

OpenBook English

Reading White Paper



Openbook

Version 7.1

Abstract

***OpenBook English* is a research-based literacy software program whose design, evaluation, and ongoing development is guided by the scientific method:**

**Systematic and empirical methods
Rigorous data analyses
Reliable and valid data collection
Strong research design
Detailed results that allow for replication
Results subject to scrutiny**

It embeds the research-identified essential skills for the development of literacy:

- **Phonemic awareness instruction**
- **Phonics instruction**
- **Fluency instruction**
- **Vocabulary instruction**
- **Text comprehension instruction**

Within a lesson design similarly guided by research-proven methods:

- **Reading Context**
- **Cognitive Reading Strategies**
- **Metacognitive Components**
- **Explicit Instruction**
- **Modeling**
- **Interaction**
- **Increased Student Control**
- **Guided Practice**
- **Systematic Feedback**

Consistent with this design, in controlled studies, subjects using OpenBook as a learning tool show markedly statistically significant improvement in literacy skills.

Development

OpenBook English (“OpenBook”) is a researched-based reading, writing, speaking and listening program whose philosophy and execution grew from a synthesis of research in developmental reading and the field of rich-media, human-computer interfaces. This early and ongoing integration of advanced rich-media technology and metacognitive reading theory places OpenBook in a unique and non-reproducible position.

In the early 1980’s, developmental reading researcher Dr. John Henry Martin teamed with James Dezell, an IBM senior executive who was positioning IBM to be a leader in educational information technology. Their goal was to create computer-assisted learning systems that delivered instruction in the ways users think and acquire skills most effectively during the process of learning to read. The result, IBM’s Writing to Read system, was recognized as the leading literacy solution of its time. IBM’s education division, Eduquest, became a leading provider of educational technology, with Writing to Read establishing an installed base in over 17,000 schools.

When IBM decided to abandon the educational market in the mid-90’s, James Dezell and Doug Winter, a key member of IBM’s Eduquest team, founded what is now OpenBook Learning, Inc., with the philosophy of continuing the development of programs that combined rich-media instruction with the most current research in how people learn the intricate and complex skill of reading. This philosophy means *OpenBook English* is the natural migration path of this research and of the Writing to Read system.

OpenBook English merges scientifically based skill instruction with scientifically based lesson designs. Beginning with Dr. John Henry Martin, OpenBook has built its programs from research using

- Systematic and empirical methods
- Rigorous data analyses
- Reliable and valid data collection
- Strong research design
- Detailed results that allow for replication
- Results subject to scrutiny.

A. OpenBook's Scientifically Based Essential Skills Instruction

OpenBook uses rich-media to deliver instruction in the areas identified by No Child Left Behind to be scientifically demonstrated to teach literacy.

The National Reading Panel of the National Institutes of Health identified five components that have been validated by extensive research science as essential components of a literacy curriculum:

- **Phonemic awareness instruction**
- **Phonics instruction**
- **Fluency instruction**
- **Vocabulary instruction**
- **Text comprehension instruction**

No Child Left Behind and Reading First have adopted these components as the foundation of their requirements. OpenBook provides comprehensive instruction in all five:

Phonemic Awareness Instruction

OpenBook students hear individual phonemes in isolation and combined in digraphs, blends, and blended words. Students activate video instruction in phoneme isolation and phoneme blending. Students practice phoneme, blend, and word pronunciation by recording their own voices and hearing their pronunciation matched with a speech professional's vocalizations. (National Reading Panel 2.9) Reitsma, P.; Lindamood, C.& P.; Ehri, L.; Adams, M.; Shaywitz, S.)

Phonics Instruction

OpenBook systematically matches 52 phonemes with their alphabetic representations initially embedded in 41 high-frequency words. OpenBook's 515 lessons in phonemic awareness and systematic phonics far exceed the requirements of No Child Left Behind. (NRP 2.102) Englemann, S.; Foorman, B.; Kame'enui, E.; Lovett, M.; Stahl, S.A.; Torgensen, J.)

Fluency Instruction

Every one of OpenBook's 5,000 lessons in the complete program allows students to activate video of a speech professional vocalizing all content. Students hear professional readers read OpenBook content with expression and fluency. A lesson feature then allows students to match a live recording of their own reading with the professional reader's vocalization. In this manner, students then receive guided fluency practice. (NRP 3.10) Eldridge, J.L.; Labbo, L.D.; Rayner, K; Shanahan, S.; Shaywitz, S.; Simmons, D. C.; Wagner, R.

