A Theoretical and Empirical Basis for 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 Griffin, 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, Wagner concluded that students need to master seven survival skills:

- critical thinking and problem solving
- collaboration and leadership
- agility and adaptability
- initiative and entrepreneurialism
- effective oral and written communication
- accessing and analyzing information
- curiosity and imagination

He found none of these being fostered in the high school classrooms he visited. Instead, Wagner found to his great dismay mostly "test prep" (p. 24). In hundreds of classrooms, 1 in 20 were engaged in instruction to teach students to think instead of merely drilling for the test (p. 24). Wagner is not alone in his findings. Other prestigious reports suggest that students with average or greater reading ability are currently under prepared for the literacy demands of work or of post-secondary education (Pennsylvania Department of Education, 2004; Williams, 2004).

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 after a year's leave (Chapman, 2008):

> At my school, this year seems to be adding to our need for new ideas. Over the last few years we have mainstreamed ELD and resource students into our core classes. [The work to integrate these students] has been mind-boggling. I have struggled to adapt my teaching to meet these new challenges. This year my district ended a program for emotionally or mentally disturbed students, and now they too are mainstreamed. I am ill-trained to meet such a circumstance, and I worry that these students will be out on the streets before the semester has ended. (p.4)

Given such conditions in many middle and high school classrooms, combined with the fact that teachers are not getting the professional development they need, it is not surprising that a recent, longitudinal case-study of forty low-income youths – following students from preschool through high school – found that many of the study's high school graduates were under-prepared to participate in the knowledge economy, despite the fact that several of the students seemed well-prepared for middle school (Snow, Porche, Tabors, & Harris, 2007). This finding suggests that the moderate increases in reading scores and the shrinking racial achievement gap for students in the elementary grades, laudatory as they may be, are not sufficient. Many of our adolescents do not read well enough (NAEP, 2006).

The under-achievement of seven out of ten American adolescents cannot be the result of faulty intelligence. In our view, one severe problem is that students are not committed to learning. Fortunately, we are finally beginning to understand some of the change that is necessary to keep older students engaged and motivated.

---

1 The rate for white students was 78%; for Asian students it was 72%; for African-American students it was 55%; for Hispanic students it was 53%; and for Native Americans it was 57% (Green & Winters, 2006).

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 conversation, three young women sitting near Russell — all in the work force having just finished high school — chimed in. Essentially they agreed with him, but to a head said that now that they were working they wished they had had more opportunities to problem solve and collaborate before graduation. These students felt they were bright — they got mostly A's and B's; certainly they were articulate.

Is it possible that even our best students are not challenged? That their curriculums are being watered down? Here is one piece of evidence: According to PISA, the OECD's international comparison of the achievement of 15-year-olds in science, American students ranked 35th in the world in 2006 — below the world's average and 28 places behind Japan. They were 32 places behind their Canadian counterparts. In reading, 15-year-olds in the United States ranked 35th in the world and right at the world's average in 2003, the last time the U.S. participated in the reading test. (OECD/PISA, 2002). The Partnership for 21st Century Skills (2008) reminds us that our status has serious economic implications. "Countries that do well on PISA, which measures 21st century skills such as critical thinking and problem solving, have demonstrated higher increases in GDP growth than countries that do not, according to a series of studies by Stanford researchers" (p.3).

As good citizens, we are all deeply concerned about the poor state of literacy in America's middle and high schools. But as parents, we realize that our children can be getting A's and B's in these schools and still fall woefully behind graduates of most schools in Europe, Japan, Korea, and even Canada. Most of us consider it our civil obligation to send our children to public schools and do what we can to make those schools work better. But the truth is, we also scramble to give our kids the extra challenge and stimulation they will need to go on to good colleges.

