

Reconciling College and Career Readiness with Lifelong Reading

Victoria Appatova

University of Cincinnati Clermont College

Elfrieda H. Hiebert

TextProject &

University of California, Santa Cruz

TextProject Article Series

February 2014

TextProject, Inc.

SANTA CRUZ, CALIFORNIA

Appatova, V. & Hiebert, E. H. (2013). Reconciling college and career readiness with lifelong reading. *American Reading Forum Annual Yearbook* [Online]. Vol. 33.

Reconciling College and Career Readiness with Lifelong Reading

Victoria Appatova
University of Cincinnati Clermont College

Elfrieda H. Hiebert
TextProject & University of California, Santa Cruz

Abstract

This article argues that the current emphasis on college and career readiness by high school graduation fails to recognize the dynamic needs of adults in reading development across the lifespan. A model for college reading programs is designed, drawing on evidence that reading development continues beyond college and career readiness levels. It is proposed that the content of such programs should emphasize elements of reading such as metacognition, critical analysis, multimodal reading, creative thinking, and flexibility with electronic forms of reading. Opportunities to develop such capacities would serve both college students and other adult populations in acquiring the literacies required for professional, social, and personal well-being in the 21st century.

Reconciling College and Career Readiness with Lifelong Reading

College and career readiness at the time of the high school graduation is the central focus of the Common Core State Standards (CCSS; CCSS Initiative, 2010). The concept of college and career readiness has recently attracted more attention of researchers and practitioners than literacy proficiencies sufficient for the students to succeed later in college life and the workplace. The common definitions of “college and career readiness” concentrate on some ultimate level of accumulation of knowledge and experiences that prepare students for college and jobs and embrace such aspects as competence, proficiency, and understanding of required content with reasonable accuracy (Greene & Foster, 2003; Maruyama, 2012).

The predominant emphasis on the preparation for college and career takes away attention of the researchers and policy-makers from the concept of the further growth of literacy skills beyond the entry point to the academe or the job market and throughout the following lifespan development. In particular, in the area of reading, the underlying assumption manifesting itself in the policy arena is that high school graduation represents a final stage in instructor-guided reading development, after which the responsibility for further growth lies with the individual. The lack of studies concerned with post-secondary reading development of proficient readers contributes to this assumption. More than a dozen state systems (Jenkins & Boswell, 2002) and many colleges and universities in other states have eliminated developmental reading courses in four-year state institutions. Moreover, few campuses offer advanced reading courses designed to benefit college students as critical readers, especially to promote the professional, social, and personal growth in literacy required in the 21st century.

Although post-secondary and career-level literacy needs have been studied in the past, it appears that the peak of interest in this subject matter occurred about ten years ago and has faded away since then, giving way to the discussion of college and career readiness. At the beginning of the 21st century, researchers focused on instructional needs of bilingual students (Huerta-Macias, 2003), effective practices in adult literacy instruction (Purcell-Gates, Degener, Jacobson, & Soler, 2002), a separation between literacy instruction in the schools and the literacy needs of competent citizens (Venezky, 2000), as well as workplace basic-skills programs and the further expansion of developmental education instruction at community colleges (Comings, Sum, & Uvin, 2000). Although all of the above aspects remain significant in the context of the second decade of the 21st century, a new step has to be made in piecing together a more comprehensive, larger-scope vision of post-secondary reading development.

In this paper, we explore a dynamic view of reading across a lifetime and argue that the reading development after the high school graduation requires closer attention in light of theory and research on literacy across the lifespan. The existing definitions of reading seem to be static rather than dynamic. The earliest mechanistic definitions of reading were followed by what can be called communicational definitions since the latter ones were constructed from the viewpoint of communication theory: reading was defined as the process of constructing meaning through the dynamic interaction among the reader's existing knowledge, the information suggested by the text being read, and the context of the reading situation (Snow, 2002; White & Dillow, 2005; Wixson, Peters, Weber, & Roeber, 1987). The past two decades have also brought sociocultural definitions of reading which view reading as “the competence to exploit a particular set of cultural resources... [It] is learning to use the resources of writing for a culturally defined set of tasks and procedures” (Olson, 1994, p. 43). The most recent definition by the National

Assessment of Educational Progress (NAEP) states that “[r]eading is an active and complex process that involves (i) understanding written text, (ii) developing and interpreting meaning, and (iii) using meaning as appropriate to type of text, purpose, and situation (Reading Framework for the 2013 NAEP, p. 2), and it can be referred to as a functional definition since it focuses on the functions embraced by the reading process, but does not explain the process itself. Neither of these definitions reflects a dynamic nature of reading manifesting itself in continuous transformations within a person’s lifespan or resulting from the technological advances in the whole society.

We are defining reading as a constantly evolving process, which draws profoundly on the reader’s background knowledge, including the knowledge gained from acting in the world and having the world act upon one. Our goal is to envision what support and instruction for literacy might look like in colleges and beyond when adult reading development moves from the realm of remedial instruction. The driving question is: How can we help *all* adult learners progress to higher levels, irrespective of their current reading level?

