Tracy Linderholm

Reading with Purpose

In college-level courses, the vast majority of students read expository textbooks with a primary purpose in mind: to memorize and, hopefully, understand enough information to receive a particular grade on a course exam. Intuitively, this kind of reading is different than the kind of reading that these same students do when reading a novel while waiting for a friend in a coffee shop. As commonsense as this may seem, only recently has empirical evidence supported the notion that reading proceeds very differently depending on the reader's purpose for reading. To illustrate, readers have been shown to exhibit different inference-making patterns, which influence what is remembered from a text, as a function of their purpose for reading (e.g., van den Broek, Lorch, Linderholm, & Gustafson, 2001). Unfortunately, a sizeable number of students do not effectively alter their cognitive processing to meet specific educational goals. For example, many college students are used to reading in order to memorize the material, so they struggle when they are asked to generalize textbook concepts to new situations as is the case in applied courses such as educational psychology. That is, some students are reading for college courses with the incorrect purpose in mind. I wish to establish why it is important for study and reading skills instructors to consider the specific purpose for reading when advising college student readers. Thus, the focus of this paper will be to briefly review the empirical evidence that readers alter cognitive processing in accordance with the purpose for reading and to provide educational applications for this research for use by study and reading skills instructors at institutions of higher learning.

Review of the Literature: Reading for Specific Purposes

Empirical research has shown that the particular purpose for reading influences readers' cognitive processing of texts in terms of time spent reading and strategies employed, which in turn influences the amount of text information recalled (e.g., Brannon, 1998; Lorch, Lorch, & Klusewitz, 1993; Narvaez, van den Broek, & Ruiz, 1999; van den Broek, Lorch, Linderholm, & Gustafson, 2001). Theoretically, this has been couched

in terms of readers having varying *standards of coherence* that influence the way that texts are processed to meet particular reading goals (van den Broek et al., 2001; van den Broek, Risden, & Husebye-Hartmann, 1995). For example, college students may have stricter standards for understanding textbook materials the day before an exam but more relaxed standards three weeks before an exam. The strictness of these standards theoretically influences the kinds of cognitive processes readers engage in during reading, and these standards vary due to reading purpose, text difficulty, or the motivation level of the student. For the review that follows, I will focus on how readers' cognitive processes change as a function of their purpose for reading.

Methodologies used in this line of research have involved students' self-reports, the collection of verbal protocol/think aloud data, recall data, and computer simulations of the reading process (Linderholm, Virtue, Tzeng, & van den Broek, 2004; Lorch et al., 1993; van den Broek et al., 2001). In this research, two reading purposes are typically selected for systematic experimental investigation because of their perceived distinctiveness (Lorch et al., 1993; Lorch, Lorch, & Mogan, 1987). In one such study (van den Broek et al., 2001), college-aged participants were randomly assigned to a *read for entertainment purposes* condition or to a *read for study purposes* condition. When reading for entertainment purposes, participants were asked to imagine that they were reading a magazine when they came across an interesting article that captured their attention. When reading for study purposes, participants were asked to imagine that they were reading an article to prepare for an exam in a college course. Note that these students were reading the same expository texts from a science magazine, but the only difference was that they were asked to imagine themselves reading for a particular purpose. All of the expository texts used in these investigations had both an entertainment and an educational value, so were appropriate (and believable) for either reading purpose condition.

When reading for entertainment purposes, readers' verbal protocols indicated that they generated more free associations, which are associations loosely based on text ideas that become transiently activated during reading, and generated more evaluative comments on the writing or interest value of the text (van den Broek et al., 2001). In other words, these readers processed texts at a rather shallow level. In contrast, readers generated more coherence-building inferences and paraphrased more often when they were asked to imagine themselves reading for study purposes. Not surprisingly, the types of processes that were executed during reading influenced how much text information readers recalled after reading. Readers in the study purpose condition recalled

significantly more than readers in the entertainment purpose condition. Note that these differences were based on students' reading of the same expository texts, and, thus, the changes in cognitive processing were brought about by the imagined purpose for reading. The subtle differences in directions pertaining to the imagined purpose for reading changed cognitive processing and recall results in dramatic ways (van den Broek et al., 2001).

