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COMMENTS *from Evelyn*

Text Comprehension, the Internet, and Student Independence in Learning

More and more students are using the Internet to complete classroom assignments. In order to remain current, it is important for us, as CRISS trainers and teachers, to know just what research is telling us. We are aware of the teaching power inherent in knowing what skilled readers do in various reading contexts. In this article, we will look briefly at two pieces of research that have major implications for Project CRISS teachers and students. These findings also have a major impact upon how we interface with technology, especially the Internet, in our teaching.

Technology use affects NAEP Scores

Harold Wenglinsky, a researcher with the Academy for Educational Development, wrote about the ways technology use affected student achievement scores posted by the National Assessment of Educational Progress (NAEP) in the January 2006 issue (Volume 63, No. 4) of *Educational Leadership*. His research found technology did make a positive impact. See figure 1. The most significant finding related to socioeconomic status. That is, those students from homes with a higher socioeconomic status were more able to utilize technology for completing classroom assignments. In many homes across our nation there is only one computer, and often the children’s use is limited.

Another significant finding, of interest to high school teachers, was the high relationship between 12th grade history students’ scores and the amount of time students use computers for schoolwork outside of school. This is a particularly interesting finding related to the goal of Project CRISS that focuses on students as independent learners. For both 4th and 8th grade students, computer use that centered on complex problems and higher-order thinking skills produced greater benefits

Figure 1.
Which Characteristics Affect Student Achievement on NAEP History Scores?

Student Characteristic	Effect Size
Socioeconomic status	36
Amount of time student has used computers in school	-15
Amount of time student has used computers for schoolwork outside school	16
Extent to which student has used computers for history-specific tasks	0
Extent to which student has used computers for generic academic tasks	6

0 = No significant effect; 15 or above = A substantial effect.

The author’s analysis of the 2001 NAEP database shows how selected characteristics correlate with U.S. history scores.

than those drill exercises of routine tasks. Given Wenglinsky’s analysis of the NAEP scores and findings related to student use of computers, let us look a bit deeper into the kinds of things skilled readers do when using the Internet. For this we will look at the research of Julie Coiro, a co-author of the timely *Teaching with the Internet K-12: New Literacies for New Times*, Fourth Edition, (2004).

Comprehending Internet text requires similar plus additional skills

Coiro and a colleague, Elizabeth Dobler, reported a research study in the *Reading Research Quarterly* of April/May/June 2007, “Exploring the online reading comprehension strategies used by sixth-grade skilled readers to search for and locate information on the Internet,” which addressed three areas of reading comprehension: prior knowledge, inferential reasoning, and cognitive self-regulated processes. In each of these areas, the researchers’ first research focus was on the **similarities** between the processes used to comprehend printed informational text and those used with Internet text. Their second research focus related to the **additional complexities** of these reading comprehension areas necessary for students to comprehend Internet text.

The charts that follow present the three areas of reading comprehension in the research: prior knowledge, inferential reasoning, and cognitive self-regulated processes. Each chart details the two areas of research: **similarities** of the comprehension areas and the **additional complexities** necessary for Internet text comprehension. Each chart also presents information on what skilled readers know and on the CRISS teachers’ role to assure that all their students are functioning as skilled readers of printed and Internet text.

PRIOR KNOWLEDGE

1 st Research Focus	Skilled Readers Have	CRISS Teachers’ Role
Similarities of comprehension with printed informational text and Internet text	<ul style="list-style-type: none"> • <i>prior knowledge</i> of the topic. • <i>prior knowledge</i> of printed informational text structure. 	<ul style="list-style-type: none"> • Teach students how to ascertain the structure of informational text in various contexts • Teach students to understand and utilize the research behind the activation of background knowledge
2 nd Research Focus	Skilled Readers Have	CRISS Teachers’ Role
Additional complexities of comprehension with Internet text	<ul style="list-style-type: none"> • <i>prior knowledge</i> of Web-based search engines. • <i>prior knowledge</i> of informational Web site structures. 	<ul style="list-style-type: none"> • Activate background knowledge across multiple settings, including the Web • Include online text structure and conventions in the study of text structure

