NCSALL Seminar Guide:

Ideas for Teaching Reading: ESOL

September 2005

National Center for the Study of Adult Learning and Literacy

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Ideas for Teaching Reading: ESOL

This seminar guide was created by the National Center for the Study of Adult Learning and Literacy (NCSALL) to introduce adult education practitioners to ideas for evidence-based instruction in reading for English-for-speakers-of-other-languages (ESOL) learners. Programs or professional developers may want to use this seminar in place of a regularly scheduled meeting, such as a statewide training or a local program staff meeting.

Objectives:

By the end of the seminar, participants will be able to:

- Outline several strategies for teaching reading
- Explain how to use those practices in their teaching

Participants: 8 to 12 practitioners who work in adult education—teachers and tutors

Time: 3 hours

Agenda:

20 minutes	1. Welcome and Introductions
5 minutes	2. Objectives and Agenda
75 minutes	3. Reading Jigsaw
15 minutes	***Break***
35 minutes	4. Reflections and Individual Planning
20 minutes	5. Planning Next Steps for the Group
10 minutes	6. Evaluation of the Seminar

Session Preparation:

This guide includes the information and materials needed to conduct the seminar—step-by-step instructions for the activities, approximate time for each activity, and notes and other ideas for conducting the activities. The readings, ready for photocopying, are at the end of the guide.

Participants should receive the following readings at least 10 days before the seminar. Ask the participants to read the articles before the seminar.

- **The ESOL Adult and the Push Towards Meaning** by Judith Rance-Rony (*Focus on Basics*, Volume 1, Issue B, May 1997)
- **How Should Adult ESL Reading Instruction Differ from ABE Reading Instruction?** by Miriam Burt, Joy Kreeft Peyton, and Carol Van Duzer (*CAELA Brief,* 2005-01, March 2005)
- **Models of Reading and the ESOL Student: Implications and Limitations** by David E. Eskey (*Focus on Basics*, Volume 1, Issue B, May 1997)
- **Rediscovering Themselves: Learning to Read for Survival** by Melissa Nieves (*Focus on Basics*, Volume 1, Issue B, May 1997)
- **The Neurobiology of Reading and Dyslexia** by Sally E. Shaywitz, M.D. and Bennett A. Shaywitz, M.D. (*Focus on Basics*, Volume 5, Issue A, August 2001)

The facilitator should read the articles, in addition to studying the seminar steps and preparing the materials on the following list.

Newsprints (Prepare ahead of time.)

___ Objectives and Agenda (p. 6)

___ Discussion Question (p. 8)

___ Reflections (p. 8)

___ Next Steps (p. 9)

___ Useful / How to Improve (p. 10)

Readings (Have two or three extra copies available for participants who forget to bring theirs.)

___ **The ESOL Adult and the Push Towards Meaning**

___ **How Should Adult ESL Reading Instruction Differ from ABE Reading Instruction?**

___ **Models of Reading and the ESOL Student: Implications and Limitations**

___ **Rediscovering Themselves: Learning to Read for Survival**

___ **The Neurobiology of Reading and Dyslexia**

Materials

___ Newsprint easel and blank sheets of newsprint

___ Markers, pens, tape

___ Sticky dots

Steps:

1. Welcome and Introductions (20 minutes)

- **Welcome participants** to the seminar. **Introduce yourself** and state your role as facilitator. Explain how you came to facilitate this seminar and who is sponsoring it.
- **Ask participants to introduce themselves** (name, program, and role) and briefly describe a favorite instructional strategy for teaching reading to English-for-speakers-of-other-languages (ESOL) learners.
- **Make sure that participants know** where bathrooms are located, when the session will end, when the break will be, and any other housekeeping information.

Note to Facilitator
Since time is very tight, it's important to move participants along gently but firmly if they are exceeding their time limit for introductions.

2. Objectives and Agenda (5 minutes)

- **Post the newsprint <u>Objectives and Agenda</u>** and review the objectives and steps with the participants.

Objectives

By the end of the seminar, you will be able to:

- Outline several strategies for teaching reading
- Explain how to use those practices in your teaching

Agenda

1. Welcome and Introductions (Done!)
2. Objectives and Agenda (Doing)
3. Reading Jigsaw
4. Reflections and Individual Planning
5. Planning Next Steps for the Group
6. Evaluation of the Seminar

3. Reading Jigsaw (75 minutes)

- **Explain to participants that in this activity they will be reviewing the articles that were sent to them to read in advance of this session. These articles describe evidence-based, instructional strategies for reading.**

- 🕮 **Ask the participants to form three small groups and assign the articles** they read to the groups as follows:
  - Group 1
    - **The ESOL Adult and the Push Towards Meaning**

      [Note to facilitator: The author argues for the importance of considering the cultural experiences of learners and the schema learners bring to texts when teaching reading to ESOL students.]
    - **Rediscovering Themselves: Learning to Read for Survival**

      [Note to facilitator: The author describes the process by which she worked with colleagues to develop a three-phase program that draws on students' personal histories as topics and texts for ESOL instruction.]
  - Group 2
    - **How Should Adult ESL Reading Instruction Differ from ABE Reading Instruction?**

      [Note to facilitator: In order to provide evidence-based suggestions for teaching reading to adult English language learners, this brief summarizes the research on adult English speakers learning to read and the suggestions for instructions from these studies. Then, using findings from a synthesis of research on adult English language learners learning to read, the brief describes how these learners differ from native English speakers, and how instruction should take these differences into account.]
    - **Models of Reading and the ESOL Student: Implications and Limitations**

      [Note to facilitator: The author argues that present models of reading do not address some important aspects of reading for adult ESOL learners and advises that teachers must be cognizant of a student's language problems. Eskey identifies as a key issue the lack of schema to facilitate comprehension of particular texts.]

- Group 3
  - **The Neurobiology of Reading and Dyslexia**

    [Note to facilitator: The authors review the most recent advances in comprehending the neurobiology of dyslexia and outline the implications for teaching adults with dyslexia. They determine that a deficit in phonology correlates with reading disabilities and argue that practitioners need to consider these research findings in order to adopt the most successful, evidence-based interventions.]

- **Ask the groups to review the assigned articles and discuss the key points and the strengths and weaknesses of the evidence given to back up the practices.** Pass out blank sheets of newsprint and tell groups to record their ideas on them. Give them 20 minutes to do this.

- **Ask each group to post the newsprints on which they recorded the key points and briefly summarize them.**

- **Post the newsprint <u>Discussion Question</u>.** Then conduct a general discussion about the summarized articles.

Discussion Question

Which of the findings or practices did you find surprising or intriguing? Why?

Break (15 minutes)

4. Reflections and Individual Planning (35 minutes)

- **Post the newsprint <u>Reflections</u>.** Ask participants to reflect individually on students in their programs and how they might implement the research findings or instructional strategies with their particular students. Give the participants 15 minutes for reflections.

Reflections

- **Reconvene the group and ask participants to briefly describe one strategy they would like to try, either with a particular student or in their classes.** Summarize the responses on newsprint. After each person presents, time should be allotted for questions and comments from other participants.