Delivery of what 21st century students both need (higher-level of proficiency), and want (engagement), seems imminently possible if educators would use what they know from the archives of accumulated, highquality instructional research, including the elicitation of stronger motivation to learn (Snow, Griffin, and Burns, 2005), and if they would develop innovative ways to use the world of technology that now occupies a central place

in our society (Briancaroso, et al, 2004; Hunter, 1994), especially in our students' worlds. As a new report devoted to learning online found, "Technology and online communications are dominant forces in students' lives. Students go online to find answers to their questions, communicate with friends and family, play games and listen to music" (p.2) (Henke, 2008). Not surprisingly, Henke found that one in three students selected online classes as a component of their ideal school. It is crucial to realize, as well, that "the word now shares Web space with the image, and text appears inextricably tied to pictures" (Heim cited in Alverman, 2008, p25). In this time of accountability with No Child Left Behind, and as focus shifts from the elementary level to middle and high school level, it will be a challenge to develop young people's critical awareness as they engage with multiple sign systems (Alverman, 2008). "The unprecedented speed and ease of digital production mounts photographs, movies, and video on the Web. Cyberspace becomes visualized data, and meaning arrives in spatial as well as in verbal expressions" (Heim, cited in Alverman, 2008, p. 26).

It is within this context that StudySync™ was born. Students and parents alike are demanding a 21st century education (Henke, 2008), and companies like StudySync™ promise to be only the beginning of what will become a learning revolution. The technology naysayers were right to slight technology when programs did little more than package and glorify worksheets, but today's technology allows for the seamless integration of academic skills and content learning within real social networks, thereby providing access to on-going collaborative thinking experiences, instantaneous fact-checking that promotes analysis, the ability to define oneself in academic and social circles in light of the person one is, not what one looks like on any given day, and so much more. Writers and readers who interact with new media texts frequently take up new and multiple identities. In a recent article by Yi (2008), we learn that students who composed blogs in an American literacy class created various identities for themselves. Their transformations helped them develop new ideas about the books they read, and students developed new ways to communicate. As a virtual learning community to which people can subscribe, StudySync™ will help keep kids' minds active and broaden their exposure to different kinds of print matter and literature and also connect them with other bright students.

Research Behind the StudySync™ Experience

At the core of StudySync™ is an Internet technology-based learning system that accommodates the current generation's need for instruction. It is customized, collaborative, and lives up to the need for information integrity in a highly digitized and connected world. Its solutions leverage students' experience and intelligence to advance them on a pathway to excellence through middle and high school and into college. Through assessment, explicit and customized instruction, and integrated research-based lessons, students progress to higher levels of understanding, comprehension, and critical thinking across multiple subject areas while thoughtfully interacting with peers on StudySync™'s exclusive educational social network site. Designed by leading academics to interest students and prepare them for distinction and success, StudySync™ will engage students and scaffold their learning from their areas of interest to the many disciplines and areas of discourse demanded by both higher education and current work-force literacy requirements.

Substantial research undergirds the company's user experience. A perusal of the StudySync™ description above leads to a list of approaches and strategies that define the system: initial assessment; explicit instruction tailored to individual needs and interests within content-oriented lessons; opportunities for

thoughtful discussion and collaboration; extensive social networking designed to illicit feedback, share reflections, plan projects, or participate in intensive book discussions; on-going formative assessment, which serves to further tailor lessons; and opportunities for extensive reading. In full, these approaches serve to promote greater student engagement and motivation. It is well known that as students progress through the grades they get "tuned out." Thus, building networks that are filled with choice, including opportunities to choose what they read and topics to research, as well as opportunities to work with like-minded students, are ways to achieve successful and flexible members of society. Below is a very brief review of key articles that form part of the research-basis for each element within the system.

Explicit comprehension and critical thinking instruction within content-oriented lessons

The need exists for explicit instruction in comprehending complex texts in many disciplines and in critical thinking. Substantial evidence supports the need for explicit instruction both in comprehending complex texts and in critical thinking (Johnson and Freedman, 2005; Kamil, et al., 2008). Because the terms "explicit," "comprehension strategy instruction," and "critical thinking" are fluid, for the sake of clarity we define them this way:

- Explicit instruction refers to the intentional design and delivery of information by the teacher to the student. It includes (1) the teacher's modeling or demonstrating the skill or strategy; (2) the students receiving a structured and substantial opportunity to practice and apply the new skills and knowledge under the teacher's direction and guidance; and (3) the students having frequent opportunity for feedback (see teaching functions).