Vocabulary Instruction

OpenBook's initial 41 high-frequency words build through a grade-equivalent sequence, to more than 32,000 words. The program offers specific vocabulary instruction and vocabulary in context through stories, poems and nonfiction academic content. (NRP 4.18 Durkin, D.; Levin, J.; Stahl, S; Kamil, M.)

Reading First has validated the special effectiveness of rich-media, computer-based learning. (NRP 4.19) Chambless, J&M.; Kamil, M.; Reinking, D.)

Text Comprehension Instruction

Students read stories, hear stories, and receive context clues from drawings, photos, graphical organizers and other elements of graphical comprehension, and videos. Students interact repeatedly with each text in series of exercises that include explicit comprehension questions, writing prompts, CLOZE exercises, and keyboarding activities. (NRP 4.42) Duffy, G.; Wedman, J.)

B. Scientifically-based Lesson Design

"A sophisticated software design could create an interactive environment in which the consequences of a learner's response would be mediated in terms of the computer's response." John Henry Martin

The fundamental and immutable difference between OpenBook and every other product currently marketed - - is that OpenBook offers rich teaching media while other systems offer rich presentation media.

OpenBook's program, through its ability to functionally teaches students:

- monitor student choice
- provide just-in-time training
- cue the student to next actions in a graduated way

OpenBook Learning, Inc.

- engage, then evaluate a student response
- show comparisons of students' results with a standard of performance
- and model skills
- offer guided skill practice

In short, it guides and coaches students from a position of not knowing how to do something into a position of knowing.

Other multimedia programs simply present material the way a textbook or workbook does. They do not guide, cue, coach, model, and instruct. They do not offer dynamic engagement in instruction and learning the way OpenBook does.

The result is that OpenBook Learning, Inc. offers the only software program on the market today that provides all nine components proven to facilitate the development of literacy. These nine components were documented in research conducted by V. L. Collins, S. V. Dickson, D.C. Simmons, and E. J. Kameenui, funded by the U.S. Department of Education and adopted as the literacy standard by the State of California, among others. OpenBook not only provides all nine components, it does so through a user-friendly interface.

Below are the nine components with the documentary source validating its importance to developmental reading:

Reading Context - - OpenBook provides narrative and expository text. OpenBook's text includes fiction and nonfiction selections to allow students to develop both factual comprehension and symbolic comprehension. (Simmonds, 1990)

Cognitive Reading Strategies - - The series of activities included in each lesson in OpenBook:

- Leads students through processes of summary/main idea identification in its comprehension question component
- Invites visual imagery and predicting outcomes in its learning-to-write components
- Provides a rich context for linking the elements of grammar with effective narrative comprehension.

(Billingsley and Wildman, 1990)

Metacognitive Components - - OpenBook Learning Styles Assessment, an OpenBook exclusive, reveals students' distinctive thinking and learning styles. (Seligman, M.E.P, 1990. Paris, 1991)

Explicit Instruction - - OpenBook teaches phonics, whole language, vocabulary, pronunciation, spelling, grammar, narrative, and context. (Pikulski, 1997)

Modeling - - OpenBook's video component puts a speech and language specialist on each student's desktop. By using OpenBook's simple interface, the student controls the interaction. (Schunk and Rice, 1992)

Interaction - - OpenBook allows teachers to customize each student's lessons and to adjust instruction based on student performance data. This allows teachers to set a course for each individual student that allows the student to explore the richness of the technology within boundaries pre-set by the teacher. (Billingley and Wildman, 1990)

Increased Student Control - - OpenBook lets students seek additional instruction and support in multiple modalities including Spanish language translations. Once a teacher has set the parameters, students can select among various instructional media. Students access most additional modes by point-and-click. (Schunk and Rice, 1992)

Guided Practice - - Each component of an OpenBook lesson takes students through a range of practice sets that challenge, motivate, and support. (Kelly, 1997)

Systematic Feedback - - OpenBook weaves new instruction, practice and review through each lesson set while the OpenBook database gathers an ongoing record of student performance, which teachers can access in numerous customizable reports. (Cross and Lipson, 1991)

Exclusive Features

OpenBook's overall philosophy is based on research that demonstrates a rich-media environment will help children read better, sooner, with greater fluency and understanding.