5. Planning Next Steps for the Group (20 minutes)

- **Post the newsprint Next Steps.** Explain that now that the individual participants have developed an instructional plan to try out in their classrooms, the group should make a plan about the group's next steps.

Next Steps

How might participants share with each other how their plans for instruction worked, or how might they ask each other questions?

- **Write up potential next steps** on the newsprint as the participants mention them. After 10 minutes of brainstorming, ask participants to silently look at the options and individually decide on two ways for the group to continue the discussions.

- **Hand out two sticky dots to each participant** and ask the group to put their dots next to the one or two ideas that they would most like the group to do. If they don't want to do any of the activities, they should not put their dots on the newsprint.

- **Lead the group in organizing its choice:**

  - If they choose to schedule a follow-up meeting, set the date, time, and place for the meeting, and brainstorm an agenda for the meeting. Determine who will definitely be coming, and who will take the responsibility to cancel the meeting in case of bad weather.

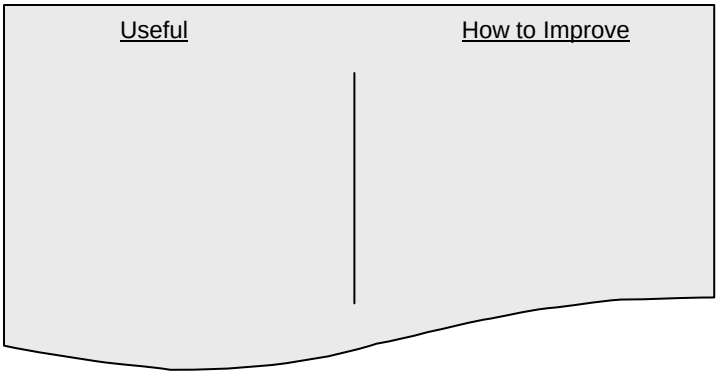
  - If they choose to organize an e-mail list, pass around a sheet for everyone to write their e-mail addresses. Decide who is going to start the first posting, and discuss what types of discussion or

postings people would like to see (e.g., questions about how to try out something in their classroom, descriptions of what happened after they tried it, sharing of other resources about instructional strategies, etc.).

6. Evaluation of the Seminar (10 minutes)

- **Explain to participants that, in the time left, you would like to get feedback from them about this seminar.** You will use this feedback in shaping future seminars.

- **Post the newsprint Useful/How to Improve.**



Ask participants first to tell you what was useful or helpful to them about the design and content of this seminar. Write their comments, without response from you, on the newsprint under "Useful."

- **Then ask participants for suggestions on how to improve this design and content.** Write their comments, without response from you, on the newsprint under "How to Improve." If anyone makes a negative comment that's not in the form of a suggestion, ask the person to rephrase it as a suggestion for improvement, and then write the suggestion on the newsprint.

- **Do not make any response to participants' comments during this evaluation.** It is very important for you not to defend or justify anything you have done in the seminar or anything about the design or content, as this will discourage further suggestions. If anyone makes a suggestion you don't agree with, just nod your head. If you feel some response is needed, rephrase their concern: "So you feel that what we should do instead of the small group discussion is . . . ? Is that right?"

- **Refer participants to the National Center for the Study of Adult Learning and Literacy's Web site (www.ncsall.net) for further information.** Point out that most NSCALL publications may be downloaded for free from the Web site. Print versions can by ordered by contacting NSCALL at World Education: ncsall@worlded.org.

- **Thank everyone** for coming and participating in the seminar.

Reading

(To be read by participants *before* the session.)

The ESOL Adult and the Push Towards Meaning

by Judith Rance-Rony
Focus on Basics, Vol. 1, Issue B, May 1997, pp. 17-18

Omar, a young immigrant from rural Venezuela, sat dejectedly in the tiny corner we called a lab, hands wrapped around his thin cheeks, head bowing over a reading passage assigned by his teacher. "I don't understand. I can't do the worksheet." He was attempting to read a passage about an Appalachian family living in an abandoned bus. "I don't understand these words; this story says that these people are living in a bus. I don't understand. People don't live in buses."

Our adult English for Speakers of Other Languages (ESOL) readers come in all varieties: they are adolescent and elderly, educated and missing key years of education, motivated by survival and motivated by the need to get ahead. Yet they share characteristics as ESOL adult readers. ESOL readers approach the reading task in ways that are far different from those taken by native readers. We must attend to these differences if we are to be effective in our instruction.

Schema of cultural experience

According to Kenneth Goodman's Transactional Sociopsycholinguistic Model of Reading, effective readers employ the minimum number of written cues to comprehend the printed page. Thus, much of what we 'understand' from the passage is unstated, but we understand it because of all we have learned as members of a culture, and because, as native users, we grasp the subtleties of our language. ESOL readers usually do not have the same network of experiences and learning—the schema—to make those leaps of faith, the leaps that occur in the unstated elements of the passage. In fact, ESOL readers may possess cultural concepts that contradict the truth of the reading passage.

Omar, reasonably, expected the passage to make sense. He had learned that bus, people, and 'driving' should occur together. Being a recent immigrant in this land of opportunity, the thought of a family living in a broken down bus had no validity for Omar. The context of Appalachia meant nothing to him.

Unlike an ESOL child in the midst of reading a new language, adult readers are faced with not only the English in the textbooks, but also the

English of the new workplace, the English of their children's worlds, the English of survival in the community. In effect, adult ESOL readers has several English domains to learn, each with a unique grammar, corpus of specialized vocabulary, and writing style or register. Each context of an adult's life holds an overwhelming challenge to language mastery.

Unique goals of the ESOL reader

Typically in my class, peering over shoulders, I see scribbled translations over nearly every word, grammar notes in margins. And I find this despite having taught the lesson wryly entitled "Using Context for Vocabulary Learning." "Guess at the words you don't know," I say, "and find the main idea." Yet the minute I finish the lesson, students busily pore over dictionaries or line up, waiting to ask the meaning of this idiom or that word.

It is natural to assume that readers attempt to decode written language for the purpose of comprehending the author's message. Yet this is not the only purpose for ESOL reading. Until these readers develop the fluency and confidence that is only realized through long exposure to English, these adults possess a second, and sometimes overriding purpose: to incorporate new linguistic data and expand their language base. The higher order of comprehension, main ideas, and inferential skills are sacrificed for mastery of a new language. Adults seem to forget to comprehend; they do not feel secure in their English knowledge to make the subjective judgments necessary to separate the essential from the extraneous. They have difficulty in interacting with the story in a joyful way; rather they are manipulated and controlled by it. Indeed, the discovery of the author's intent will have to wait. They have to survive in this world and they need more words and better grammar to do it.

As teachers, it is essential that we gently move ESOL readers towards meaning making and reading confidence. We can do this by teaching and using material in meaningful contexts—self, family, work, community—at first expanding learners' worlds in an ever widening circle. We can choose materials that are emotionally engaging and personally relevant, motivating readers to discover meaning. We can carefully select texts that embed cultural information, helping the ESOL learners to develop a cultural background sufficient to understand less explicit texts. We can ask adults to write in response to their reading, cementing learned words and meaningful grammar.