Empirical studies also show individual differences in how college readers alter cognitive processing to fit the purpose for reading (e.g., Linderholm & Cong, 2003; Linderholm & van den Broek, 2002). One measure of reading individual differences that is predictive of a variety of reading comprehension skills is the working-memory capacity of the reader (e.g., Daneman & Carpenter, 1980; Just & Carpenter, 1992; Kaakinen, Hyona, & Keenan, 2003; Linderholm, 2002). To provide a conceptual definition, one's working-memory capacity is related to how efficiently cognitive resources are allocated to processing relevant information during complex tasks such as reading (Engle; 2002; Engle, Kane, & Tuholski, 1999). As it relates to reading specifically, individual differences in working-memory capacity influence how accurately readers comprehend text, generate inferences, determine relevant themes, and retain what is read (Daneman & Carpenter, 1980; Just & Carpenter, 1992; Kaakinen et al., 2003; Linderholm, 2002; Linderholm & van den Broek, 2002; Virtue, van den Broek, & Linderholm, in press). It should be noted that these differences in working-memory capacity are not necessarily indicative of a learning disability but refer to college-level readers at the lower end of reading comprehension performance.

As working-memory capacity relates to reading for different purposes, in two separate investigations (Linderholm & Cong, 2003; Linderholm & van den Broek, 2002), low and high working-memory capacity readers were asked to imagine that they were either reading for entertainment or for study purposes as they read scientific, expository texts. In terms of strategies and processes used during verbal protocols, low and high working-memory capacity readers, like the results reported earlier (van den Broek et al., 2001), tended to free associate and make evaluative comments more when reading for entertainment than when reading for study purposes (Linderholm & van den Broek, 2002). That is, low and high working-memory capacity readers used similar cognitive processing strategies when reading for entertainment. Not surprisingly low and high working-memory capacity readers' level of recall was also similar in this reading purpose condition. Differences appeared, however, when reading for study purposes: low working-memory capacity readers paraphrased and made coherence-building inferences more

often when reading for study, similar to the results reported earlier, but also emphasized a re-reading strategy and de-emphasized a comprehension monitoring strategy. High working-memory capacity readers also paraphrased and made coherence-building inferences more often when reading for study purposes but, in contrast to low working-memory capacity readers, emphasized a comprehension monitoring strategy and de-emphasized a re-reading strategy. The different strategies used when reading for study purposes also yielded differences in recall: low working-memory capacity readers recalled significantly less than high working-memory capacity readers. Thus, it appears that low working-memory capacity students realize that reading for study purposes requires *something* different than reading for entertainment purposes, but these readers emphasize strategies that give them nothing in return —that is, in terms of maximizing recall from their reading of expository text materials.

To further explore the differences between low and high working-memory capacity readers' cognitive processing patterns as a function of reading purpose, a second experimental investigation was conducted (Linderholm & Cong, 2003). Low and high working-memory capacity readers were again asked to imagine themselves reading for entertainment versus study purposes, but in this investigation reading times were collected to provide converging evidence for previous findings. Given that low working-memory capacity readers tended to re-read text information more heavily in the study purpose condition than high working-memory capacity readers in the previous investigation (Linderholm & van den Broek, 2002), it was thought that low working-memory capacity readers may actually spend more time and effort when reading for study purposes but, as a result, have the mistaken impression that their effort should pay off in terms of increased learning and comprehension. Thus, in addition to reading times, the difference between readers' actual comprehension test performance and their *estimates* of test performance also was determined (see Gillstrom & Ronnberg, 1995; Schommer & Surber, 1986), which allowed us to inspect whether readers overestimated or underestimated actual comprehension test performance as a function of working-memory capacity and reading purpose condition.

The results of this second investigation (Linderholm & Cong, 2003) were that low and high working-memory capacity readers read at a similar rate when reading for entertainment purposes. And as one might expect, their confidence levels in terms of estimating test performance were similar in this condition. Notably, both low and high working-memory capacity readers were under confident in estimated test performance when reading for entertainment purposes; this is likely

