A The retical and Empirical Basis f r StudySync.™
Ruth Nathan, Ph.D.

Introduction: The Need for Innovation in Light of Current Academic Achievement

The purpose of schooling, be it in a physical or virtual setting, is to engage students deeply in learning – to plant seeds of intellectual interest that will carry them into the next stages of education and work (Yazzie-Mintz, 2006). Core to such engagement is reading ability, which is the key predictor of literacy achievement in all areas (Stanovich, 1986), including math and science (ACT, 2006).

By reading ability we mean, of course, much more than pronouncing words and making sense of text. Written language encodes ways of thinking, ways of knowing. An adolescent student who reads well is one who can participate in the logic and excitement of scientific inquiry, who can sample the world view of an insightful novelist or essayist from a near or distant place or time, who can appreciate the artistry of a classical poet or a street rhyme-spinner, who can follow the steps of a historian assembling and weighing the significance of evidence to shed light on a puzzling event.

Advanced reading ability is the key to the full range of ways of knowing. It can no longer be considered a luxury. The global information economy now requires greater breadth and depth of skill in making meaning than what was expected of any previous American generation (Snow, Burns, and Gri□n, 1998). Tony Wagner, co-director of the Change Leadership Group at the Harvard Graduate School of Education, recently did a study of skills students will need in the new global economy (Educational Leadership, October, 2008). He asked several hundred business, nonprofit, philanthropic, and education leaders, “What skills will students need to build successful careers? What skills will they need to be good citizens?” (p.20). After hours of analysis,

Four years ago, Briancarosa & Snow (2004) found that some 70 percent of older readers require some form of remediation, with most of their problems due to reading comprehension, including the ability to think critically—to understand ways of thinking, ways of knowing. Given these facts, perhaps it is not surprising that descriptive research from 2006 (Greene & Winters) found that the national graduation rate for the public school class of 2003 was 70 percent. [1] At the middle school level, 69 percent of 8th grade students fall below the proficient level in their ability to comprehend text at their grade level, and 26 percent read below the basic level, which means they can't learn from text at their grade level (Lee, Griggs & Donahue, 2007; NAGB, 2007).

The problems cited above are not new. Highly sophisticated research on older students began in the late twentieth century. It was in 1999, for example, that the Office of Educational Research and Improvement of the U.S. Department of Education charged the RAND Corporation with developing a research agenda to address the most-pressing, higher-level issues in literacy. Findings from the RAND Reading Study Group (RRSG) (Snow, 2002) showed an increased need for a high degree of literacy, including the capacity to comprehend complex texts; but comprehension outcomes for older students, the study found, were not improving, even by 2002 (nor are they now [Briancarosa & Snow, 2004]). Concomitantly, the RAND group found little attention had been devoted to helping teachers develop the skills they need to promote reading comprehension, ensure content learning through reading, and deal with the differences in comprehension skills that their students need, a finding that is mirrored in a new study by the Institute of Education Sciences (Borman, Dole, Kamil, Kral,Salinger, & Torgesen, 2008). Witness this high school teacher's account of coming back to school

In a study of upwards of eighty-one thousand high school students from 110 schools in 26 different states, researchers from the Center for Evaluation & Educational Policy (Yazzie-Mintz, 2006) found that schools need to better understand student engagement. “Engagement is about relationship; engagement is not a solo activity” (p. 1). Students want to

- learn with their peers, including discussion and debate;
- be active participants, as opposed to listening to the teacher lecture; and
- engage with their minds, with the life of their schools, and with their hearts. (p. 7-8)

In short, students want to be able to think. They certainly deserve more than we are giving them (Moore, Bean,Birdyshaw, and Rycik, 1999).

Recently a tenth grader said to this author, “I really want to do well in college, but in high school there’s so much teacher talk. It’s easier to learn with someone your own age or maturity than with somebody who has grown up in a different time or lived different experiences. I like working on my assignments online, actually. Working online, you can talk to different kinds of people and get different perspectives from others you may never meet” (Russell Winter [pseudonym], November 21, 2008, 4:30PM, San Antonio Airport). Overhearing our conversatio

Rescue Committee promotes critical thinking along with connectedness to others as a key ingredient of a “healing classroom” for children (International Rescue Committee, 2007). As young people in America also confront the accelerating pace of change, they, too, need to develop the capacity to think beyond the here-and-now, along with the willingness and the ability to engage with others.

Instruction within content-oriented lessons

The research-based findings documented in the recent and influential RAND report indicate that much is known about comprehension instruction. Of the many findings, the report concluded that instruction in reading strategies, when integrated into subject-matter learning, improves students’ comprehension of text (Biancarosa et. al, 2004; Guthrie and Humenick, 2004). Although language arts teachers routinely integrate reading instruction with subject matter when teaching content material and/or when using content material

A sample of what works:

- Direct instruction of vocabulary items is required for specific text.
- Repetition and multiple exposures to vocabulary items are important.
- Learning in rich contexts is valuable for vocabulary learning. Words chosen should be those that the learner will find useful in many contexts.
- Vocabulary learning is effective when the student active engages in learning tasks.
- Computer technology can be used effectively to help teach vocabulary
- A variety of methods is necessary for teaching vocabulary. One method becomes boring to students.
- Methods that include multimedia, capacity (practice), and association (drawing connections between the known and the new) are all important.