And we can flood our students with reading "stuff"—magazines, news-papers, books, whatever. Much of learning to read doesn't happen in the classroom; rather it is learned by reading a lot, developing fluency, cultural schema, the essential language base, and the love of interacting with author and text meaningfully and emotionally.

Reading

(To be read by participants *before* the session.)

How Should Adult ESL Reading Instruction Differ from ABE Reading Instruction?

by Miriam Burt, Joy Kreeft Peyton, and Carol Van Duzer
CAELA Brief, 2005-01, March 2005

Background on Adult Learners

Adult education programs serve both learners who are native English speakers and those whose first, or native, language is not English. Native English speakers attend adult basic education (ABE) classes to learn basic skills so they can get high school equivalency certificates or to achieve other goals related to job, family, or further education. English language learners attend English as a second language (ESL) or ABE classes to improve their oral and written skills in English and to achieve goals similar to those of native English speakers. Sometimes ABE classes include both native English speakers and English language learners.

Audience for This Brief

This brief is written for the following audiences:

- Practitioners: teachers, teacher trainers, curriculum writers, and program administrators who work with adult English language learners in ESL classes or in mixed ABE classes (with native English speakers and English language learners)
- Educational researchers

Background

Literacy and language proficiency in English seem to be related to economic self-sufficiency. Immigrants who are literate only in a language other than English are more likely to have non-continuous employment and to earn less than those literate in English (Greenberg, Macías, Rhodes, & Chan, 2001). An analysis of the 2000 U.S. Census data on immigrant earnings revealed a

positive relationship between earnings and English language and literacy (Chiswick & Miller, 2002).

Increasing the English reading skills of adult immigrants is an important task. Unfortunately, little research exists on how adult immigrants learn to read in English and which instructional practices are the most successful. In order to provide evidence-based suggestions for teaching reading to adult English language learners, this brief summarizes the research base on adult English speakers learning to read and the suggestions for instruction from these studies (Kruidenier, 2002). Then, using findings from a synthesis of research on adult English language learners learning to read (Burt, Peyton, &Adams, 2003), it describes how these learners differ from native English speakers, and how these differences should affect instruction.

Research Base

A review of research related to adult literacy and reading instruction in adult basic education (ABE) was completed by a group convened by the National Institute for Literacy and the National Center for the Study of Adult Learning and Literacy. The Reading Research Working Group looked at approximately 70 research studies (Kruidenier, 2002). Only five of the studies address English language learners#cc0000 specifically; the rest are normed on native English speakers.

Another review focused on reading development among adult English language learners in the United States (Burt, Peyton, & Adams, 2003). The review found only 47 studies that addressed this group of learners. Of those, only 24 were conducted in non-postsecondary education settings (adult education programs, community-based programs, and workplace literacy programs). The others were conducted in college-based intensive English programs (IEP). Although the body of research is small and preliminary, it provides valuable information about English language learners in adult education programs and can be used as the springboard for future research studies.

Research Findings

Kruidenier (2002) discusses the following components of reading:

- vocabulary
- alphabetics and word analysis
- fluency
- comprehension

These components are defined below with corresponding suggestions (from Kruidenier, 2002) for teaching reading to adult learners in ABE programs. Note: The suggestions marked with an * may not be effective with adults learning English. The suggestions are followed by a brief discussion of the marked items and the ways that these might be handled with English language learners. This discussion is informed by the review by Burt, Peyton, and Adams (2003) and writings on second language acquisition by Birch (2002), Eskey (2005), Folse (2004), Hadley (1993), Qian (1999), and Nation (2000, 2005). This literature suggests that the differences between adult English speakers and those learning English may affect both the ways that adults learn and how they should be taught to read.

Vocabulary

Vocabulary refers to the words that a person knows. Reading vocabulary is critical to the comprehension processes of a skilled reader. The Kruidenier report (2002) makes the following suggestions for teaching ABE learners:

- Conduct oral assessments, where learners either choose the one correct meaning of a word from multiple choices or define terms in their own words.
- Teach vocabulary in semantic sets.*
- Encourage students to get meaning of new vocabulary items through context.*

Issues for English language learners

Folse (2004) reviewed the research on teaching vocabulary in semantic sets (e.g. colors, foods, furniture, days of the week) and found that grouping words in this way can actually impede the learning of vocabulary. This is because if similar new words are presented together, such as a set of colors or the days of the week, the learner is likely to confuse the words. The same is true if antonym pairs such as hot/cold, fat/thin, right/left are presented together. Folse suggests grouping new vocabulary around looser themes such as going out to eat, planning a trip, or celebrating an anniversary. Nation (2000, 2005) recommends teaching high-frequency vocabulary first. For example, rather than presenting red, yellow, blue, black, white, etc. at one time, he suggests beginning with one color. In this way red, which is used more frequently than orange, would be taught before orange. Tuesday, which is used more frequently than Thursday, would be taught before Thursday (Nation, 2000). This separation of Tuesday and Thursday would also avoid the confusions that surface between these two words, which are similar phonologically and in spelling (Folse, 2004).

Acquiring the meaning of a vocabulary item through context clues – a strategy often taught by ABE teachers – is difficult for learners of English as a second language, because they often do not have the vocabulary in English that native speakers have (Eskey, 2005). For example, while fluent English speakers possess a written English vocabulary of 10,000-100,000 words, second language learners generally know only 2,000-7,000 English words when they begin their academic studies (Hadley, 1993). This gap can impede success in listening to lectures, reading academic material, or writing essays. Using context to understand new vocabulary requires an understanding of more than 98% of the words of a passage (Nation, 2005). Furthermore, even if the meaning of a word can be guessed from context, knowledge of the word may be superficial. Truly knowing a word includes knowing its pronunciation, spelling, morphological and syntactic properties (e.g., part of speech, prefixes and suffixes it has), and multiple meanings; the contexts in which it can be used; the frequency with which it is used; and its collocates, or how it combines with other words (e.g., the word squander is often paired with resources, time, or money; Folse, 2004). For these reasons, vocabulary teaching needs to be planned and deliberate with English language learners.

Suggestions for teaching adult English language learners

Because of the need for English language learners to acquire more English vocabulary for all aspects of their lives, Birch (2002), Eskey (2005), Folse (2004), and Nation (2000, 2005) suggest the following:

- Pre-teach the vocabulary in a reading passage.
- To limit the number of vocabulary items that must be pre-taught, select reading passages that are only slightly above what learners can read independently.
- Teach high-frequency words first.
- Provide learners with multiple exposures to specific words in multiple contexts.
- Provide learners with lists of words for intentional learning.
- Avoid presenting synonyms, antonyms, or words in the same semantic set together.
- Teach learners to use both monolingual and bilingual dictionaries. Because even English dictionaries designed specifically for learners contain about 2,000 words (Nation, 2005) and the definitions and examples are in English, learners at basic reading levels may not understand the definitions and explanations. They will need to use bilingual dictionaries.

- Encourage learners to use word cards—notes cards with the English words on one side and the translation on the back—and to study them frequently.
- Encourage vocabulary learning through regular tests where students can prove receptive knowledge of words through matching words to definitions or multiple choice exercises.
- After reading, have students write sentences in which they use specific words and grammatical forms.