a function of a perceived lack of effort and more relaxed comprehension standards when reading for this particular purpose (see Gillstrom & Ronnberg, 1995; Maki, Foley, Kajer, Thompson, & Willert, 1990). Interestingly, the differences between low and high working-memory capacity readers appeared only when reading for study purposes: low working-memory capacity readers read more slowly, in fact, nearly 3 seconds more slowly per sentence, than high working-memory capacity readers. This finding is striking in light of the recall results of the first investigation described (Linderholm & van den Broek, 2002). To reiterate, low working-memory capacity readers do more re-reading and read much more slowly, and thus put in more effort, when reading for study purposes compared to high working-memory capacity readers and yet do not show gains in recall performance whereas high working-memory capacity readers do. In addition, as expected, low working-memory capacity readers were *over* confident in their estimates of comprehension test performance when reading for study purposes whereas high working-memory capacity readers, as in the entertainment purpose condition, were *under* confident. Thus, low working-memory capacity readers seem to have had the impression that their comprehension test performance would be better than it actually was when reading for study purposes. One could argue that it is better for a student to be under confident and *over* study for an exam rather than over confident and *under* study for an exam. Thus, low working-memory capacity readers mistakenly believe that the amount of time and effort spent reading (and re-reading) when reading for study purposes should yield greater learning than it actually does.

Recommended Practical Applications

How may study and reading skills instructors capitalize on the subtle but powerful influence of reading with a specific purpose in mind? In the section that follows, I make recommendations for how to use the empirical research on the topic of reading for different purposes to college students' advantage.

Empirical finding: Cognitive processing is relatively shallow, and recall is minimized, when reading for entertainment purposes (Linderholm et al., 2004; Lorch et al., 1993; van den Broek et al., 2001).

Practical applications:

1. Recommend to students that they do not read in front of the television, computer, or in a social setting as this may automatically prime the kinds of cognitive processing normally used for entertainment or leisure reading purposes, which leads to lower recall.

2. Recommend students use a specific study area associated only with serious reading to help prime the kind of cognitive processing that is associated with reading for study purposes and better recall. That is, ask students to set the stage for learning by designating an area in their dorm room or apartment that is strictly used for study purposes.

Empirical finding: Students skim more, that is, read in a more shallow manner, when reading for class preparation than for exam preparation (Lorch et al., 1993).

Practical applications:

1. Suggest to students that when they read for class preparation purposes to imagine that they have an exam the next day. Thus, students will be more prepared for class and more disposed to learning the material well if they have processed it deeply prior to class discussions.
2. One specific method a student may use to get in the *reading for exam preparation* mindset is to anticipate the kinds of questions that may be asked on an exam and to attempt to answer them both during and after reading. This should be done both when reading for class preparation and exam preparation to activate deeper levels of cognitive processing.

Empirical finding: There is a direct connection between the types of cognitive processing strategies students execute during reading and how well they remember and comprehend text material (e.g., Linderholm & van den Broek, 2002; van den Broek et al., 2001).

Practical applications:

1. Emphasize to students that a *once size fits all* approach to reading is not appropriate to meet all educational goals and that it is necessary to alter the way they read to meet goals (Linderholm, Zhao, Cong, & Virtue, in press). For example, reading superficially might prepare students well for exam questions that tap into a superficial memory of the material (e.g., typical matching or true/false questions) but would not prepare them well for critical thinking about the material (e.g., extended-essay or compare/contrast questions).
2. Ask students to generate their own ideas about what kind of reading, and cognitive processing, is appropriate for each of their classes and discuss these ideas with them. Upon completion of this exercise, students will discover that most of their classes require a level of learning that cannot be accomplished

by simple cognitive processing strategies such as re-reading textbook definitions repeatedly. In addition, students should recognize that different types or different levels of courses require unique reading strategies. For example, different reading strategies would need to be used for an introductory French course where memorizing basic vocabulary is emphasized versus an advanced 19th century French literature course where critiquing the quality of the writing is emphasized.

3. Likewise, talk explicitly to students about the reading strategies that are linked to more integrated, long-term memories of text information. For example, when readers actively attempt to explain text materials by making connections with prior knowledge and with other parts of the text during reading, comprehension and memory are enhanced (e.g., Magliano, Trabasso, & Graesser, 1999; van den Broek et al., 2001). An explanation strategy is more effective than the more common practice of skimming a text for key points and for definitions of terms. More specifically, when a student is reading an expository text, ask them to generate cause-and-effect questions about how one idea is causally related to another. For instance, if reading about a scientific process of some kind, students may attempt to explain to themselves how one step in the process influences or causes the next step in the process.

Empirical finding: Instructing students to read with a particular angle or a specific purpose will help those with limited knowledge and/or reading skills delineate important information (Kaakinen, Hyona, & Keenan, 2002; Kaakinen et al., 2003).