- Comprehension strategies are cognitive or reasoning strategies used when readers encounter barriers to their comprehending reading materials. The goal of explicit instruction in comprehension is the achievement of competent and self-regulated reading (NRP, 2000).

- Critical thinking is the ability to use logical thinking, analysis, comparison and contrast, questioning, evaluation, and summarizing (Johnson and Freedman, 2005); it is considered a "habit of mind" (Meier, cited in Johnson and Freedman, 2005). According to Johnson and Freedman (2005, p.3), critical thinking is "an attitude encompassing a skepticism that allows for divergent ways of knowing about the world and about the knowledge emphasized in any content area or discipline" (p.3). Explicit instruction in the strategies and skills of critical thinking may include discussing engaging texts, but it quickly extends to considering issues from the world around. In fact, students who use comprehension strategies and who develop the habit of thinking critically develop the very skills they need to succeed in the best colleges and build successful careers. When students are able to think critically, that is, to ask questions, evaluate texts from various literary perspectives, make connections to their lives and to the world, they are using high-level skills to comprehend. This type of thinking means, too, that elements of higher-order comprehension, such as being able to monitor one's understanding or to choose reading strategies, are being enlisted in real time reading situations, thereby enabling students to work more productively from minute to minute. Critical thinking has a civic dimension as well. When asked about the skills needed for democratic citizenship, the contemporary philosopher Jean Francois Revel (1993) listed critical thinking, along with problem solving, meaning making, cooperating, taking responsibility for one's self, and caring for others. In areas of the world that have been ravaged by warfare, the well-known group International

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 for practice opportunities, this integration needs to be more frequent than is currently the case. The authors noted that while subject-area teachers often embed reading instruction when teaching comprehension skills and strategies that are particularly effective in their subject areas, they frequently overlook opportunities for meaningful integration. For example, a science teacher could appropriately teach the SQ3R reading strategy (survey, question, read, recite, review) when introducing a chapter to be read partially in school and partially at home.

A sample of what works:

- Teach comprehension and critical thinking explicitly and adopt a model that provides students with adequate scaffolding (as deftly shown through the reciprocal teaching approach [Palincsar and Herrenkohl, 2002] and the Reading Apprenticeship model [Jorday, Jensen, and Greenleaf, 2001]).
- To facilitate learning from text, extend to content-area material the skill and strategy instruction used for narrative text.
- To enrich comprehension, use aids and devices such as graphic organizers, prompted outlines, structured reviews, and guided discussions.
- As they pursue an extended project, have students practice reading strategies they have learned, such as explicating a theme, reading a variety of materials, and producing a product meaningful to them (for example, creating a travel brochure).

Gutherie and Hymenick (2004) point out that when students integrate information from many types of texts for projects, such as presentations or written reports, the students' sense of "being in command of the topic fuels their confidence and arouses new curiosities, while providing a platform for understanding the content of new materials. This content emphasis encourages students to adopt mastery goals for reading activities and to read with purpose, rather than merely complete assignments" (p.334). Texts also differ in their level of difficulty; so offering texts at various levels supports diverse learners. All students, not just those reading at grade level, have the opportunity to read material at their independent or instructional levels. This practice is informed by the finding that when teachers carefully match the reading level of a text to a student's ability, reading becomes challenging but attainable (Morrow, 1996).

A sample of what works:

- Gather materials for themed work that reflect diverse reading levels, interests, and text types.
- Provide multiple ways of reading texts, for example, through computer-assisted or tape-recorded texts, reading with a partner, reading individually, and so on.
- Provide opportunities to talk about multiple texts in study circles, on-line, or otherwise.
- Provide explicit instruction on how to integrate information about a topic from alternative text types. For example, show students how to use graphic organizers to organize the information they have found that answers questions generated by a student, the teacher, and/or a small group.