INFERENTIAL REASONING

1 st Research Focus	Skilled Readers Know	CRISS Teachers’ Role
Similarities of comprehension with printed informational text and Internet text	<ul style="list-style-type: none"> • <i>inferential reasoning</i> predicting strategies and using some forward inferences through literal matching skills, structural cues, and context cues. 	<ul style="list-style-type: none"> • Design purposeful assignments which lead to deep understanding of textual patterns in order to make meaning of informational text • Teach analysis of individual text structures, especially the use of word knowledge
2 nd Research Focus	Skilled Readers Know	CRISS Teachers’ Role
Additional complexities of comprehension with Internet text	<ul style="list-style-type: none"> • <i>inferential reasoning</i> using a high incidence of forward inferential reasoning. • <i>inferential reasoning</i> strategies are multilayered when reading across three-dimensional Internet spaces. 	<ul style="list-style-type: none"> • Utilize and guide students to independent use targeted strategies • Target prediction and confirmation of specific information across multiple texts on the same topic (including online text) • Target strategies that teach searching for relevant information and getting the gist • Use summarizing often

SELF-REGULATED PROCESSES

1 st Research Focus	Skilled Readers Know	CRISS Teachers' Role
<p>Similarities of comprehension with printed informational text and Internet text</p>	<ul style="list-style-type: none"> • <i>self-regulated processes</i> occur as readers use independent fix-up strategies for monitoring and repair of comprehension of text. • <i>self-regulated processes</i> lead to development of a larger strategic reading process. 	<ul style="list-style-type: none"> • Lead students to self-choice of strategies for self-regulation of reading texts • Foster purposeful selection of strategies for specific tasks • Model how to repair faulty comprehension using strategies • Utilize a system such as plan, predict, monitor, and evaluate using CRISS strategies
2 nd Research Focus	Skilled Readers Know	CRISS Teachers' Role
<p>Additional complexities of comprehension with Internet text</p>	<ul style="list-style-type: none"> • <i>self-regulating cognitive reading strategies</i> are intertwined with physical reading actions. • <i>self-regulating cognitive reading</i> includes rapid information-seeking cycles within extremely short text passages. 	<ul style="list-style-type: none"> • Provide real-world learning situations dealing with multiple texts on the same topic • Use magazines, newspapers, articles, and online texts to serve as scaffolding in preparation for the complexity of Internet sites

Metacognitive readers succeed with Internet text

Cognitive flexibility in order to navigate and make meaning across multiple texts is one more area of interest in this well-documented research related to online reading comprehension strategies. The highly skilled readers in this study were able to “balance and negotiate the self-regulatory skills [metacognition] required for navigating search engines and skimming across multiple texts with more traditional self-regulatory processes required to read closely and critically within one text.” (Coiro and Dobler, 246)

Spiro (1991, 2004) found that strategic online readers employ a set of fluid and changeable strategies to make sense of what they read on the Internet. That is, these students “own” the strategies, so they can easily change and adapt them while interacting with Internet text. Coiro and Dobler’s findings, which relate to the Spiro’s research, show that the agility with which skilled readers apply and adapt strategies used to comprehend both the *single text* of informational printed text and the *multiple texts* of the Internet are related. This is relevant information for today’s teachers that teach students at all levels. Student use of strategies and monitoring of both the cognitive experience and text understanding (metacognition) is now a non-negotiable for an effective learning curriculum in any discipline and when using any type of informational text.

Active engagement with complex text helps comprehension

The second principle of cognitive flexibility theory involves student interaction with poorly structured text and holds that this interaction fosters deeper levels of processing with the meaningful construction of knowledge. Coiro and Dobler state, “In our study we found that skilled readers who struggled to make sense of complex Internet texts were actively engaged in high levels of inferential reasoning and self-regulation.” (p.246) This appears to relate to Spiro’s (2004) thoughts that rapidly emerging technologies may actually prepare readers to assemble information in a more situation-specific manner.

It is true, as Coiro and Dobler state, that more research is needed. However, some connections are clear.

- The more background knowledge students are able to access, the more inferential reasoning students use.
- The more self-monitoring students execute, the more prepared they will be to utilize the new literacies required for Internet comprehension.

The chart relating this research study to Project CRISS is designed to help you make direct initial connections for students. Many of you will go on to make additional and more specific connections for your own students. And that is the purpose of this article.

In actuality, the CRISS Principles and Philosophy, along with the direct teaching of strategies in a supportive learning atmosphere, provide exactly what students need as they face the increased demands of Internet learning and research. Onward to the new technologies leading our students and us to deeper understandings!

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