Researcher Mila Stoicheva summarized this position in her 1999 article "Balanced Reading Instruction".

“Over the years more and more educators have started to agree that no single approach to teaching reading is fundamentally superior to all the rest.

As early as 1967 the First-Grade Studies project, conducted specifically to examine the best approach to reading, concluded that children learn to read by a variety of materials and methods and that a combination of approaches is often more effective (Bond and Dykstra, 1967, 1997)."

Because OpenBook has been at the forefront of advances in both rich-media and advanced reading theory, the *OpenBook English* program has the following exclusive features available.

1. The most comprehensive phonics system available in software.

- Fifty-two phonemic sounds. Most systems offer specific instruction on only 42 to 46 sounds.
- Includes sounds such as “ong” and “ing” that other systems do not include.
- OpenBook’s 52 phonemes are embedded in an introductory lesson set that highlights forty-one high-frequency words.

Phonological awareness is the foundation of the OpenBook beginning reading process. As documented by Fitzsimmons in 1998:

To translate letters into sounds, a beginning reader should "enter school with a conscious awareness of the sound structure of words and the ability to manipulate sounds in words" (Smith, Simmons, & Kameenui, 1995, p. 2). This is referred to as phonological awareness.

The research is clear and substantial, and the evidence is unequivocal: Students who enter first grade with a wealth of phonological awareness are more successful readers than those who do not.

2. Video pronunciation

Comprehension increases when students can access digitized speech support. (Leu, 2000)

- Videotaped speech-specialists sound out each of the 52 phonemic sounds.
- Video of a speech specialist sounding out each word in text is available with a mouse-click.

3. Student-activated video instruction.

- Students use a mouse-click on a word to activate a videotaped speech specialist sounding out each phoneme.
- Other lessons offer video instruction and text matched to audio-visual presentation and reinforcement.

4. Student-activated oral instruction.

The following research-based instructional sequence summarizes the kind of scaffolding beginning readers need: (a) model the sound or the strategy for making the sound; (b) have students use the strategy to produce the sound; (c) repeat steps (a) and (b) using several sounds for each type and level of difficulty; (d) prompt students to use the strategy during guided practice; (e) use steps (a) through (d) to introduce more difficult examples. (Fitzsimmons, 1999)

Students use the mouse to point and click on words in the text:

- One click and a language specialist's voice speaks the word.
- Two clicks and the voice sounds out each word phonetically.
- Three clicks and a Spanish language specialist's voice offers a Spanish language translation of the word.

5. Variable speed of word pronunciation.

Matches the most advanced research in language acquisitions. (Shaywitz, Tallal, et al.)

Teachers may slow down the articulation of the audio without changing pitch or losing fluency.

6. Oral word usage and spell check.

Allows students to click their typed word for possible synonyms, homonyms, alternative word usages and spellings. The typed word is spoken back to the student, then alternative words appear in text and are also spoken.

7. Spell check displays conventional and phonetic spelling.

OpenBook recognizes many common phonetic misspellings and will correct the misspelled to the conventional spelling while continuing to display the phonetic spelling.

8. Features a virtual teacher with just-in-time training.

- No-fail instruction cues students to next actions.
- Detailed multi-media instruction precedes each new step.
- Question-mark help button for student-activated assistance.

Researchers and practitioners alike assert that children need training in both phonemic awareness--by which they develop an awareness of individual sounds--and in cueing strategies--through which they learn to decode the text and comprehend the material. (Fitzsimmons, 1999)

Comprehensive support and cueing.

- Reduces program learning curve.
- Dramatically reduces the need for students to request teacher assistance.

9. Spanish, Mandarin, Bosnian Croatian and Haitian Creole support translates idioms and ensures gender articles are correct.

10. Comprehensive teacher-support system.

- Gathers hard data on student performance.
- Validates Individualized Educational Plans (IEPs).
- Supports reporting to parents.

11. Game-like response time. Students get immediate response from keyboard controls.

12. Vocal and text support for student writing.

Professional language specialist voice reads aloud student's writing back to them.

Oral word usage and spell check.

Offers phonetic and conventional spelling.

13. 32,000-word lexicon.

Supports:

- Text spell check.
- Oral word usage and spell check.
- Video pronunciation.
- Spanish translation.