Opportunities for social networking designed to garner feedback, share reflections, plan projects or participate in intensive book discussions

Strong research points to the relevance of discussion in promoting and advancing comprehension and higher-order thinking skills. Theoretically, the importance of collaboration rests on the idea that through talk students internalize thinking processes. Through discussion, students have opportunity to express their own points of view and listen to others' interpretations of the same text. As Kamil, Borman, Dole, Dral, Salinger, and Torgesen point out (2007), "Good discussions give students opportunities to identify specific text material that supports their position and to listen as other students do the same. In the course of an effective discussion, students are presented with multiple examples of how meaning can be constructed from text" (p. 22).

Simply put, critical thinking is social. One develops thinking skills by explaining oneself clearly to others, comparing ideas, playing off others' thoughts, acknowledging different perspectives, and sometimes debating issues. Lev Vygotsky's (1978) finding that thinking is voiced aloud before it is internalized is usually thought to apply only to children, but it applies to people of all ages, particularly when they approach complex problems. Lawrence Kohlberg observed that learners are motivated to think in more sophisticated ways when they interact with others whose reasoning is just a step beyond their own. Kohlberg's observation provides another reason why a thinking program should include regular opportunities for students to discuss ideas with peers. In a five-year study headed by Judith Langer (2000), currently director of the National Research Center on English Learning and Achievement, researchers found that students from higher performing schools work in communicative groups and engage in the kind of teamwork now so highly prized in business and industry. Says Langer, "They bring their personal, cultural, and academic knowledge to these interactions, in which they play the multiple roles of learners, teachers, and inquirers and have opportunities to consider issues from multiple perspectives" (p. 14).

While the research on text discussion online is still in its infancy, a scholar from Central Michigan University (Steffel, 2008) reported the benefits of electronic communication over face-to-face discussion. In reviewing several years of saved discussion boards from former college entry-level students, Steffel compiled some intriguing insights: electronic communication offers females the opportunity to speak uninterruptedly; offers quiet or shy students time to formulate a comment and share it without competition; removes or helps to displace the teacher from the center of conversation; mimics real conversation; tamps down competition (though not doing away with it); allows all voices to be heard; and permits no "overtaking," interrupting, or dismissing. Though Steffel found some downsides, she emphasized that they could be overcome through explicit teaching of how to hold conversations on-line. Downsides included the following: it's difficult for the

"speaker" to express tone; on-line discussions often lack code shifting (changing what and how one says something in light of one's audience); discussions are informal and can be abrupt; they sometimes lack spontaneity; abbreviated comments are often so short that they don't further conversation; there can be hesitancy because print is more permanent than speech; it's difficult to express non-verbals (e.g. expression, intonation, humor, sarcasm) and comments can therefore be misunderstood; discussion has potential to veer off topic and allows students to remain detached.

A sample of what works:

In regard to discussion, in general

- Include multiple strategy instruction, such as Reciprocal Teaching (Palincsar & Brown, 1984) and Question the Author (Beck & McKeown, 2006) approaches within social-networking opportunities.
- Set up discussion groups that require a password for projects, book discussions, solving math equations, understanding and finding primary and secondary sources for a project, and so on.
- Observe and encourage students' multiple literacies as meaningful, complex and relevant (Yardi, cited in Collier, 2008, p. 19).
- Re-examine the curriculum in light of shifting and multi-modal literacies, including the increase in interactivity, visual representations, and non-linearity for both writers and readers (Ranker, cited in Collier, 2008, p. 21).
- Provide authentic opportunities for Web 2.0.

In regard to on-line conversations

- Teach explicitly issues of discourse and how they translate to on-line discussions.
- Practice through various assignments both code shifting (specified audiences) and style shifting (formal/informal).
- Consider using V-mail such that students can hear each other's comments.
- Acknowledge the need for the speaker to be aware to be unambiguous and perhaps to have to offer additional explanations or questions.

