he really mean by "break up"?

On a surface level, Student A did not seem to have significantly more trouble with vocabulary than Student B, but the commenting pattern shows a difference in his reading of the text. Student A has six annotations all before reaching the end of the first sentence while Student B has nine spread throughout the text. Student A seems to have "given up" reading the text early on. This is confirmed once we examine Student A's actual comments:

Student A: Comments
-Why is in the Washington
-why Boston
-why is 1775
-how come is pain
-the congress make people honorable

These comments reveal the student doesn't have the background knowledge to make sense of the letter. Or rather, the text fails to fit the student's schema. The student recognizes Washington as a place, not a person. But then the text mentions another place, "outside Boston"--not close to Washington at all. With little knowledge of the American Revolution and uncertain command of English, the next sentence, with its eighteenth-century references, rhetorical flourishes and syntactical issues, causes the student to abandon the attempt to make sense of the text.

Student B's annotations reveal a student struggling with the text's meaning, but one who has more background knowledge to call upon and who is more confident in English:
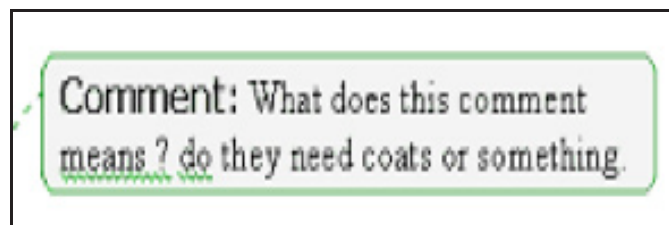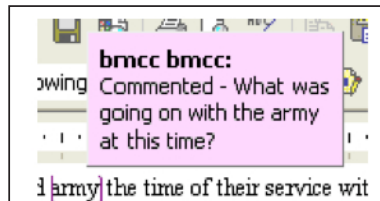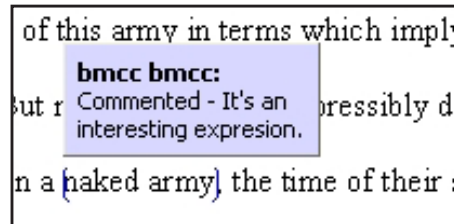
Student B: Comments
-Was in in army?
-Important date to remember.
-What is the meaning?
-What does it means? Does the army was without supplies?
-The Army didn't have enough money, how can it be.
-I didn't understand this sentence.
-The state had allowance.
-Who is he referring to? Who is the evil?
-Did the Army break up in that time?
-What does he really mean by "break up"?

Below is a third student whose annotations reveal partial understanding as she grapples with the text:

Student C: Comments
-Where the date?
-Why is Washington saying that he is getting attention then goes
-How is an army naked from what?
-How Is it winter when it going to be summer time
-Who has been expiring
-What does military chest mean
-Dosen't he know who failure it is already and what the problem
-Why does he go to say I am of something but doesn't finsh it
-Why does he say that the army must break up

When students read General Washington's warning that the "situation is inexpressibly distressing, to see the winter fast approaching upon a naked army" they usually try to work it out because, they reason, 'naked' just can't mean what it ordinarily does:

> of this army in terms which imply
>
> **bmcc bmcc:**
> Commented - It's an
> interesting expresion.
>
> ut r   ressibly d
>
> n a naked army the time of their s

> **bmcc bmcc:**
> Commented - What was
> going on with the army
> at this time?
>
> owing
>
> l army the time of their service wit

> Comment: What does this comment
> means ? do they need coats or something.

With digital annotations the deconstructionist distinction between "strong misreadings" and "weak misreadings" seems a pragmatic one. I now see where comprehension breaks down and often what caused it; I see students making correct and incorrect inferences. As a result, I can target appropriate areas for classroom discussion and anticipate problems future classes may have. For example, if I give students Washington's letter with no background, they always annotate "the military chest is totally exhausted." They make comments like, "what is the military chest?" or, referencing the only "chest" they know, they infer "they must have been working really hard." If we define "military chest" before they annotate, they concentrate on the economic issues and more easily read the rest. Because the letter has been placed in a financial context, their understanding improves and their annotations change.

Electronic annotations confirm what research tells us about proficient readers, that they 1) clarify their purpose for reading; 2) activate relevant background knowledge; 3) allocate attention to the important ideas; 4) evaluate content for internal consistency and compatibility with prior knowledge; 5) self-monitor to verify comprehension; and 6) draw and test inferences[3]. These annotations also illustrate that a proficient reader can tolerate a higher degree of ambiguity in a passage than a weaker reader. The latter has a harder time temporarily suspending understanding due to their

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3 A. S. Palinscar and A. L. Brown, "Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities," *Cognition and Instruction* 1 (1984): 120.

tendency to read word-by-word and/or translate the unknown words they encounter rather than read by meaningful phrases and units; nor do they read to see if later information can bring clarity. Students' annotations show them asking and answering questions as they create meaning from text. Here are students reading: activating prior knowledge, making inferences, visualizing and self-monitoring; they are thinking, making connections, problem-solving, free-associating:

By taking their annotations into the digital world my students have created "think-alouds"--"the overt, verbal expression of the normally covert mental processes readers engage in when constructing meaning from text."[4] In class these verbal protocols serve four functions: first, a way for us to understand the reading process; second, a way to showcase effective and ineffective reading strategies and problem-solving behaviors; third, a way to help develop specific and general reading strategies; fourth, a way of seeing reading as socially constructing meaning and engagement, rather than as employing a set of discrete skills.[5]

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4 Meena Singhal, "Reading proficiency, reading strategies, metacognitive awareness and L2 readers," *The Reading Matrix 1*, no. 1 (April 2001), http://www.readingmatrix.com/articles/singhal/ .

5 L. Kucan and I. L. Beck, "Thinking aloud and reading comprehension research: Inquiry, instruction, and social interaction," *Review of Educational Research 67* (1997): 271-272.

But think-alouds can be misused: "When a subject provides verbal reports, there is the built-in language variation that is part of the individual's personality and way of interacting with the world. When a researcher attempts to analyze the verbal report," Pressley and Afflerbach warn, "a separate worldview, vocabulary, and set of inferencing processes is put into action." Add to that the difficulties that incomplete schema, second-language, dialect and multicultural backgrounds bring. And then, they point out, the researcher brings his or her "separate worldview, vocabulary, and set of inferencing processes" into the analysis.[6] We must remember not to 'read' too much or too little into student annotations. For example, a student reading "The quarter-master general is precisely in the same situation," commented, "I found this very surprising." Does this indicate understanding, or a lack of understanding? Is the student surprised by how desperate Washington's situation is, or more confused than surprised? How do we interpret annotations like: "This date sounds kind of interesting to me," "I think that this phrase is confusing," "Why is such negative word used in this letter?" We, as instructors, need to be aware of how easily we project our own assumptions into our interpretations. We, too, must strive for "strong" not "weak misreadings" of the students' reading.

These electronic annotations make the implicit explicit and are a pedagogically powerful tool I would ordinarily have neither the time nor resources to employ. They help me diagnose reading strengths and weaknesses around a given text and decide where to place the focus of discussion and assignments. What do they understand and what don't they? Where does the text make sense and where doesn't it? Electronic annotation also presents an integrated tool that strengthens students' critical reading. It forces them to slow down and become metacognitively aware of their reading in real time.

It was electronic annotations and not written ones that made all this possible. Digitally the apparatus seems to become invisible, leaving only the process itself. There is more of a natural flow, which helps students establish a conversation between the text and themselves. The annotation process opens more possibilities for layering comments: students can comment on their own or each others' comments, edit comments, use them for other assignments, etc. On a pragmatic level, there is no limit to the number or length of their comments. Their work is legible, can be more easily accessed and made public. And let's not forget the affective element: traditional methods of annotation seem ho-hum and cumbersome; electronic annotations seem interactive and fun.

MS Word offers an important added bonus that paper and pen never will: the ability to make auditory comments as well as written ones. Asking students to annotate orally can help ESL learners, students with disabilities, or simply reinvigorate the process. Students can easily produce multimedia readings of texts and readings that mirror more traditional think-alouds.

Digital annotations are pedagogically flexible and portable. They can be used as a method of inquiry, diagnosis, and instruction. Texts can be annotated individually or in groups, at home or in class. These products can be easily transported from person to person and location to location and, unlike written annotations, are harder to lose.

Those students with the most annotations and questions are the better readers. They are in dialogue with the text and metacognitively engaged. Contrary to what many students believe, those who ask

6 M. Pressley and P. Afflerbach, *Verbal protocols of reading: The nature of constructively responsive reading,* (Hillsdale, NJ: Lawrence Erlbaum Associates, Inc., 1995), 2.

questions of the texts are thoroughly involved in reading and constructing meaning. This is the most important, surprising, and liberating lesson they take from my class. As Frank Smith reminds us, "Ignorance is not so much not knowing an answer as not knowing that there is a question, not being able to think when thinking is required. Ignorance is a blind dependence that someone else will be able to tell you what to do."[7]

Frank Smith's dictum seems to apply equally to my time in VKP. I learned something about the value of Critical Inquiry but also of inquiring critically. It can be disconcerting to question one's assumptions, techniques, pedagogy and results. It can also be liberating. The reason I teach my students the importance of annotating and questioning the text is because it is the only way for them to meet the author on a level playing field and make the text their own. VKP taught me that I, my students and my classroom are also a text, one that has to be read and reread as carefully and critically as any other if I am to be an active, involved participant in my own teaching and my students' learning.

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7 Frank Smith, "The Politics of Ignorance," in *Essays into Literacy: Selected Papers and Some Afterthoughts* (Portsmouth, NH: Heinemann, 1983), 1.