Views of Reading in Adulthood

Most of the existing research on reading development across the lifespan is limited to the young age of learners. As seen in Figure 1, Common Core State Standards do not address the progression of text difficulty beyond the high school level. The levels of texts in Chall, Bissex, Conard, and Harris-Sharples’ study (1999), as depicted in Figure 1, show the growth of Lexile levels for benchmark texts up to grade 16 (i.e., college graduation). It is reasonable to assume that growth continues beyond the undergraduate years.

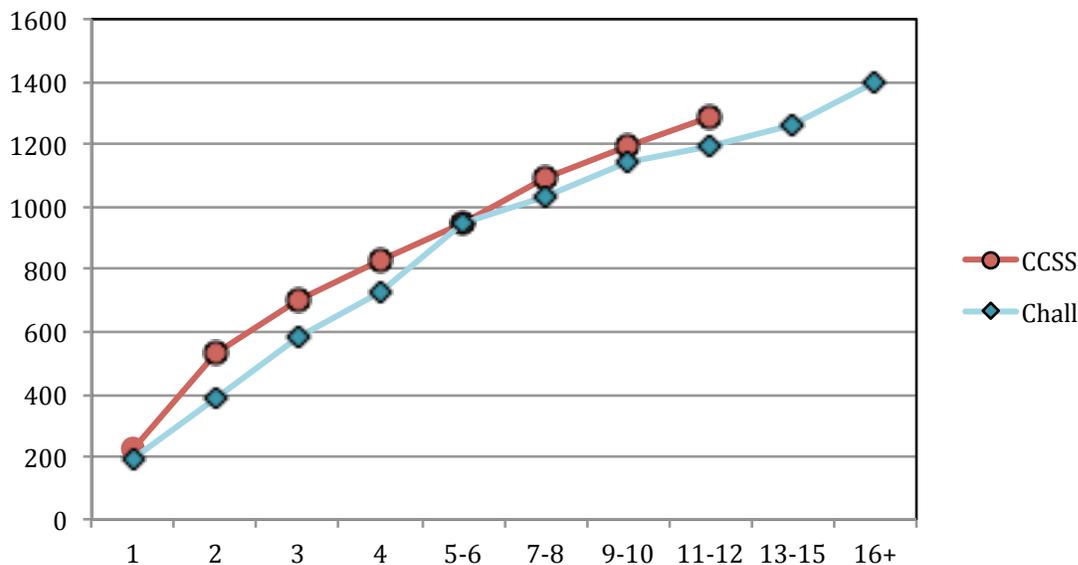


Figure 1. Comparison of Trajectories of Quantitative Levels of Text Exemplars for Grades 1 through 16+: CCSS and *Qualitative Assessment of Text Difficulty* (Chall et al., 1999)¹

¹ Note. From *Contrasting views of how to increase capacity for complex text: The Common Core State Standards and Jeanne Chall* by E. H. Hiebert, April 13, 2012. Paper presented at the annual conference of the American Educational Research Association, Vancouver, Canada. Copyright by E.H. Hiebert. Reprinted with permission.

The field of adult literacy has been focused almost entirely on establishing basic standards of literacy in the 21st century, identifying the portion of population that does not meet these standards and then designing and providing instruction for this portion of the population. In 1992, the National Center for Education Statistics (NCES) identified five literacy levels (since reframed as performance levels in 2003) based on test performances: non-literate, below basic, basic, intermediate, and proficient (Kirsch et al., 2001). The International Adult Literacy Survey (IALS) used a set of five fairly similar levels in their 1994-1998 survey. The 2003 National Assessment of Adult Literacy (NAAL) identified a range of adult literacy tasks from a purely functional perspective (i.e., how well adults perform basic tasks with printed materials) such as filling out a job application, interpreting a chart in the newspaper, and using written instructions to operate a voting machine (White & Dillow, 2005).

A view of literacy across the lifespan addresses the needs of all adults, irrespective of literacy deficiencies rooted in the school years. Such a view needs to address both the mechanisms and the content for ensuring continued literacy growth for academic, job-related, social, or personal purposes. Within this view, all adults, regardless of job or educational context or point in the lifespan—are regarded as lifelong learners in the field of literacy.

A Dynamic Rather than Static View of Reading

According to the Rand Reading Study Group (Snow, 2002), reading comprehension consists of three elements: the *reader*, the *text*, and the *activity* of reading. This three-way interrelationship occurs within a larger socio-cultural *context* that also interacts with each of the three elements iteratively. None of these variables is static. The reader changes over time, so the experience of reading different text types and genres can vary over the reader's lifetime. The reading activity is probably the most variable element of the reading process, changing with the reader, text or the context. Contexts are defined by many factors, such as community, workplace, and income, and the demands of these contexts can change enormously over time and in combination.

The reader also brings to the act of reading a set of cognitive capabilities (e.g., attention, memory, critical and analytic abilities, visualization skills), affective components (e.g., motivation, purpose for reading, interest in the content, confidence in reading ability), knowledge (e.g., vocabulary and topic knowledge, linguistic and discourse knowledge, knowledge of comprehension strategies), and finally, a life history (Cunningham & Stanovich, 2001). These attributes vary considerably among readers, and they can also vary within an individual reader over time and according to the text being read, the reading conditions, and the context for reading.