Alphabetics and word analysis

Kruidenier's report defines alphabetics and word analysis as the "whole process of using the letters in a written alphabet to represent meaningful spoken words" (p. 35). Adult beginning readers typically have difficulty applying letter-sound knowledge to figure out new words while reading. Word analysis refers to the methods that readers use to recognize words. These include understanding letter-sound correspondences and recognizing sight words; using context to determine meaning; knowing prefixes, suffixes, and root words; and using dictionaries. The Kruidenier report makes the following suggestions for teaching ABE learners:

- Assess beginning readers' letter-sound knowledge through their pronunciation of letters, word parts, or whole words that are decodable using common rules or generalizations.
- Assess knowledge of sight words with lists of regularly and irregularly spelled words.
- Provide adult beginning readers with explicit instruction in word analysis.
- When assessing letter-sound knowledge, consider using nonsense words to ensure the reader does not know the words as sight words.*

Issues with English language learners

English language learners may not have literacy skills in any language, or they may be literate in a non-alphabetic system such as Chinese, a non-Roman alphabet such as Cyrillic, or a Roman alphabet such as Spanish. All will experience some difficulties in English sound-symbol relationships (Burt, Peyton, & Adams, 2003). Alphabetics instruction with native English speakers generally assumes high oral language skills and vocabulary. Nonnative English speakers do not have the vocabulary base in English that native speakers do in either written or oral expression. As a result, instructional strategies that rely on oral comprehension of vocabulary and use of nonsense

words to teach sound-symbol correspondence are not likely to be successful with English language learners (Nation, 2005; Qian, 1999).

Suggestions for teaching adult English language learners

- Teach English letter-sound correspondences to all learners.
- When assessing knowledge of letter-sound relationships, use actual English words that follow patterns such as bat/pat/sat (not nonsense words).
- Teach morphophonemic relationships in the English writing system. For example, point out that while the regular past tense has different pronunciations depending on the phonological structure of the verb, past tense morphology for regular English verbs has only one written form –ed (e.g., laughed /t/, climbed /d/, wanted, /Id/).
- Teach word analysis skills including word prefixes and suffixes.
- Identify parts of speech and their roles.

Fluency

Fluency is the ability to read easily and accurately, with appropriate rhythm, intonation, and expression. For ABE learners and children, fluency instruction and practice may lead to increases in reading ability. The Kruidenier report makes the following suggestions for teaching ABE learners:

- Assess fluency of learners by rating the accuracy and speed of their oral reading.*
- Involve learners in repeated reading of texts and words, taped and live.*

Issues with English language learners

Extensive individual oral and choral reading is of questionable value in the adult ESL classroom. Accuracy in oral reading of adults learning English may be complicated by native language interference at every level from the letter-sound relationship, to suprasegmentals of the language (stress, intonation, and pauses).

Suggestions for teaching adult English language learners

- Consider limited use of choral readings. When choral readings are used, select short segments that emphasize English stress and intonation.
- When involving learners in oral and choral reading of texts, be certain that they first hear a native-speaker-like model of the reading.

Reading comprehension

Reading comprehension is the ability to make meaning from the written text. Skilled readers are purposeful and active and apply comprehension strategies to the text. The Kruidenier report makes the following suggestions for teaching ABE learners:

- Have students complete cloze passages (in which learners fill in specific words that are left out of a text).
- Provide instruction in comprehension strategies such as using headings and graphics to predict meaning, summarizing verbally, skimming, and scanning.
- Assess students' strategy use by asking them which comprehension strategies they used.
- Assess learners' reading comprehension by having them read passages and answer comprehension questions about the text in multiple choice or short answers.*
- Have students summarize readings.*

Issues with adult English language learners

Cultural issues might impede text comprehension. What seems to be a straightforward text, for example, an article about a tree house or one about a family going to the Dairy Queen in a station wagon may present the reader with difficulties in comprehension because of cultural differences. It is of limited value to assess reading comprehension when readers lack the cultural knowledge needed to understand the text. Summarizing is difficult and should not be asked of learners until they understand the text (Hood, Solomon, & Burns, 1996).

Suggestions for teaching adult English language learners

- Find out what students know, need to know, and want to know and then build on ideas and concepts from learners' cultures and experiences whenever possible. Select readings on topics they may be most familiar with.
- Pre-teach vocabulary and preview unfamiliar ideas, actions, vocabulary, and settings as well as titles, pictures, graphics, text structure, and discourse markers (e.g., words such as "first" or "next").
- Use visual aids and physical objects to help learners build background knowledge.

- Assess learner comprehension through short answers, cloze exercises, and summary writing only after pre-teaching vocabulary, previewing cultural contexts, and discussing the text.

Conclusion

Some of the suggestions for working with adult English speakers based on research may be of use with English language learners, such as teaching letter-sound correspondence and word analysis skills and providing instruction in comprehension strategies. However, other suggestions, such as using nonsense words in instruction, or relying on context clues to build vocabulary knowledge, are not useful with nonnative English speakers. Difficulties arise because of cultural differences, gaps in English oral vocabulary between English speakers and English language learners, and interference from the native language. Instructors need to consider these differences when planning and delivering instruction for adult English language learners. Researchers might consider investigating issues raised in this brief.

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Reading

(To be read by participants *before* the session.)

Models of Reading and the ESOL Student: Implications and Limitations

by David E. Eskey
Focus on Basics, Vol. 1, Issue B, May 1997, pp. 9-10

Models of the reading process are models of an ideal reader reading: they tell us what such a reader does. By comparing how our real students do to a model, we can develop a much clearer sense of what our students' needs are and attempt to address these needs in class. For English for Speakers of Other Languages (ESOL) reading teachers, like other reading teachers, these models therefore have direct implications for teaching, though such models tell us nothing at all about other important aspects of reading.

Implications

Currently popular 'interactive' models suggest that the most successful readers are both skillful 'bottom-up' processors of texts—they can convert the language on the page into the information it represents both rapidly and accurately—and skillful 'top-down' processors—they can relate this new information to the relevant knowledge they already have to construct a plausible meaning for the text. These models also tell us that successful readers do these two things simultaneously: they decode and interpret as they read. As they become more proficient in the former, eventually achieving automaticity, they can devote more attention to the latter, in what is technically called parallel processing. For teachers, the obvious message in this is that students who have problems with either kind of processing, or with both, will have trouble reading.

For ESOL readers, these problems are compounded at the decoding—bottom-up—level by their limited knowledge of the language. As a general rule, the more students read in their native languages, the more likely they are to become proficient readers of English, since good reading habits readily transfer across languages, but, as Clarke (1978) has pointed out, insufficient language skills can "short-circuit" this transfer. If the text contains a great many words or grammatical constructions these readers cannot decode, they will have trouble recovering the information contained in the language of the text and, in struggling to do so, will be prevented from engaging in efficient top-down processing. At the interpretive—top-down—level, even when

working with texts they can decode, such students may lack the relevant background knowledge—schemata—on the subject of the text, American history or sports, for example, knowledge the writer has taken for granted, or they may have conflicting schemata based on different experiences and values. Thus even if they can successfully determine what the text says, they may be unable to determine what it means, or may simply misread it.