Explicit vocabulary instruction

Historically, the importance of vocabulary knowledge has long been recognized. In 1925, the National Society of Studies in Education noted: "Growth in reading power means, therefore, continuous enriching and enlarging of the reading vocabulary and increasing clarity of discrimination in appreciation of word values (Whipple, 1925). Vocabulary is that important "middle ground" between word recognition and comprehension. (See the section in this paper, "Opportunities for Extensive Reading.") While it is true that readers often learn new words incidentally from context, the probability of this happening is actually only about 15 percent. Research has shown that for academic success, additional explicit support needs to be provided as part of any curriculum (Kamil, et al, 2008). Explicit, in the case of vocabulary instruction, means one of two things: direct instruction in word meaning (e.g., learning how to look up definitions, using graphic displays of the relationships among words) and instruction in strategies to promote independent acquisition of vocabulary (e.g., analyzing context, relating prior knowledge to the context). Research has also shown that words are best learned through repeated exposure in multiple contexts and that integrating explicit vocabulary instruction helps students acquire textbook vocabulary (Kamil, et al., 2008).

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 different 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 StudySync™ learning system at the end of major aspects of learning. The principle guiding these tests is that students must meet a preset performance level. For example, a student might take a test on his/her comprehension of main ideas. If the criterion for "mastered" is eight, then those scoring eight or above pass; those scoring below do not. Students who fall below criterion are assigned additional practice on the objective until they attain a passing score (Calfee and Wilson, 2004). Summative assessments are reliable – there is a degree of consistency to them that is important to students and their parents. Additionally, they are valid because they measure what they are intended to measure.

A sample of what works:
- Using summative assessments as part of a balanced approach to assessment, an approach whereby summative assessments work for accountability and formative assessments work for informing teachers, parents, and students both how students are doing and what instructional steps teachers need to take next.
- Helping students see summative tests as problems to be solved.
- Thoroughly familiarizing students with the test's instructions.
- Advising students what to do when they don't know the answer to a question.

Opportunities for extensive reading

Perhaps nothing is so important to successful reading comprehension than practice, by which we mean repeated engagement with reading texts of various types. Reading itself increases familiarity not only with words but also with text structures and written syntax, which are not identical to the typical structures and syntax of spoken language. (p. 5) Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg, 2001

In general, most children become fluent readers by third grade (Kuhn & Stahl, 2003), but reading fluency continues to develop beyond this period (Horn & Mainis, 1987). As word recognition develops and becomes less reliant on resources and more automatic, general language skills, such as vocabulary, background knowledge, familiarity with complex language structures, and so on, become the limiting factor on reading ability (Chall, 1983; Rayner et. al., 2001). Nonetheless, the sheer volume of reading done by the better--or at least the more-advantaged--reader has the potential to provide an advantage even here , since extensive reading develops these skills and bases of knowledge. Theoretically, Cunningham and Stanovich (1998) point out that researchers agree the bulk of vocabulary growth during a student's lifetime occurs indirectly through

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 provide all students, regardless of their achievement levels, with as many reading experiences as possible.

Our discussion so far has focused primarily on what reading does for the mind. Reading does as much for the soul, of course. Anne Dillard made this clear about a decade ago when she wrote, "What Reading Does for the Soul: A Girl and Her Books" (American Educator, Spring/Summer, 1998). Dillard opens, "I began reading books, reading books to delirium." In her essay, we learn of the Homewood Library and how, in short order, her good friend Henry-the-librarian gave Dillard a card to the adult section — "an enormous silent room with marble floors" (page 88). Reading The Field Book of Ponds and Streams numerous times led her to want a microscope, this leading to her next "must have," and so on into adulthood. Says Dillard about reading, "I had essentially been handed my own life" (p.91).