The dynamic nature of reading lends support to the argument that reading development does not or should not stop at the high school graduation level. First, additional development is needed to cope with text complexity that continues to increase after high school. The ACT (2006) study showed that “the clearest differentiator in reading between students who are college ready and students who are not is the ability to comprehend *complex* texts” (p. 2). As evident in Figure 1, Chall et al. (1999) stages show changes in the reading level beyond high school and through four years of college. Moreover, grade 16+ implies potential development after an undergraduate degree is earned.

Second, the tasks of college and work environments require a higher level of metacognitive reading abilities (e.g., setting purpose, self-questioning, and monitoring comprehension) than those resulting from high school preparation (Autor, Levy, & Murnane, 2003; Hunter & Hunter, 1984; Mikulecky & Drew, 1991). The level of difficulty in technical texts can far exceed high-school level texts. Workplace reading activities are task-related, and involve performance goals as opposed to learning goals. In professional environments, literacy and computational skills may be combined for a greater challenge (Levy & Murnane, 2004). Also, reading skills do not always transfer smoothly from an academic setting to a professional one. For example, comprehension of a literacy text does not guarantee capability in understanding and applying the knowledge in a technical manual. Further, reading skills in one job context (e.g., medical aide) does not necessarily transfer to another context (e.g., dental aide). Even within a job context, reading skills may not transfer from one task to another (Mikulecky & Kirkley, 1998).

Third, adulthood holds the promise of richer and more complex reading proficiencies. Secondary school students, for the most part, tend to trust the information about life presented in texts or media because of a lack of background knowledge. As people age, prior experiences accumulate to transform and enrich the processing and interpretation of text. Thus, there is an opportunity to develop more critical and richer literacy proficiencies in adulthood than is possible during the high-school years. Enriched literacy proficiencies can benefit the quality of individuals' lives and their families and local communities. In addition, however, society has a stake in the continuous intellectual growth of its citizens. Adults need advanced critical thinking skills to make informed decisions that affect society (e.g., voting), family (e.g., parenting), or personal lives (e.g., marriages and partnerships). It is not incidental that 2003 NAAL test questions covered such topics as home and family, health and safety, community and citizenship, consumer economics, work, and leisure and recreation (White & Dillow, 2005). Society benefits when citizens commit to lifetime learning and the development of advanced reading skills.

Finally, the technological transformation of literacy requires constant learning of new reading skills. The technological metamorphosis of the reading process has not only been extremely rapid, but also revolutionary in its essence. Fifteen years ago, the claim was made that electronic reading had prevailed over print reading, as evident in Reinking's (1998) statement that "the conventional library [...] may be viewed as a nostalgic anachronism" (p. XIX). Today, after so many new forms of electronic reading have emerged, we can wonder at the prescience of these words. The last decade has brought a host of work defining new literacies and exploring new skills needed to read and learn information online (Coiro, Knobel, Lankshear, & Leu, 2008; Goldman, Wiley, & Graesser, 2005; Leu et al., 2005; Rouet, 2006).

Frameworks for Reading Development over a Lifetime

Once young people are done with their last reading test—likely a high school exit exam or a college entrance exam—the emphasis shifts to functionally determined aspects of reading. For those who immediately join the workforce, questions arise: Which reading materials are important for obtaining the necessary qualifications and job requirements? Will I be able to understand those materials well enough to apply the knowledge and information they contain? For those who enter college, questions are essentially similar: What are the implied reading expectations for my next college course? Will I be able to handle the readings as I move into

advanced courses? Will I be expected to read more and comprehend faster once I reach the graduate level?

The NAAL identified reading success as an interaction of text characteristics with readers' skills in the context of a task (White & Dillow, 2005), a definition similar to that of the Rand Reading Study Group (Snow, 2002). To increase readers' success in using texts for various tasks requires attention on various levels. First, readers will need to have had experiences with texts that represent domains of use such as reading to learn procedures in a workplace or reading to glean critical concepts from research articles in college courses. Texts differ across domains in text structure and genre (including graphics), specialized and challenging vocabulary, and style and purpose (Biber, 1988). Second, readers need to develop numerous proficiencies with different text types, including comprehension monitoring strategies that enable transfer across domains and tasks and information retention skills. The last decade's debate over the critical differences between content area literacy and disciplinary literacy emphasizes the need of exploring, researching and teaching discipline specific reading strategies as opposed to generic study skills that enhance learning in any discipline (Moje, 2008; Shanahan & Shanahan, 2012).