In teaching reading to ESOL students, we must therefore take great care in choosing the texts we ask them to read, with respect to both the language and the content of those texts, and we must also take great care to provide these students with both the language and the knowledge of the content they will need to make sense of any text assigned. Of course, this is easier said than done. Texts which are interesting to adults, relevant to their lives, and written in simple English are hard to find (but see Rosow, 1996; Brown, 1994 and 1988; and Mikulecky, 1990, for suggestions). One way of dealing with this problem is to develop effective pre-reading class activities to introduce new texts to ESOL readers—in other words, to bridge the gap between what the students know and what they will need to know to read assigned texts successfully. We can also teach our students various strategies to facilitate both their bottom-up and top-down processing. For bottom-up processing, activities that help students learn to read in larger chunks of text, and thus to break away from ineffective, and wearisome, word-by-word decoding (see Mikulecky & Jeffries, 1996, pp. 205-274, for activities). For top-down processing, think-before-you-read activities can enhance comprehension of the text as a whole by requiring students to think about the probable content of a text and to ask themselves what questions they will likely find answers to in that text (see Mikulecky & Jeffries, 1996, pp. 34-48, for activities).

Limitations

As useful as models of reading are in helping to shape teaching practices, they have their limitations. Models of reading deal with reading as a psycholinguistic process, which of course it is, but reading is also, and just as importantly, a form of sociocultural behavior which people choose, or choose not, to engage in, with major consequences for their ultimate development as readers—an area of concern for reading teachers to which models of reading have little to contribute. The major implication of this dimension of reading for the instruction is that just as we should do whatever we can to facilitate our students' text processing, we should also do whatever we can to motivate students to read, in quantity, whatever they need or would like to read. Teaching reading strategies to students who do not in fact read much is like teaching mountain climbing strategies to desert dwellers: they won't practice enough to become good at it, and what's the point anyway?

As Frank Smith (1988) has argued, becoming a reader in any language means joining the people who read in that language, much as someone might join a club—in this case, what Smith calls "the literacy club"—devoted to some activity that he or she enjoys and would like to engage in. If this is so, then we should think of our classrooms as mini-literacy clubs where students not only learn how to read better but actually engage in a good deal of reading. Here again, ESOL students present special problems. Unlike native speakers, they have not been exposed to U.S. literacy practices and have, conversely—if they are literate in their own languages—, been members of different literacy clubs in which people may read different kinds of texts in different ways for different purposes—texts considered worthy of reverence, for example, like The Koran or The Thoughts of Chairman Mao, which students may be expected to memorize. They will, in other words, have their own reading histories, ranging from not reading in their native languages to reading a great deal but having little knowledge of the texts they will have to read, or may want to read, in English, and the ways in which we approach these texts. Thus a very large part of the ESOL reading teacher's job is to introduce these students to the kinds of materials we read in English and the uses we typically make of them—from an application for a driver's license, to academic textbooks, to newspapers, magazines, and popular novels. Teachers must welcome students into the large and complex literacy club of those who read in English, and to do so at a level that makes sense for the particular students.

Just as students need to read rapidly and accurately, they also need to read extensively, and many current programs have been primarily designed to address this and have achieved some success in doing so (see Krashen, 1993, for examples and discussion). The question of how to motivate readers to read in sufficient quantity is certainly a sticky one, and the answer probably varies from class to class (see *Learning to Love Reading*, by Donna Earl). A good place for us to begin is to project our own love for reading by discussing what we are reading ourselves, why it interests us, how it relates to our everyday lives, perhaps even reading a few selected excerpts—in short, treating the students as fellow readers—then inviting them to reciprocate.

Conclusion

Taken together, these two practical pursuits—facilitating the students' text processing, to which models of reading can make a major contribution, and motivating them to read in quantity by helping them to join our literacy club—to which models of reading have little to contribute—constitute the major part of any reading teacher's job. But teachers of reading in ESOL must be especially attuned to students' language problems, to mismatches in any

given text between the writer's and the students' background knowledge, and to the problem of introducing students to materials these students might need or want to read in English and the uses we normally make of these materials.

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Reading

(To be read by participants *before* the session.)

Rediscovering Themselves: Learning to Read for Survival

by Melissa Nieves
Focus on Basics, Vol. 1, Issue B, May 1997, pp. 11-12

I came into the ESOL classroom ready to instill the English language into the minds of my students. I believed that I needed to drill and drill the grammar and sounds of English to teach efficiently. As a fledgling teacher at the University Settlement Society of New York, in New York City, I had a lot to learn about meeting the needs of learners.

That year, I learned that my students were real people with pasts and a lot of pain from their childhoods. Many had limited views of the world and the possibilities available to them in the future. Many of the women—primarily immigrants from the Caribbean, Latin America, China, and Bangladesh—had less than a fifth grade reading level in their native languages and had not been to school for years. Many were in school because they were mandated by welfare to attend classes or have their welfare cases closed. Many felt contempt for the 'system' for forcing them to attend classes. As a teacher I represented the system to them, so they were ready to take their anger and frustration out on me.

A Large Task

Setting out to develop a level of trust and communication in my class, I asked the students why they were coming to school. One student replied that she needed to learn English, but she didn't know why. A second told me she needed to get her check from welfare. A third student said she was on welfare but she wanted to get her GED and possibly go to college. I came to realize that my task as a teacher was larger than I ever imagined. Teaching words and sounds was the easy part; my true challenge would be to inspire my students to rediscover themselves, for some to regain inspiration for the future and for others to develop their path for success.

The program director was a mentor to me and taught me how to begin the process of true education. I started learning to take into account my students' pasts and the issues that were relevant to them. I began to see that students bring to class every day concerns that act as barriers to learning. Throughout the year I observed behavior that reflected my students' ongoing

struggles. One student would start to cry when she was asked to read aloud. One student came to the classroom angry and refused to participate. Another student tried to belittle students whom she perceived as vulnerable. I also had students who were constantly late and absent. I knew that I had to deal with all this or I would never have a viable class.

I had the students talk about their problems, develop solutions, and plan for the future by writing their own stories and reading them aloud. As the teacher, it was essential for me to participate in the dialogue and to share stories about my struggles and accomplishments. I shared my experience as a child of parents who were factory workers, and talked about how my father was an alcoholic, how I began working at the age of 13, how I worked full-time to make it through college, and how I had to struggle in this country. I told them that they all could achieve what they wanted if they planned for their goals.

The students began talking about their hopes and dreams for themselves and their children. We developed text based on the topics we discussed. We did follow-up reading activities using literature written by other literacy students or magazine or newspaper articles that dealt with the issues we were discussing. In the following months, we continued our dialogue. Tears were shed as students re-lived their experiences: stories about being beaten by teachers when they were children, stories about being raped by step-fathers, stories about dealing with abusive husbands, and many others.

Bilingual Teachers

The fact that I am bilingual really enhanced the class. At the lowest levels of ESOL, students feel more comfortable talking about their lives in their native languages. At our program we offer classes taught bilingually in Chinese, Spanish, and Hindi, so teachers can use their native languages to talk about personal issues and also to explain fine points of grammar, which are easier to teach in the students' native languages. The bilingual environment does not mean that English is not learned, because all activities include English writing activities as well as translation of dialogue into English. Higher level ESOL classes are taught completely in English.