In Reading Reasons (2002) Kelly Gallagher, the author and a teacher at Magnolia High School, pleads for teachers to create their own classroom libraries, making a strong case with a simple equation given to him by his friend Jeff McQuillan: "more books = more reading = better reading"(p.5). Kelly stakes out a reason for reading few have brought to light: "Reading arms you against oppression." Gallagher evokes James Baldwin's

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 affective as well as cognitive. Daily we are gleaning more information from neuroscience about how emotions affect 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 Griffin (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 differ from external, to internal, to self-efficacy. 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-efficacy believe they have the capability to read well. When reading, they exhibit confidence and assume that even if a text is difficult, 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 effective 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 scaffold 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."

Bibliography

ACT, Inc. (2006). Reading between the lines: What the ACT reveals about college readiness in reading. Iowa City, IA: Author.

Alverman, D. (2008). Multiliterate youth in the time of scientific reading instruction. In K. Beers, R. Probst, and L. Rief (Eds). Adolescent literacy: Turning promise into practice. Portsmouth, NH: Heinemann.

Anderson, R. C. Wilson, P.T., & Fielding, L. G. (1988). Growth in reading and how children spend their time outside of school. Reading Research Quarterly, 23, 285-303.

Besk, I., & McKeown, M. G. (2006). Improving comprehension with questioning-the-author: A fresh and expanded view of a powerful approach. New York: Scholastic.

Biancarosa, G. S. & Snow, C. (2004). Reading next: A vision for actiona nd research in Middle and High school literacy: A Report to Carnegie Corporation of New York. Washington, DC: Alliance for Excellent Education.

Black, P., & Wiliam, D. (1998a). Assessment and classroom learning. Assessment in Education 5 (1): 7-74. (1998b). Inside the black box: Raising standards through classroom assessment. Phi Delta Kappan 80 (2): 139-48.
Calfee, R. & Wilson, K. M. (2004). Classroom assessment. In M. Graves, C. Juel, and B. Graves (Eds.) Teaching reading in the 21st century. Boston: Pearson.

Chall, J. (1983). Stages of reading development. New York: McGraw-Hill.

Ciardiello, A. V. (2007). Puzzle them first: Motivating adolescent reading with question-finding. Newark, DE: International Reading Association.

Chapman, B. (2008). President's perspective. California English 14.2, p. 4.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences, 2nd ed. Hillsdale, NY: Erlbaum.

Collier, L. (2008). Fighting for scientifically valid reading strategies that work. Council Chronicle, 18 (2), 14-24.

Cunningham, A.E., & Stanovich, K. (1998). What reading does for the mind. American Educator 22(1&2), p. 4-15.

Dillard, A. (1998). What reading does for the soul: A girl and her books. American Educator 22 (1&2), p. 88-96.

Fuchs, L. S., Deno, S. L., & Mirkin, P.K. (1984). The effects of frequent curriculum-based measurement and evaluation on pedagogy, student achievement, and student awareness. American Educational Research Journal 21, 440-460.

Fuchs, L.S. & Fuchs, D. (1986). Effects of a systematic formative evaluation: A meta-analysis. Exceptional Children 53, 199-208.

Manzo, A. (1969). The Request procedure. Journal of Reading, 13(2), 123-127.

Meier, D. (1996). The power of their ideas: Lessons for America from a small school in Harlem. Boston: Beacon Press.

Moore, D. W., Bean, T. W., Birdyshaw, D., & Rycik. (1999). Adolescent literacy: A position statement: Newark, DE: International Reading Association.

Morrow, L. M. (1996). Motivating reading and writing in diverse classrooms. (NCTE Research Rep. No. 28). Urbana, Il: National Council of Teachers of English.

Naceur, A. & Schiefele, U. (2005). Motivation and learning--the role of interest in construction of representation of text in long-term retention: Inter- and intraindividual analysis. European Journal of Psychology of Education, 20(2), 155-170.

National Assessment Governing Board (NAGB). (2007). Reading framework for the 2009 National Assessment of Educational Progress. Washington, DC: American Institutes for Research.