Readers need to be adaptive in their proficiencies as they encounter texts in the tasks of the workplace and academia. In the digital-global age, this adaptiveness often occurs in digital settings. Presumably, as the skills of electronic reading are taught throughout students' school careers, possibilities are increased substantially for students' independent learning. Electronic reading in the digital age where texts are available 24-7 and to everyone with digital access offers opportunities that were not possible with the more static sources of previous decades. Not only are informational sources constantly available, but the filters of arbiters who decide what society members can and should learn are no longer applicable (Lemke, 1998). The mandated curriculum has been replaced with an interactive learning paradigm where individuals can access and read the texts that they require as the need arises. This paradigm shift has its upside: we can learn what we want when we want to learn it. At the same time, the ability to process text in digital contexts is essential to thrive in the digital-global era. Curricular learning paradigms will probably be de-emphasized and interactive learning paradigms, rooted in independent learning, will be prioritized in the future of education, a phenomenon already evident at the turn of the century (Lemke, 1998). In particular, readers require a strategic stance as they negotiate the task of using texts on the Internet such as deciding what to learn and how to learn it (Reinking, 1998). An electronic text, with its linking opportunities, may contribute to difficulties with attention—a recognized, but not yet researched affliction of the new technological generation of learners. However, reading focus can be improved by teaching learners how to create and pursue meaningful directions as they explore the tangled web of Internet.

Bolter (1998) has described hypertexts as less stable and predictable than typical printed texts. Readers require support in learning to adequately interact with hypertext, including adding to or changing web information (through wikis, blogs, online chat rooms, remixes, etc.). This feature of reading in digitized contexts calls for guidance and instruction in making choices while reading multilinear, multidirectional discourse.

Teaching critical thinking skills for the self-supervised, independent evaluation of Internet sources is another facet of a metacognitive approach. In both academic and job contexts, individuals need to collect, select, categorize, critically evaluate, analyze, and synthesize online information. As individuals search through millions of online sources, they become their own

librarians (Lemke, 1998). Learning to take critical perspectives on digital content—especially when it increases exponentially yearly—would seem an ideal focus of college reading courses.

Rooted in the nexus of critical thinking and metacognition, often referred to as “21st century skills” (National Research Council, 2012), are other necessary elements of both electronic and typographic reading such as questioning the validity of a text, understanding and questioning the author’s point of view, detecting subtexts, and, ultimately, synthesizing the acquired knowledge to construct the reader’s own meaning. Taking these stances is a challenge, especially for young adults who are forming life views (Britt & Aglinskas, 2002; Simpson, Stahl, & Francis, 2012; Stahl & Hynd, 1994).

The digital-global age leaves little doubt that multimodal literacies acquire a stronger instructional focus (Alvermann, 2011). Essential cognitive, metacognitive, and self-regulatory processes that include selecting, summarizing, organizing, elaborating, monitoring, self-testing, reflecting, and evaluating (Nist & Simpson, 2000) become as vital for processing multimedia objects and presentations as for processing verbal information. It is reasonable to assume that, in addition to metacognition and critical thinking, multimodal literacies may trigger and accelerate the third aspect of higher-order thinking skills: creative thinking, another cognitive competency identified as a “21st century skill” (National Research Council, 2012). Reading and processing a multimodal discourse requires the synthesis of knowledge from overlapping media – a level of thinking where creativity becomes possible. Thus, a multimodal reading experience may be used as a first-step, a synthesizing warm-up for creative assignments in many areas beyond art, music, drama or writing; it may be equally applied to generating a unique solution in the social sciences or an original experiment design in natural sciences. Because multimodal reading demands metacognition, critical thinking, and creative thinking, which are also elements of successful problem solving (Askov & Bixler, 1998), multimodal reading development could offer learners an important advantage in future job environments (Levy and Murnane, 2004).

Moreover, new literacies are not only multimodal (a static descriptor), but also mutating (a dynamic descriptor) (Mackey, 2003). The challenge of teaching constantly-mutating literacies lies not only in identifying and developing new elements of reading or modifying traditional skills; it also implies the need to preserve those traditional skills that are still valid in the new technological context, while at the same time eliminating elements that are no longer necessary.

We look at the frameworks for the reading development over a lifetime as a basis for our vision of college reading courses and programs as it is aligned with a social practice view of literacy, “to be best understood as a set of social practices associated with different domains of life that are purposeful and embedded in broader social goals and cultural practices” (Purcell-Gates et al., 2002, p. 70).