The model of teaching and learning we use challenges learners and teachers alike to be vulnerable in the learning environment. It expects everyone in the group to begin to respect and trust each other. It forces individuals to explore the difficulties of the past and deal with their fears of the future. Our method is not easy to implement: it is easier for teachers just to teach and students just to learn words and sounds. But our approach is truly effective.

Many of the students in our program come from traditional educational backgrounds where the teacher was the sole source of information. They were told what to write and were taught to memorize information. They expect to see red ink corrections on their writing samples and want to compare grades on tests given back by the teacher. As a result, many of the students initially could not see the relevance of using their lives and issues as part of a curriculum. This comment illustrates their perspective: "Look, I am a poor woman with little education; I just need to learn a little English so I can survive in this city. My life is not what I want to talk about."

Three Phases

Working with my colleagues at University Settlement Society, we developed a three-phase model that addresses the tension between this view and our interest in using the lives of teachers and learners as part of the curriculum.

- **Phase 1**

  In the first phase, to get the students accustomed to talking and reading about issues in their lives, and to build relevant English vocabulary, teachers use learning materials in which fictional characters deal with issues such as child abuse, domestic violence, limited education, and lack of health care. Classroom activities include debates, dictations, and writing. Students share their beginning writing activities with their classmates. They are exposed to theme-based learning and critical thinking activities, and develop portfolios of their work.

- **Phase 2**

  In the second phase, with the teacher facilitating, the class begins to talk about issues as they pertain to their own lives. Students work on theme-based activities about their children, families, or communities. They create group texts, bring in relevant articles, and make presentations in English about their themes. Teachers lead traditional grammar and writing lessons addressing specific needs that arise in the course of the class. In this phase, students write one-page stories and use complete sentences in English, with minimal grammar mistakes.

- **Phase 3**

  In the third phase, the students develop journals and personal dictionaries—their own word lists—and may be ready to begin independent projects. Students choose a theme they want to work on by themselves and develop a presentation or piece of writing. Teachers

assess the progress of the projects and create activities that support students in completing their projects. Students, working with their teachers, analyze their portfolios and journals, and begin developing written plans on how to reach their future goals. Students begin to work as peer teachers in the lower level classes, assisting teachers in taking the new students through the process they have experienced.

Conclusion

The rate at which a class or an individual can move through this process depends on many variables. It depends on the teacher's ability to assess students' needs and progress and plan lessons accordingly. It depends on the teacher's ability to create a safe and comfortable learning environment for all his or her students. It also depends on the needs and goals of each individual student and on the commitment which the student has to his or her own education. Some students take two years to progress; others take six. Feeling that our program is their second home, many of our students visit us years after they have finished. It is a place where they were given the chance to rediscover themselves as they learned to read. As one of my students told me, "You taught me that I can have whatever I want in life if I want it and plan for it. I will never forget this."

Reading

(To be read by participants *before* the session.)

The Neurobiology of Reading and Dyslexia

by Sally E. Shaywitz, M.D., and Bennett A. Shaywitz, M.D.
Focus on Basics, Vol. 5, Issue A, August 2001, pp. 11-15

Developmental dyslexia is characterized by an unexpected difficulty in reading experienced by children and adults who otherwise possess the intelligence and motivation considered necessary for accurate and fluent reading. It represents one of the most common problems affecting children and adults; in the United States, the prevalence of dyslexia is estimated to range from five to 17 percent of school-aged children, with as many as 40 percent of the entire population reading below grade level. Dyslexia (or specific reading disability) is the most common and most carefully studied of the learning disabilities, affecting 80 percent of all individuals identified as learning disabled. This article reviews recent advances in the neurobiology of dyslexia and their implications for teaching adults with dyslexia.

Epidemiology of Dyslexia

Like hypertension and obesity, dyslexia fits a dimensional model: within the population, reading and reading disability occur along a continuum, with reading disability representing the lower tail of a normal distribution of reading ability. Good evidence based on sample surveys of randomly selected populations of children now indicate that dyslexia affects boys and girls equally (Figure 1); the long-held belief that only boys suffer from dyslexia reflected sampling bias in school-identified samples.

Dyslexia is a persistent, chronic condition; it does not represent a transient "developmental lag" (Figure 2). Over time, poor readers and good readers tend to maintain their relative positions along the spectrum of reading ability.

Causes

Dyslexia is both familial and heritable: both environmental and genetic influences affect the expression of dyslexia. This observation provides opportunities for early identification of affected siblings and often for delayed but helpful identification of affected adults. Thus 23 to 65 percent of children who have a parent with dyslexia, 40 percent of siblings of dyslexics, and 27 to 49 percent of parents of dyslexics may have the disorder. Studies implicate

loci on chromosomes 6 and 15 and, more recently, on chromosome 2 in the causation of dyslexia.

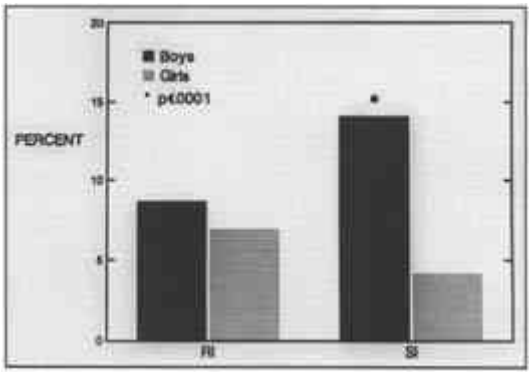

Figure 1. Prevalence of reading disability in research-identified (RI) and school-identified (SI) boys and girls. Schools identify about four times as many boys as girls, reflecting primarily externalizing behavioral characteristics that are more likely to bring boys to a teacher's attention. This skewed prevalence rate reflects referral bias. When actual reading scores are used to identify children, there is no significant difference in the prevalence of dyslexia between boys and girls (based on data in Shaywitz et al., 1990).

The Cognitive Basis of Dyslexia

The phonologic deficit hypothesis—There is now a strong consensus among investigators in the field that the central difficulty in dyslexia reflects a deficit within the language system, although other systems and processes may also contribute to the difficulty. The language system is conceptualized as a hierarchical series of components: at higher levels are neural systems engaged in processing, for example, semantics, syntax, and discourse; at the lowest level is the phonologic module dedicated to processing the distinctive sound elements that constitute language. The functional unit of the phonologic module is the phoneme, defined as the smallest discernible segment of speech; for example, the word "bat" consists of three phonemes: /b/ /ae/ /t/ (buh, aah, tuh). To speak a word, the speaker retrieves the word's phonemic constituents from his or her internal lexicon, assembles the phonemes, and then utters the word. Conversely, to read a word, the reader must first segment that word into its underlying phonologic elements. The awareness that all words can be decomposed into these basic elements of language (phonemes) allows the reader to decipher the reading code. In order to read, a child has to develop the insight that spoken words can be pulled apart into phonemes and that the letters in a written word represent these sounds. This so-called phonemic awareness is largely missing in dyslexic children and adults. Results from large and well-studied populations with reading disability confirm that in young school-aged children, as well as in adolescents, a deficit in phonology represents the most robust and specific correlate of reading disability. Such

findings form the basis for the most successful and evidence-based interventions designed to improve reading. While children and adults with a phonologic deficit represent the vast majority of subjects with dyslexia, other subtypes may account for some cases of dyslexia. Examples include dyslexia resulting from deficits in naming-speed in addition to phonological deficits, the so called double-deficit hypothesis.