On-going formative assessment

The best instructional practices are informed by ongoing assessment of students' strengths and needs (Torgesen, 2004). Formative assessments are assessments for learning, as opposed to assessments of learning. Technology-based systems, as well as classroom teachers, are engaged in doing formative assessment when they are determining what students know following lesson(s), thereby enabling tighter planning of appropriate, future instruction.

Syntheses of research on formative assessment reveal that such assessments are probably the educator's most powerful tool for planning instruction (Black & Wiliam, 1998 a & b). After synthesizing results from 250 studies, Black & William describe the impact of effective formative assessment this way:

As an illustration of just how big these gains are, an effect size [2] of 0.7, if it could be achieved on a nationwide scale, would be equivalent to raising the mathematics attainment score of an "average" country like England, New Zealand, or the United States into the "top five" after the Pacific rim countries of Singapore, Korea, Japan, and Hong Kong. (p. 61)

This line of research also found that student achievement is related to frequency of assessments (Fuchs, Deno, and Mirkin, 1984; Fuchs and Fuchs, 1986).

A sample of what works:

- Cataloging data on a computer system that allows teachers, administrators, and evaluators to inspect student progress individually and by class.
- Adjusting instruction based on formative assessments.
- Administering formative assessments frequently, on a daily, weekly, or bi-weekly basis when necessary.

2 Statistically, students' achievement scores tend to be distributed according to the well-known "bell curve." The majority of scores are clustered around the mid-point, with fewer scores occurring as the distance from the mean increases. Normal distribution has a range of about three standard deviations above the mean and three below. In order to show whether a particular technique or intervention helps raise student achievement on a test, a researcher would translate the results of a given study into a unit of measurement referred to as an effect size. This calculation expresses the increase or decrease in achievement of the experimental group in standard deviation units. An effect size of 1.0 means that the average score for students in the experimental group is 1.0 standard deviation higher than the average score of the control group. A study that results in an effect size of .7 means that the average student who was exposed to the treatment scored .70 standard deviations above the scores of the average student who was not exposed. Effect sizes of .2 are small; .5 are medium; and .8 are large (Cohn, 1998).

- Considering on-line feedback from peers a valid and engaging type of formative assessment.
- Ensuring that assessments include di□erent aspects of reading (both traditional and cyberspace formats) from structural analysis, fluency, and vocabulary to comprehension, evaluation, and critical analysis.
- Providing opportunities for students to monitor their own reading progress.

Summative: Final Assessment

Summative assessment is assessment of learning. Criterion-referenced tests, or tests that determine what students are supposed to have learned, are one type of summative assessment, a type used within the

exposure to language, especially exposure to diverse texts, rather than through direct teaching; and, indeed, this increase in exposures to texts accounts for differences in achievement between skilled and less-skilled readers.

Most speech is lexically impoverished as compared to written language (Hayes & Ahrens, 1988). Anderson, Fielding, and Wilson (1988) did research on the amount of reading students do outside of school (fifth graders were asked to keep a diary of their out of school reading experience). They learned that children in the 50th percentile in amount of independent reading read approximately 4.6 minutes a day, or about a half an hour per week. This was over six times as much as the child reading at the 20th percentile (less than a minute daily), but twenty times less than the child reading at the 80th percentile (14.2 minutes a day). Over a year's time, a child reading at the 50th percentile reads 282,000 words per year, while the student at the 80th percentile reads 1,146,000 words per year. At the 98th percentile, words read per year stand at 4,358,000. Given that written speech is far richer lexically than spoken language, the chance for developing a better vocabulary and adding to one's background knowledge is huge for the "reader" and less so for the "non-reader."

Empirically, Cunningham and Stanovich (1998) delineate how extensive reading affects achievement. It's one thing to find theoretical relevance to reading a lot but another to show that such reading really matters. The two researchers sought to examine the unique contribution that independent or out of school reading makes toward reading ability. They used a measure of student reading volume, the Title Recognition Test, in combination with the powerful statistical technique known as hierarchical multiple regression to determine why avid readers excel in most domains of verbal learning. They found that reading volume, even when general ability and reading comprehension are discounted, accounts for an independent source of cognitive difference. Reading a lot matters. In yet another study (Stanovich and Cunningham, 1993), the research team found that reading volume contributed significantly to declarative knowledge. The resultant crucial message for StudySync™'s portfolio of research (and there is far more than discussed in this short white paper) is that we should provi[illegible]

words, “It’s expensive to be poor.” Says Kelly, “Beyond simple economics, Baldwin was getting at the notion that poor people are often taken advantage of. The best way to arm our students against this oppression is to teach them how to read the world critically – to teach them how to read the advertiser who is trying to get them to spend their money unwisely; to read the politician who is intentionally clouding the issue; to read the ballot proposition correctly” (p. 37).