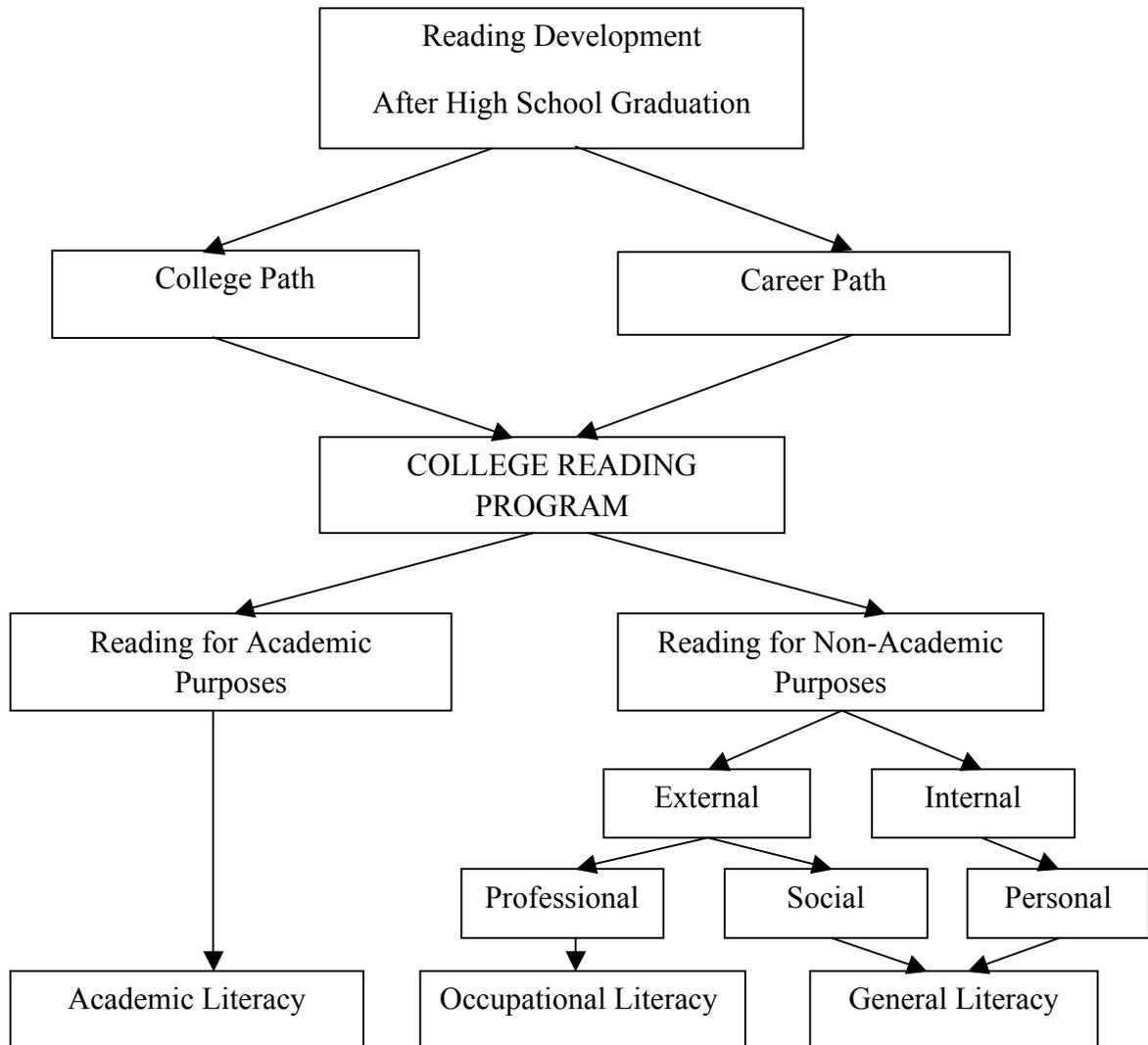
A Vision of College Reading Courses/Programs

What are Reading Related Tasks after High School Graduation?

Most high school graduates choose between the college or career paths. The literacy requirements for the two paths may differ, but both paths involve literacy tasks (see Figure 2).

Figure 2.

Trajectories of Post-Secondary Reading Development: College and Career Paths



College students need reading competencies that will allow them to function in more advanced courses, while employees have literacy requirements related to job training or certification requirements. Policy-makers typically recognize the demands of college and career, and it is true that these demands require immediate attention. Social and personal goals for literacy development, however, may be as compelling as these immediate needs and often fall under the radar of policy-makers.

Traditionally, work-training programs focus almost entirely on professional literacy. Non-job related applications of adult education (such as social and personal enrichment) are not commonly included among after-college educational opportunities, and general literacy improvement has not been shown to be a noticeable direct by-product of job training programs. However, an over-emphasis on the purely functional, job-related approach to literacy development in adults may result in limited critical thinking skills. In its definition of reading, NAAL emphasizes a broader approach: the use of written materials to function adequately in various external contexts—academic, professional, social—and as an individual (White & Dillow, 2005). Therefore, the role of college-based reading programs should be to provide well-balanced opportunities for development in all four areas: academic, occupational, social, and personal.

How Can Colleges Help Students Develop More Sophisticated Levels of Reading?

The old misconceptions that post-secondary reading development is an individual task and “sophisticated reading” is only for intellectuals or academicians are clearly not accurate. The development of the reading process over a lifetime should be actively promoted in society as an expectation and necessity and supported by an adequate choice of reading courses on the college level.