National Reading Panel. (2000). Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction (NIH Publication No. 00-4769). Washing DC: U.S. Department of Health and Human Services, National Institute of Child Health and Human Development.

Partnership for 21st Century Skills. (2008). Transition Brief: Policy recommendations on preparing Americans for the global skills race. Author.

Palincsar, A. S. & Brown, A. L. (1984). Reciprocal teaching of comprehension - fostering and comprehension - monitoring activities. Cognition and Instruction, 1 (2), 117-75.

Palincsar, A. S., & Herrenkohl, L. R. (2002). Designing collaborative learning contexts. Theory into Practice , 41 (1), 26- 32.

Partnership for 21st Century Skills (2008). Transition brief: Policy recommendations on preparing Americans for the global skills race. Retrieved on December 1, 2008, from http://www.21stcenturyskills.org

Pennsylvania Department of Education. (2004). Pennsylvania reading requirements for school, the workplace and society: Executive summary of findings. Harrisburg: Author.

OECD/PISA. (2002). The assessment of literacy in the OECD/PISA project. The Netherlands: Springer.

Rayner, K., Foorman, B. R., Perfetti, C. A., Pesetsky, D., & Seidenberg, M.S. (2001). How psychological science informs the teaching of reading. Psychological Science in the Public Interest, 2, 31-74.

Revel, J.F. (1993). Democracy against itself. New York: The Free Press.

Sousa, D. F. (1995). How the brain learns. Reston VA: National Association of Secondary School Principals.

Sousa, F. De. (2008, November 11). A clear explanation of what is motivation and extrinsic motivation. December 3, 2008, from http://ezinearticles.com/?A0Clear-Explanation-of-What-is-Motivation-and-Extrinsic-Motivation&id=1678751

Snow, C. (2002). Reading for understanding: Toward an R&D program in reading comprehension. Santa Monica, CA: RAND.

Snow, C., Burns, M., & Griffin, P. (Eds.). (1998). Preventing reading difficulties in young children. Washington, DC: National Academy Press.

Snow, C., Griffin, P. & Burns, M. (2005). Knowledge to support the teaching of reading: Preparing teachers afor a changing world. San Francisco, CA: Jossey-Bass.

Snow, C., Porche, M., Tabors, P., & Harris, S. R. (2007) Is literacy enough?: Pathways to academic success for adolescents. Baltimore, MD: Paul Brookes Publishing Co.

Stanovich, K. (1986). Matthew effects in reading. Reading Research Quarterly , 21, 360-407.

Stanovich, K., & Cunningham, A.E. (1993). Where does knowledge come from? Specific associations between print exposure and information acquisition. Journal of Educational Psychology, 85, 211-229.

Steffel, S. (2008) The shifting conversation: Maintaining the balance between spoken and electronic communication. Presentation at the National Council of Teachers of English, San Antonio, Texas.

Torgesen, J. K. (2004). Lessons learned from research on interventions for studnets who have difficulty learning to read. In The Voice of Evidence in Reading Research. Edited by P. McCardle and V. Chhabra, 355-82. Baltimore: Paul Brookes Publishing.

Yazzie-Mintz, E. (2006). Voices of student engagement: A report on the 2006 high school survey of student engagement. Bloomington, IN: Center for Evaluation & Education Policy, Indiana University
.
Yi, Y. (2008). Relay writing in adolescent online community: Relay writing can serve as a new and valuable window into online literacy as well as adolescent literacy practices outside of school. Journal of Adolescent & Adult Litearcy, 51, (8), 670-681.

Wagner, T. (2008). Rigor redefined. Educational Leadership , 66 (2), 20-24.

Whipple, G. M. (1925). Report of the national committee on reading (24th Yearbook of the National Society for the Study of Education, Part I). Bloomington, Il: Public School PUblishing.

Vygotsky, L. (1978). Mind in society. The development of higher psychological processes. (M. Cole, V. John-Steiner, S. Scribner & E. Souberman, (Eds. & Trans.). Cambridge, MA: Harvard University Press. (Original work published in 1934)