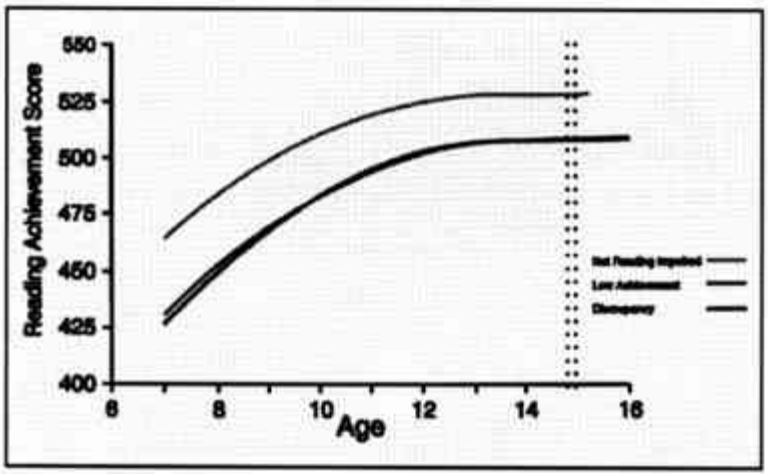

Figure 2. Trajectory of reading skills over time in nonimpaired and dyslexic readers. Ordinate shows Rasch scores (W scores) from the Woodcock-Johnson reading test (Woodcock & Johnson, 1989) and abscissa shows age in years. Both dyslexic and nonimpaired readers improve their reading scores as they get older, but the gap between the dyslexic and nonimpaired readers remains. Thus dyslexia is a deficit and not a developmental lag (from Francis et al., 1996).

Implications of the phonologic model of dyslexia—Reading is comprised of two main processes: decoding and comprehension. In dyslexia, a deficit at the level of the phonologic module impairs the reader's ability to segment the written word into its underlying phonologic elements. As a result, the reader experiences difficulty, first in decoding the word and then in identifying it. The phonologic deficit is domain-specific; that is, it is independent of other, nonphonologic, abilities. In particular, the higher-order cognitive and linguistic functions involved in comprehension, such as general intelligence and reasoning, vocabulary, and syntax, are generally intact. This pattern - a deficit in phonologic analysis contrasted with intact higher-order cognitive abilities - offers an explanation for the paradox of otherwise intelligent people who experience great difficulty in reading.

According to the model, a circumscribed deficit in a lower-order linguistic (phonologic) function blocks access to higher-order processes and to the ability to draw meaning from text. The dyslexic reader cannot use his or her higher-order linguistic skills to access the meaning until the printed word

has first been decoded and identified. For example, readers who know the precise meaning of the spoken word "apparition" will not be able to use their knowledge of the meaning of the word until they can decode and identify the printed word on the page and will appear not to know the word's meaning.

The phonologic deficit in adolescence and adult life—Deficits in phonological coding continue to characterize dyslexic readers even in adolescence; performance on phonological processing measures contributes most to differentiating dyslexic from average readers, and average from superior readers as well. Children with dyslexia neither spontaneously remit nor do they demonstrate a lag mechanism for "catching up" in the development of reading skills. That is not to say that many dyslexic readers do not become quite proficient in reading a finite domain of words in their area of special interest, usually words that are important for their careers. Such individuals, while able to decode words in this domain, still exhibit evidence of their early reading problems when they have to read unfamiliar words, which they do accurately but not fluently and automatically. In adolescents, oral reading, the rate of reading, as well as facility with spelling may be most useful clinically in differentiating average from poor readers.

From a clinical perspective, these data indicate that as children approach adolescence, a manifestation of dyslexia may be a very slow reading rate. Children may learn to read words accurately, but they will not be fluent or automatic, reflecting the lingering effects of a phonologic deficit. Because they are able to read words accurately (albeit very slowly), dyslexic adolescents and young adults may mistakenly be assumed to have "outgrown" their dyslexia. These older dyslexic students may be similar to their unimpaired peers on untimed measures of word recognition, yet continue to suffer from the phonologic deficit that makes reading less automatic, more effortful, and slow. The provision of extra time is therefore an essential accommodation; it allows them the time to decode each word and to apply their unimpaired higher-order cognitive and linguistic skills to the surrounding context to get at the meaning of words that they cannot entirely or rapidly decode.

Neurobiological Influences

A range of neurobiological investigations using postmortem brain specimens and, more recently, brain morphometry and diffusion tensor magnetic resonance imaging (MRI) suggests that there are differences between dyslexic and nonimpaired readers in the back of the brain, specifically in the temporoparieto-occipital brain regions. Functional brain imaging studies also show a failure of left hemisphere posterior brain systems to function properly in adult dyslexic readers while they perform reading tasks.

In principle, functional brain imaging is quite simple. When an individual is asked to perform a discrete cognitive task, that task places processing demands on particular neural systems in the brain. To meet those demands requires activation of neural systems in specific brain regions and those changes in neural activity are, in turn, reflected by changes in cerebral blood flow. We use the term "functional imaging" for technologies that measure those changes in blood flow in specific brain regions while subjects are engaged in cognitive tasks.

Gender-based Differences

In an early study of 19 neurologically normal right-handed men and 19 women, the subjects had to decide whether two pseudowords rhymed. (For example, do [LEAT] and [JETE] rhyme?) Nonword reading is perhaps the clearest indication of decoding ability because familiarity with the letter pattern cannot influence the individual's response. Of particular interest were differences in brain activation patterns in men compared to women. Figure 3 illustrates that activation during phonological processing in men was more lateralized to the left inferior frontal gyrus, known as Broca's area; in contrast, activation during this same task in women resulted in a more bilateral pattern of activation of this region.

These findings provide the first clear evidence of gender-based differences in the functional organization of the brain for language. They support and extend a long-held hypothesis that language functions are more likely to be highly lateralized in males but are represented in both cerebral hemispheres in females.

Studies of dyslexic readers indicate a significant disruption in the neural systems for reading in dyslexic subjects as they try to decode pseudowords. Thus, as shown in Figure 4 during nonword rhyming in dyslexic readers, we found a disruption in several critical components of a posterior system involving the posterior superior temporal gyrus (Wernicke's area) and the angular gyrus, and a concomitant increase in activation in the inferior frontal gyrus.

These data indicate that dyslexic readers demonstrate a functional disruption in an extensive system in the posterior cortex encompassing both traditional visual and language regions as well as a portion of association cortex. The involvement of this latter region, centered about the angular gyrus, is of particular interest since this portion of association cortex is considered pivotal in carrying out those cross-modal integrations necessary for reading (i.e., mapping the visual percept of the print onto the phonologic structures of the language).