The computer is ideally suited, by virtue of the flexibility it can provide, for fostering cognitive flexibility. In particular, multidimensional and nonlinear hypertext systems have the power to convey ill-structured aspects of knowledge domains. (Spiro, 2000)

14. Learning styles assessment and learning-styles-based teaching solutions.

OpenBook provides four age-level computerized questionnaires which - - with targeted questions developed from 17 years of research on high-performing students with divergent learning styles - - help teachers quickly specify instructional methods that will connect more effectively with each student.

(Kelly, 1997). Carbo (1996) points out students have different learning styles. The "analytic and auditory students," (Linear Listeners in the OpenBook lexicon) in particular, benefit from phonics instruction; students with "visual, tactile and global learning styles"(Associative Movers in OpenBook) tend to profit from a whole language approach. Further, the different stages of reading acquisition (selective cue, spelling-sound, and automatic) require different approaches. It is during the spelling-sound stage that phonics instruction is especially crucial. (Raven, 1997)

Further:

Multimodal learning theories, such as the dual coding theory of Paivo, typically suggest information presented with multiple modalities maximizes learning for a variety of students. . . . (Leu, 2000)

15. Comprehensive teacher training - - Just-in-Time Training

Complete audio-visual instruction supports each page of material.

Teachers activate instructions by clicking on the page's question mark.

Print manuals document each feature.

Ongoing Research Validation

These studies are being conducted by independent university researchers and include emergent readers, remedial readers, adult learners, and ESOL learners. These studies include district-wide populations, learners in several states, and across ethnic and SES categories. Preliminary results have been released and longitudinal studies are in progress.

In keeping with the rigorous research standards that have gone into the development of the *OpenBook English* program, ongoing research is being conducted according to the same standards.

Systematic and empirical methods

Several research studies measuring OpenBook's effectiveness against control group populations are currently underway. Each study is conducted by independent researchers under a supervising researcher. All studies are then independently analyzed and reviewed.

Rigorous data analysis

All research is under the review of an independent statistician who subjects the data to the research hypothesis to determine that the results justify the conclusions, are statistically significant, and not subject to chance or other factors.

Reliable and valid data collection

Data are collected using the recognized standardized assessments approved by the host state's Department of Education. Data are accumulated and reported by the standardized testing agencies. Data from the numerous studies are accumulated, measured, and compared using controlled and standard methods.

Strong research design

The research uses standard scientifically based reading research protocols - - including random and blind comparisons - - designed and approved by two university-level reading researchers each working independently of each other, and together having more than 20 years of reading research experience.

Detailed results that allow for replication

All data protected for student confidentiality are available for peer review. The research protocols are designed to encourage follow-on research.

Results subject to scrutiny

All protocols and reported data are reviewed and cross checked by independent reading experts working independently of each other. Preliminary data are released for further independent verification and publication in peer-review journals is anticipated.

Examples

DeKalb County, Georgia

Study of K-5 students

First-year study

Five research studies in elementary classrooms viewing emergent and remedial readers in grades K – 5.

Researchers:

Simone Willingham

Cynthia Woodard

Deseta Grigsby

Valerie Jackson

Harriet Thompson

Supervisor:

Dr. William Hammond

Statistician:

Dr. Curtis Greer

Second-year study

OpenBook Learning, Inc.

The original five studies have been continued for a second year and five additional research studies in elementary classrooms have been added to expand the view of emergent and remedial readers in grades K – 5.

Researchers:

K. Williams
Simone Willingham
Cynthia Woodard
Deseta Grigsby
Valerie Jackson
T. Pruitt
Harriet Thompson
Chinita Hodo
D. Saunders
Terri Hall

Supervisor:

Dr. William Hammond

Statistician:

Dr. Curtis Greer

Southwest DeKalb High School

One research study viewing high school remedial and ESOL learners in grades 9 – 12. Study in its third year.

Researchers:

Eliso Frutiger
Eugene Marnell

Supervisor:

Dr. William Hammond

Statistician:

Dr. Curtis Greer

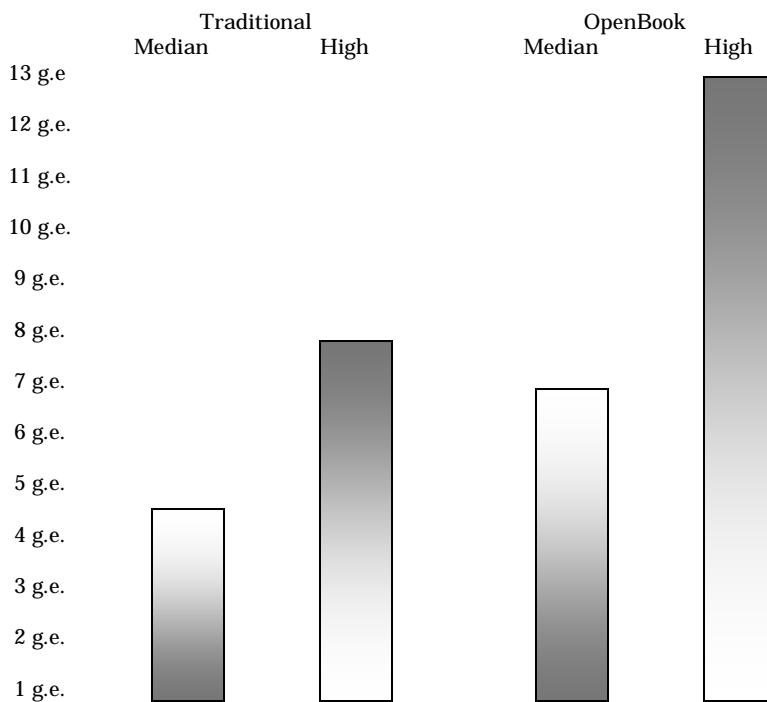
Preliminary Results from initial study:

- Twenty-eight 9th grade students reading at a grade level of 2 or less were divided into two groups.
- The traditional group used the school's existing paper-based remediation tools.

OpenBook Learning, Inc.

- The OpenBook group used *OpenBook English* in combination with the OpenBook off-line supplemental materials.
- Both groups had the same teacher.
- OpenBook group showed a mean improvement of 2 grade levels higher than the traditional group.
- The end of the year scores for the traditional group ranged from 1.4 g.e. to 7.2 g.e.
- The end of the year scores for the OpenBook group ranged from 2.2 g.e. to 12.9 g.e.

Graph from SW DeKalb High School study:



Bulloch County, Georgia

Began as an internal pilot study in four elementary schools to assess the impact of OpenBook against other schools using the district's traditional methods and materials.

OpenBook Learning, Inc.

Original researcher:
Bulloch County Superintendent's Office
Staff of four elementary schools

Supervisor:
Diane Bath, Assistant Superintendent for the Advancement of Teaching and Learning

The original data and results of four years of OpenBook implementation that grew from the pilot research project to a county-wide installation is currently under study. The longitudinal study encompasses 3800 students and the beginning of a fifth year of program implementation. Results from the Iowa Test of Basic Skills shows a county wide achievement in the upper 70th percentiles.

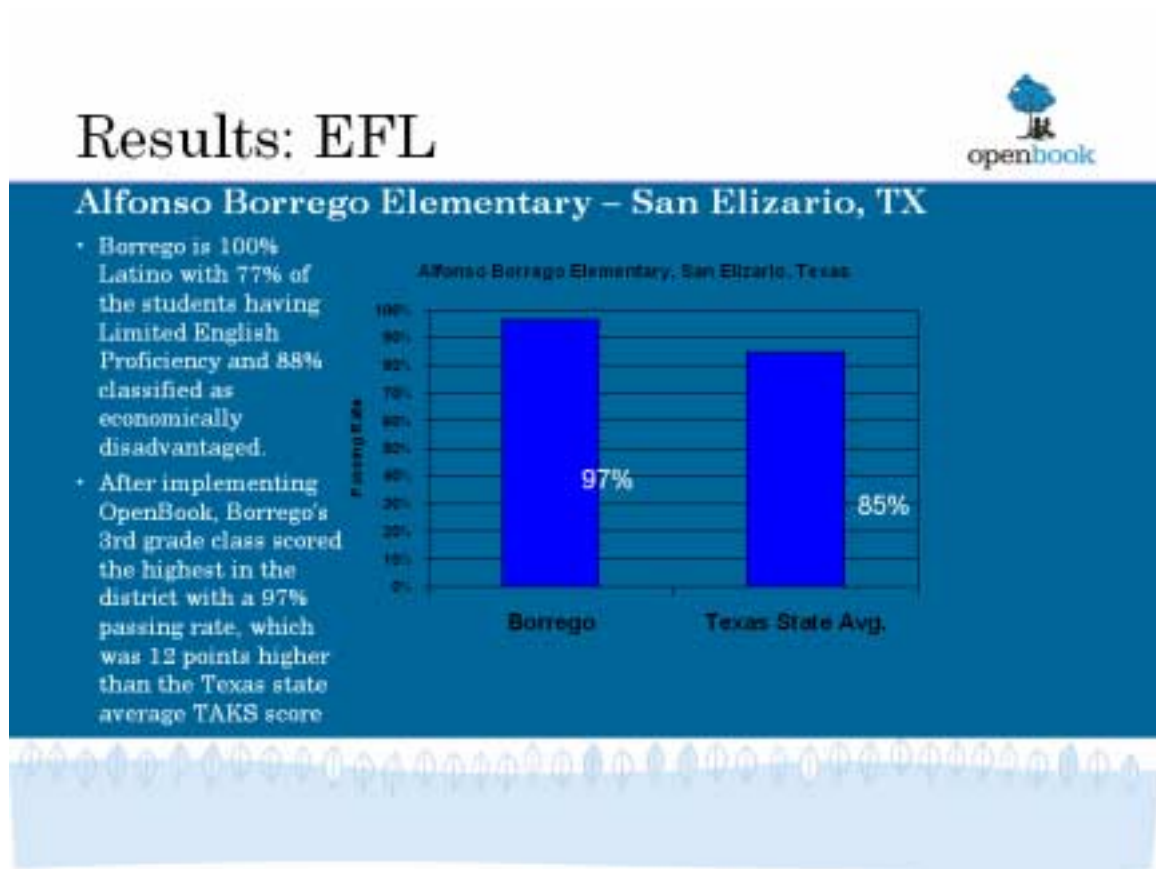
Supervisor of Longitudinal Study:
Dr. William Hammond