Such an initiative is not without precedent. About twenty years ago, colleges and universities recognized the need for an advanced writing course at the college level, and such a writing course became a common general education requirement. The demands of reading in the digital-global age make it timely for a similar commitment to an advanced reading course. The types of advanced reading classes that colleges might offer for credit could address a variety of academic and non-academic needs. Quantitative literacy, designed to improve students’ ability to analyze statistical data, is already being offered on many campuses and is included in the requirements for some majors. Adults of all ages and educational backgrounds might appreciate a course in financial literacy. Technology and new forms of electronic reading could be addressed as well as related approaches for research and learning online. Accelerated reading comprehension could serve as an advanced version of what used to be known as speed-reading, combining the skill of rapid reading with new findings in literacy research that can be translated into more efficient comprehension (see, e.g., Radach, Vorstius, & Reilly, 2010). Multimodal literacy could be incorporated into any composition or oral communication classes. Advanced reading competencies could be offered in any technically intensive discipline (e.g., reading for law, business, or medicine) guiding students to think in a discipline specific manner and thus promoting a deeper understanding and generating of sophisticated ideas (Moje, 2008; Shanahan & Shanahan, 2012).

Another focus could be to understand political messages in written and oral forms, such as listening to political speeches or reading legislative bills. A reading workshop may offer a multi-genre overview of best contemporary writers to generate appreciation of good books beyond a school setting. Ultimately, college reading programs can develop an array of reading courses that would make sophisticated reading less intimidating and more enjoyable.

College courses might also be developed in coordination with local industries that have particular needs (e.g., reading in the chemical industry). Such courses would combine the best academic practices of college reading courses and successful practices of effective workplace literacy programs. These courses could be directly linked to the specific job environment by

using job-related reading materials, simulating job demands, and solving real-life job problems (Mikulecky & Drew, 1991). Such courses would more directly meet the needs of employers who, according to the Association of American Colleges and Universities' survey, rely on significant degrees of engagement and supervised experiential learning opportunities rather than test scores (Donnelly-Smith, 2011).

What Qualities Should a Successful College Reading Program Possess?

As the goals of college reading courses crystalize, the criteria by which their success can be assessed also become evident. Successful college reading programs, first, should support college students to hone their reading competencies. Second, programs should address the reading proficiencies needed for life and careers, not simply the demands of standardized tests (Simpson, Stahl, & Francis, 2012). Third, effective programs should set high standards for students' achievements, offer credit and accreditation, and provide opportunities for further study (Basic Skills Agency, 2000). Fourth, these programs should offer a quality experience with multiple opportunities for engaged learning rather than an emphasis on a certificate that is based on a requisite number of hours (Donnelly-Smith, 2011).

Occupational and general literacy courses require a unique design different from typical academic literacy courses. Concluding that adults' literacy learning in typical literacy courses has been modest, Brooks (2011) identifies reasons such as low participation rates, low starting points, substantial portion of non-native speakers of English, as well as age-related decline in the literacy learning curve. Instructors in adult education are likely to be working against limitations in students' time and energy, which are a function of their adult responsibilities, in addition to age-related deceleration in literacy development. Consequently, we cannot always judge the effectiveness of a reading program catering to adult learners based on the immediate progress measures of pre- and post-testing. Evaluations of such courses should include qualitative measures, such as student satisfaction, long-term knowledge acquisition and application, and enhanced personal and social functioning (Boylan & Bonham, 2009). Brooks (2011) proposes that the modest progress of adults in traditional adult education might be, at least in part, explained by insufficient attention to effective teaching strategies. Professors of reading on college campuses, equipped with research-based pedagogies (National Research Council, 2012), may help boost the modest progress of adult students to substantial progress.

Implications for Research and Practice

If the society recognizes the need to support and promote the lifelong reading development of its citizens beyond the concept of college and career readiness, then higher education institutions, scholars and practitioners will face a wide new array of research questions to explore and policy-related decisions to make. The following positional statements may be considered for discussion in the field of adult literacy:

1. *Patterns of reading development after high school graduation, both in and out of academia, should be explored.* The foci of the future research may include, but should not be limited to the following:
 - a) elements of reading which continue to grow over a lifetime and those which slow down in the course of the human life;

- b) elements of reading that adult education instructors should focus on in academic and non-academic settings;
 - c) components of reading which should be emphasized with below-standard, proficient and advanced adult readers;
 - d) effective approaches to help adult learners develop creative thinking and problem solving skills in school and professional environments.
2. *A new pedagogy for electronic literacies is needed in the following aspects:*
- a) traditional reading skills that should be preserved as we move into the domain of electronic reading;
 - b) different perception of multi-modal discourse by adult learners compared to younger students;
 - c) impact of new electronic forms of reading on adult learning compared to younger students;
 - d) effective instruction in electronic reading skills with different populations of students (e.g., elementary school students, secondary students, and adults);
 - e) effective instructional reading and learning environments for online readers not enrolled in formal online courses;
 - f) metacognitive approaches with learners practicing independent online reading;
 - g) instructional approaches with multi-directional reading of hypertext: how to teach attention, focus and concentration, methods for selecting reliable sources and relevant ideas; identify various perspectives on a topic; as well as analyze and synthesize various viewpoints;
 - h) effective ways of integrating traditional instruction with the new electronic literacies in order to ease adult learners' resistance to technology.
3. *Assessment mechanisms' for adult literacy in academic and non-academic contexts should be developed.* The suggested criteria are student satisfaction, long-term knowledge acquisition, length of information retention, ability to practically apply knowledge, growth of metacognitive skills, professional development in the job environment, and enriched personal and social choices. The institutional assessment of college reading programs serving adult learners should also include these alternative criteria.
4. *Colleges should advance reading programs that would develop academic, occupational, and general (social and personal) literacy to serve both in-college and out-of-college populations for credit and accreditation.* In addition to developmental reading courses, college reading programs will develop a variety of college-level reading courses for academic (e.g., reading for art history majors), occupational (e.g., reading for professionals in the chemical industry), social (e.g., financial literacy), and personal (e.g., reading workshops or book clubs) purposes. An advanced college reading course may be considered as part of a general education requirement. Agreements with local industries can be established to meet their needs in occupational literacy and involve both native and non-native learners.