For the mind, for the soul, for living freely and intelligently, reading is core.

A sample of what works:

- Giving students opportunities to engage in discussions of books they have chosen to read.
- Giving students access to high-interest reading materials.
- Giving students time to read and a place to read.
- Modeling the value of reading.
- Not grading everything. Students need to read more than they’re graded upon.
- Encouraging in myriad ways remote reading experiences, for example, including primary source materials (facilitated nowadays by the Internet) when doing research projects.

The Need to Motivate

Learning is a□ective as well as cognitive. Daily we are gleaning more information from neuroscience about how emotions a□ect learning (Sousa, 1995, 2006). According to Gilbert (2002), “We have to play to the emotional brain; then and only then, will we be open to the intellectual brain” (p. 2). In a recent study of students’ reading of text, Naceur & Schiefele found that the best predictor of ability with more challenging comprehension tasks, such as inferring or elaborating on information in the text, was interest, not cognitive ability. When students are deeply engaged in interacting with the text and motivated to understand over lengthy periods of time, they increase their reading comprehension (Guthrie and Wigfield, 2000). In the National Reading Council’s comprehensive report on the state of education for at-risk students, Snow, Burns, and Gri□n (1998) confirmed that one of the main stumbling blocks that can prevent students from becoming skilled readers is a lack of motivation. A year later, it came as no surprise that the Adolescent Literacy Commission of the International Reading Association stated emphatically that schools “need teachers who act on adolescents’ interests and design meaningful projects addressing motivational needs” (Moore, Bean, Birdyshaw, & Rycik, cited in Ciardiello, 2007, p.26).

In a recent review of the literature on motivation, Guthrie and Humenick (2004) conclude that mounting evidence indicates that certain teaching practices increase reading motivation and achievement. The two researchers define motivation as, “[A] cognitive commitment toward reading to learn and to extending one’s aesthetic experience.” Motivation gives both energy and direction to reading, where reading is defined as “understanding the content of a text.”

Motivation is not a unitary attribute, as parents and teachers know from daily experience. They see, for example, that their children or their students are clearly motivated to read some texts more than others. Additionally, they recognize that types of motivation di□er from external, to internal, to self-e□cacy. Students externally motivated seek recognition for excellence through some prize or benefit. They focus on gaining

points, praise, or even money. Students internally motivated seek benefits that the sheer act of reading confers on them. They have desires, interests, needs, and dispositions that are satisfied through various kinds of reading activities. Students who attain self-e□cacy believe they have the capability to read well. When reading, they exhibit confidence and assume that even if a text is di□cult, they can master it.

Teachers use many practices to motivate students, from pre-teaching vocabulary (which makes text reading easier), to using classroom strategies that create expectations (and sometimes excitement) about the text. Examples of such practices include creating story impressions (what will this article be about?); making expectation outlines (students generate questions before reading, and the teacher organizes the questions into an outline); and using a variety of procedures, such as the "request procedure" (students are encouraged to ask their own questions about the text as the text is read) (Manzo, 1969). A review of experimental studies on motivation – that is, careful studies using both experimental and control groups – identified four practices as having a sizable impact on reading motivation and as being major constituents of any long-term instructional program: adopting goals and purposes for reading, allowing choice, providing interesting texts, and allowing student to discuss and collaborate (Guthrie and Humenick, 2004).

A sample of what works:

- Adopting goals and purposes for reading, including practices such as enabling students to use their background knowledge and experience, arranging for hands-on activities, modeling the behaviors of a curious reader, engaging students in extended practice, providing e□ective feedback on students' progress in relation to their goals, and creating classrooms that are mastery oriented.
- Allowing choice, including providing choices of unstructered reading activities, understanding the role of choice in alternative cultures (some students prefer choosing, while others prefer to be given materials their teachers or parents deem important), and allowing students to elect reading activities during ongoing instruction (such as letting them choose projects they might do in response to content learning).
- Providing a variety of texts relevant to the readers: those that students find interesting, including texts about which they have some experiential background knowledge; those that students already know something about; and those that students find visually both helpful and pleasing to the eye.
- Allowing time for students to discuss and collaborate, letting them know that part of their work will involve collaboration.

In Conclusion

StudySync™ was born out of need. Parents want their children to become excellent students. Students want to have opportunities to think, to create, to solve problems, and to find new ways to make friends. Business and nonprofit communities want schools to produce students who, upon entering their respective worlds, can think creatively ("outside the box") and collaborate with colleagues. StudySync™ has attempted to design a program to help all of this to happen. Our mantra, as we said at the outset, "is to engage students and sca□old their learning from their current interests to the many disciplines and types of communication they will need to command for both higher education and the current work-force."

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