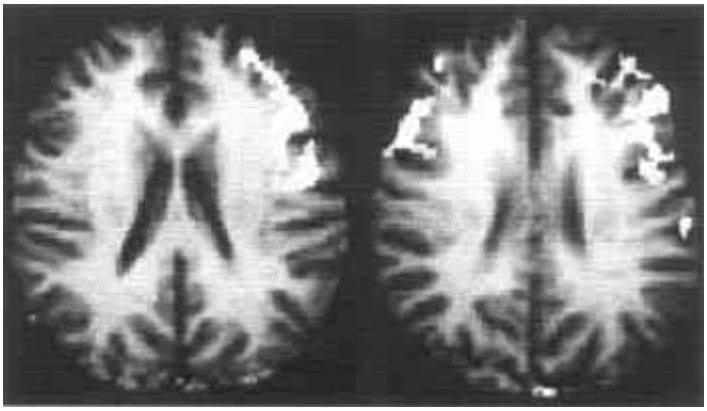

Figure 3. Gender-based differences in the brain during phonological processing. Composite fMRI images show the distribution of brain activation patterns in men (left) and women (right) during a nonword rhyming task. In men, activation is lateralized to the left inferior frontal regions; in women the same region is active bilaterally (data from Shaywitz et al., 1995).

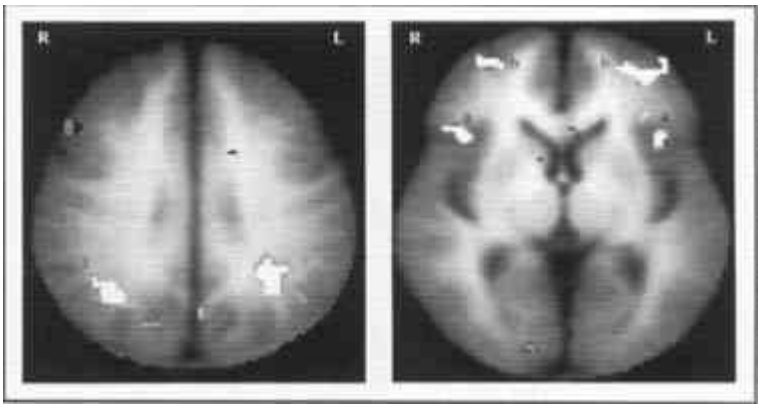

Figure 4. Composite fMRI activation maps in nonimpaired and dyslexic readers engaged in phonological processing during the nonword rhyme task show that nonimpaired readers activate a large region involving the angular gyrus (1), supramarginal gyrus, and posterior portions of the superior temporal gyrus. In contrast, dyslexic readers demonstrate a relative underactivation in this posterior region and an increased activation in the inferior gyrus (a) and middle front gyrus (b) bilaterally (data from Shaywitz et al., 1998).

Consistent with this study of developmental dyslexia, a large literature on acquired inability to read (alexia, for example, following a stroke) describes neuroanatomical lesions most prominently centered about the angular gyrus. It should not be surprising that both the acquired and the developmental disorders affecting reading have in common a disruption within the neural systems serving to link the visual representations of the letters to the phonologic (language) structures they represent. While reading difficulty is the primary symptom in both acquired alexia and developmental

dyslexia, associated symptoms and findings in the two disorders would be expected to differ somewhat, reflecting the differences between an acquired and a developmental disorder. In acquired alexia, a structural lesion resulting from an insult (e.g., stroke, tumor) disrupts a component of an already functioning neural system and the lesion may extend to involve other brain regions and systems. In developmental dyslexia, as a result of a constitutionally based functional disruption, the system never develops normally. The symptoms reflect the emanative effects of an early disruption to the phonologic system. In either case the disruption is within the same neuroanatomical system.

A Neural Model for Reading

These data from laboratories around the world indicate that a number of interrelated neural systems are used in reading: at least two in posterior brain regions as well as distinct and related systems in anterior regions (Figure 5).

In order to read, the beginning reader must break the reading code, that is, transform the visual features (the letters) of the word into the linguistic sounds (the phonemes) they represent and then access the meaning of the word. As early as 1891, Dejerine suggested that a portion of the posterior brain region (which includes the angular gyrus and supramarginal gyrus in the inferior parietal lobule, and the posterior aspect of the superior temporal gyrus) is critical for reading.

Rather than the smoothly functioning and integrated reading systems observed in nonimpaired readers, disruption of the posterior reading systems results in dyslexic readers attempting to compensate by shifting to other, ancillary, systems (e.g., anterior sites such as the inferior frontal gyrus and right posterior sites). The anterior sites, which are critical in articulation, may help dyslexic readers develop an awareness of the sound structure of the word by forming the word with their lips, tongue, and vocal apparatus and thus allow them to read, albeit more slowly and less efficiently than if the fast occipitotemporal word identification system were functioning. The posterior sites, for example the right occipitotemporal area, may be used by the dyslexic reader to facilitate visual pattern recognition, compensating for the impaired word analysis systems in the left posterior regions. The shift to ancillary neural systems in dyslexic readers may support accurate, but not fluent and automatic, word reading.

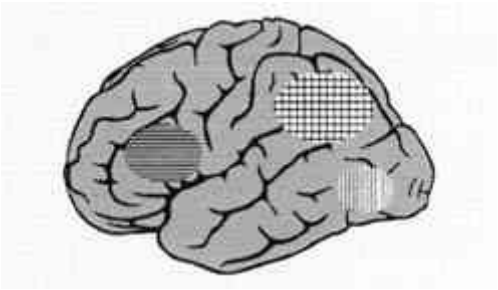

Figure 5. Neural systems for reading. Converging evidence indicates three important systems in reading, all primarily in the left hemisphere: 1) anterior system in the left inferior frontal region; 2) dorsal parietotemporal system involving angular gyrus, supramarginal gyrus, and posterior portions of the superior temporal gyrus; 3) ventral occipitotemporal system involving portions of the middle temporal gyrus and middle occipital gyrus. See text for details.

Delineation of the circuitry for reading in dyslexia may now allow strategies for specific interventions designed to facilitate the function of these ancillary systems, and a method to measure the efficacy of such interventions in a more focused and efficient way. Such studies are now underway.

For dyslexic readers, these brain activation patterns provide evidence of an imperfectly functioning system for segmenting words into their phonologic constituents; accordingly, this disruption is evident when dyslexic readers are asked to respond to increasing demands on their phonologic analysis. These findings now add neurobiological support for previous cognitive/behavioral data, pointing to the critical role of phonologic analysis, and its impairment, in dyslexia. The pattern of relative underactivation in posterior brain regions contrasted with relative overactivation in anterior regions may provide a neural signature for the phonologic difficulties characterizing dyslexia.

Editor's note: *Portions of this chapter appeared in (Shaywitz 1998; Shaywitz and Shaywitz 1999; Shaywitz, Pugh et al. 2000; Shaywitz, Shaywitz et al. In Press; Shaywitz, Shaywitz et al. In Press; Shaywitz, Lyon et al. In Press) with permission.*

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NCSALL's purpose is to improve practice in educational programs that serve adults with limited literacy and English language skills, and those without a high school diploma. NCSALL is meeting this purpose through basic and applied research, dissemination of research findings, and leadership within the field of adult learning and literacy.

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