Practical applications:

1. Ask students to meet with their course instructors to be clear on specific instructional goals. For example, is the focus of the course to memorize terms or is it to apply conceptual knowledge to solve a real-life problem? Targeted reading with a particular angle or goal in mind will minimize the strain on readers' limited cognitive resources.
2. If the instructor is willing, the student may also ask that instructors provide orienting cues such as pre-reading questions or relevant textbook themes in order to enhance their comprehension. Another more active, and perhaps preferred, approach would be for students to generate relevant themes themselves and then verify the themes with the instructor.

Empirical finding: Less-skilled readers are often over confident

particularly when reading for study purposes (Linderholm & Cong, 2003).

Practical applications:

1. Gauge how accurate a student's sense of their reading skills are and question how much effort they put into reading in preparation for exams as this may be one source of poor test performance. When a student claims that they studied several hours for an exam and yet performed more poorly than anticipated, and thus was over confident, it is crucial for study and reading skills instructors to ask about the student's reading strategies and reading habits.
2. Specifically, ask whether the student spent a lot of time simply reviewing and re-reading the textbook. This, according to the results above, may give students a false sense of good comprehension, particularly if they are less-skilled comprehenders (Linderholm & Cong, 2003; Linderholm & van den Broek, 2002).

Empirical finding: For less-skilled comprehenders in particular, it appears that there may be a lack of understanding about the strategies that enhance learning when reading for study purposes (Linderholm & van den Broek, 2002).

Practical applications:

1. For less-skilled comprehenders such as low working-memory capacity readers, it is important for them to understand exactly which strategies are beneficial for learning and comprehension. Review with these students the types of reading strategies that lead to gains in learning when reading for study purposes such as paraphrasing, making inferences, and monitoring comprehension (Linderholm & van den Broek, 2002; van den Broek et al., 2001). For example, talk to students who are having problems with reading comprehension about summarizing and putting into their own words what the main point is in each section in their textbook.
2. To increase the use of comprehension monitoring strategies, ask students to then check their summaries against what is actually contained in the textbook. This has been shown to increase monitoring accuracy, which may lead to gains in comprehension (Thiede, Anderson, & Therriault, 2003).

Empirical finding: Some less-skilled comprehenders, specifically, low working-memory capacity readers, have difficulty managing attentional

resources during complex tasks (e.g., Engle, 2002) such as reading for study purposes.

Practical applications:

1. It is particularly crucial that students who may have low working-memory capacities not read for study purposes in distracting environments where attention may be divided. And, if possible, it may be helpful for students who are known to be distractible to ask their college instructors to provide them with explicit directions as to what information is most relevant in a textbook in order to minimize the amount of information they must attend to during reading (see Kaakinen et al., 2003).
2. Have the more distractible student readers practice attention-focusing strategies such as summarizing key points as they read or ask them to read with particular questions in mind. Questions may be generated by the student and checked against the textbook, against other students' ideas about key points, or against instructors' opinions of key points.

Conclusions and Future Directions

Explicit instruction on how to tailor cognitive processing for different reading purposes will enhance learning if made available to study and reading skills instructors and their students, which makes further investigation on this topic critical. One suggestion for further research is to continue to investigate reading purposes that are specific to school learning. As outlined by Lorch and colleagues (Lorch et al., 1993; Lorch et al., 1987), there are several subcategories of reading for school purposes, such as, reading for exam preparation, reading for class preparation, reading for research, and reading to learn. Additional research must be conducted to pinpoint how specialized cognitive processing must be in each subcategory in order to maximize reading comprehension and to determine where students make mistakes in their cognitive processing when reading for school purposes. This additional research will, in turn, arm study and reading skills instructors with more tools to help students read in a highly effective and targeted manner.

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Tracy Linderholm*, Ph.D., is an assistant professor in the Department of Educational Psychology at the University of Florida. She holds a Ph.D. from the University of Minnesota with a major in Educational Psychology, Learning and Cognition, and a minor in Cognitive Science. The focus of her research is on understanding how individual differences (e.g., working-memory capacity) influence the cognitive-psychological processes (e.g., inference generation) important for adult reading comprehension. Dr. Linderholm's current research projects include the investigation of readers' metacomprehension accuracy as a function of working-memory capacity and task instructions (e.g., purpose for reading; reading strategy training) and the effects of cognitive aging on the comprehension of inferential information during reading. She can be reached at: Department of Educational Psychology, University of Florida, PO Box 117047, Gainesville, FL 32611-7047, Email:* linderholm@coe.ufl.edu.