References

- ACT (2006). *Reading between the lines: What the ACT reveals about college readiness in reading*. Iowa City, IA: ACT.
- Alvermann, D. E. (2011). Popular culture and literacy practices. In M. L. Kamil, P. D. Pearson, E. B. Moje & P. Afflerbach (Eds.), *Handbook of reading research* (Vol. 4, pp. 541-560). New York, NY: Routledge.
- Askov, E., & Bixler, B. (1998). Transforming adult literacy instruction through computer-assisted instruction. In D. Reinking (Ed.), *Handbook of literacy and technology: Transformations in a post-typographic world*. (pp. 167-184). Mahwah, N.J.: L. Erlbaum.
- Autor, D., Levy, F., & Murnane, R. (2003). The skill content of recent technological change: An empirical exploration. *Quarterly Journal of Economics*, *118*(4), 1279-1333.
- Basic Skills Agency (2000). *Effective basic skills provision for adults*. London, UK: Basic Skills Agency.
- Biber, D. (1988). *Variation across speech and writing*. New York, NY: Cambridge University Press.
- Bolter, J. D. (1998). Hypertext and the question of visual literacy. In D. Reinking (Ed.), *Handbook of literacy and technology: Transformations in a post-typographic world*. (pp. 3-13). Mahwah, NJ: Erlbaum.
- Boylan, H. R., & Bonham, B. S. (2009). Program evaluation. In R. Flippo & D. Caverly (Eds.), *Handbook of college reading and study strategy research*. (pp. 379-407). New York, NY: Routledge.
- Britt, M., & Aglinskis, D. (2002). Improving students' ability to identify and use source information. *Cognition & Instruction*, *20*(4), 485-522. doi: 10.2307/3233902
- Brooks, G. (2011). Adult literacy (age 18 and beyond). In M. Kamil, P. D. Pearson, E. B. Moje & P. Afflerbach (Eds.), *Handbook of reading research* (Vol. 4, pp. 177-196). New York, NY: Routledge.
- Chall, J. S., Bissex G., Conard, S., & Harris-Sharples, S. (1999). *Qualitative assessment of text difficulty*. Brookline, MA: Brookline Publishers.
- Coiro, J., Knobel, M., Lankshear, C., & Leu, D. J. (Eds.). (2008). *Handbook of research in new literacies*. Mahwah, NJ: Erlbaum.
- Comings, J., Sum, A., & Uvin, J. (2000). *New skills for a new economy: Adult education's key role in sustaining economic growth and expanding opportunity*. Boston: Massachusetts Institute for a New Commonwealth.
- Common Core State Standards Initiative (2010). *Common core state standards for English language arts & literacy in history/social studies, science, and technical subjects*. Washington, DC: CCSSO & National Governors Association.
- Cunningham, A. E., & Stanovich, K. E. (2001). What reading does for the mind. *Journal of Direct Instruction*, *1*(2), 137-149.
- Donnelly-Smith, L. (2011, Winter). What adult learners can teach us about all learners: A conversation with L. Lee Knefelkamp. Association of American Colleges and Universities. *Peer Review*, *13*(1), 8-9. Retrieved from http://www.aacu.org/peerreview/pr-wi11/prwi11_Interview.cfm
- Goldman, S. R., Wiley, J., & Graesser, A. C. (2005, April). *Learning in a knowledge society: Constructing meaning from multiple information sources*. Paper presented at the annual conference of the American Educational Research Association, Montreal, Canada.
- Greene, J. P., & Forster, G. (2003). *Public high school graduation and college readiness rates in the United States* (Education Working Paper No. 3). New York, NY: Center for Civic