Statistician:
Dr. Curtis Greer

Preliminary results from DeKalb County:

School	Before Percentile	After Percentile	Percentile Improvement	Percent Improvement
Sallie Zetterower Elementary	38%	78%	40 points	105%
Portal Elementary	41%	75%	34 points	83%
Brooklet Elementary	44%	75%	28 points	64%
Julia P. Bryant Elementary	51%	69%	18 points	36%

Limited English Proficiency



Intervention

Results: High School Intervention



Case Study:

Elsie Allen High School Santa Rosa, CA

Title One Reading lab

Supervisor: Matthew Glavach, Ph.D.

OpenBook Core Reading Curriculum

Average	Pre-test
Grade Equivalent	5.8
Average	Post-test
Grade Equivalent	8.75

Oklahoma Northeastern State University

OpenBook Learning, Inc.

The Center for the Study of Literacy has begun a scientifically based study of OpenBook targeting Adult Learners, English Language Learners, students in correctional facilities, and other remedial learners.

The study encompasses 16 Oklahoma Department of Corrections facilities, 16 teachers, and an average of 40 students in each facility. The students are male and female adult inmates enrolled in literacy and GED programs within the corrections facilities.

In addition, the program is installed in three adult literacy centers serving adults in the community.

Supervising researcher:

P. Frank McKane, Ph.D., Director
Center for Study of Literacy
Oklahoma Literacy Clearinghouse
Northeastern State University
Tahlequah, Oklahoma

Peer Review Publications

Educational Software Preview Guide -- U.S. Depart of Education

The Educational Software Preview Guide, now in its 21st year, is designed especially for educators seeking software for preview and lists over 1,000 titles of favorably reviewed software for PreK-12 classroom use. OpenBook has been favorable reviewed since 2003.

Florida Center for Reading Research

Supervisor: Joseph Torgesen, Ph.D.

Independent research peer review by National Reading Panel Member

International Reading Association

Dr. William Hammond

Research studies: Emergent and remedial readers: five elementary classrooms

ESOL and Remedial: high school

Four-year longitudinal study

[Teaching African American Learners to Read: Perspectives and Practices \(editor\)](#)

[Promising Practices for Urban Reading Instruction \(contributor\)](#)

Academic Leadership Journal

Closing the Gap: A New Model for Adolescent Reading Intervention. Matthew Glavach, Ph.D.

www.academicleadership.org

Conclusion

OpenBook Learning has been developed and validated through twenty years of rigorous scientifically based research in the integration of rich-media, advanced reading theory, and learning styles assessment and prescription. The result is a tested and proven interdisciplinary approach that is grounded in proven literacy-training research. OpenBook provides demonstrable and replicatable results which validate OpenBook users mastering English literacy in much shorter time frames with much greater comprehension.