- Innovation at the Manhattan Institute. Retrieved from http://www.manhattaninstitute.org/pdf/ewp_03.pdf
- Hiebert, E. H. (2012, April). *Contrasting views of how to increase capacity for complex text: The Common Core State Standards and Jeanne Chall*. Paper presented at the annual conference of the American Educational Research Association, Vancouver, Canada.
- Huerta-Macias, A.G. (2003) Meeting the challenge of adult education: A bilingual approach to literacy and career development. *Journal of Adolescent & Adult Literacy* 47(3), 218-226. doi: 10.2307/40014754
- Hunter, J., & Hunter, R. S. (1984). Validity and utility of alternative predictors of job performance. *Psychological Bulletin*, 96, 72-98.
- Jenkins, D. & Boswell, K. (2002). *State policies on community college remedial education: Findings from a national survey*. Denver, CO: Education Commission of the States.
- Kirsch, I., Yamamoto, K., Norris, N., Rock, D., Jungeblut, A., O'Reilly, P., . . . Baldi, S. (2001). *Technical report and data file User's Manual for 1992 National Adult Literacy Survey* (NCES 2001-457). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Lemke, J. L. (1998). Multimedia literacy: Transforming meanings and media. In D. Reinking (Ed.), *Handbook of literacy and technology: Transformations in a post-typographic world*. (pp. 283-301). Mahwah, N.J.: L. Erlbaum.
- Levy, F., & Murnane, R.J. (2004). *The new division of labor: How computers are creating the next job market*. Princeton, N.J.: Princeton University Press.
- Leu, D. J., Castek, J., Hartman, D., Coiro, J., Henry, L., Kulikowich, J. & Lyver, S. (2005). *Evaluating the development of scientific knowledge and new forms of reading comprehension during online learning*. Final report presented to the North Central Regional Educational Laboratory/Learning Point Associates. Retrieved October 11, 2012 from www.newliteracies.uconn.edu/ncrel.html
- Mackey, M. (2003). Researching new forms of literacy. *Reading Research Quarterly*, 38(3), 403-407.
- Maruyama, G. (2012, September 18). Assessing college readiness: Should we be satisfied with ACT or other threshold scores? *Educational Researcher*, 41(7), 252-261. Retrieved from <http://edr.sagepub.com/content/41/7/252>
- Mikulecky, L., & Drew, R. (1991). Basic literacy skills in the workplace. In R. Barr, M. L. Kamil, P. B. Mosenthal & P. D. Pearson (Eds.), *Handbook of reading research* (Vol. 2, pp. 669-689). New York: Routledge.
- Mikulecku, L., & Kirkley, J. (1998). Changing workplaces, changing classes: The new role of technology in workplace literacy. In D. Reinking (Ed.), *Handbook of literacy and technology: Transformations in a post-typographic world*. (pp. 303-322). Mahwah, N.J.: L. Erlbaum.
- Moje, E.B. (2008). Foregrounding the disciplines in secondary literacy teaching and learning: A call for change. *Journal of Adolescent & Adult Literacy*, 52(2), 96-107
- National Research Council. (2012). *Education for life and work: Developing transferable knowledge and skills in the 21st century*. Committee on Defining Deeper Learning and 21st Century Skills, James W. Pellegrino and Margaret L. Hilton, Editors. Board on Testing and Assessment and Board on Science Education, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.
- Nist, S., & Simpson, M. (2000). College studying. In M. Kamil, P. Mosenthal, P. D. Pearson, & R. Barr (Eds.), *Handbook of reading research* (Vol. 3, pp. 645-666). Mahwah, N.J.: L. Erlbaum.

- Olson, D. R. (1994). *The world on paper*. New York: Cambridge University Press.
- Purcell-Gates, V., Degener, S.C., Jacobson, E., & Soler, M. (2002). Impact of authentic adult literacy instruction on adult literacy practices. *Reading Research Quarterly*, 37(1), 70-92.
- Radach, R., Vorstius, C., & Reilly, R. (2010, July). *The science of speed reading: Exploring the impact of speed on visual motor control and comprehension*. Paper presented at the annual meeting of the Society for the Scientific Study of Reading, Berlin, Germany.
- Reading Framework for the 2013 National Assessment of Educational Progress. (2013). National Assessment Governing Board, U.S. Department of Education. Washington, DC: U.S. Government Printing Office.
- Reinking, D. (Ed.). (1998). *Handbook of literacy and technology: Transformations in a post-typographic world*. Mahwah, N.J.: L. Erlbaum.
- Rouet, J.F. (2006). *The skills of document use: From text comprehension to Web-based learning*. Mahwah, NJ: Erlbaum.
- Shanahan, T., & Shanahan, C. (2012). What is disciplinary literacy and why does it matter? *Topics in Language Disorders*, 32(1), 7-18.
- Simpson, M., Stahl, N., & Francis, M. (2012). Reading and learning strategies: Recommendations for the twenty-first century. In R. Hodges, M. Simpson & N. Stahl (Eds.), *Teaching study strategies in developmental education: Readings on theory, research, and best practice* (pp. 12-36). Boston: Bedford/St. Martin's.
- Snow, C. (Ed.) (2002). *Reading for understanding: Toward an R & D program in reading comprehension*. Santa Monica, CA: Rand Publishing.
- Stahl, S., & Hynd, C. R. (1994, April). *Selecting historical documents: A study of student reasoning*. Paper presented at the American Educational Research Association, New Orleans, LA.
- Venezky, R. L. (2000). The origins of the present-day chasm between adult literacy needs and school literacy instruction. *Scientific Studies of Reading*, 4(1), 19-39.
- White, S., & Dillow, S. (2005). *Key concepts and features of the 2003 National Assessment of Adult Literacy* (NCES 2006-471). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Wixson, K., Peters, C., Weber, E., & Roeber, I. (1987). New directions in statewide reading assessment. *The Reading Teacher*, 40, 749-755.