Synopsis of the Scientific Research Base

Research-Based Principles	AGS Globe Textbooks	References
Standards Alignment		
Subject area instruction needs to be based on skills, concepts, and processes represented by common standards for that subject area.	◆ Textbook content and skills aligned with national standards and state grade-level or course-specific content standards, where available	Matlock, L., Fielder, K., & Walsh, D. (2001). Building the foundation for standards-based instruction for all students. *Teaching Exceptional Children, 33*(5), 68–72. Miller, S. P., & Mercer, C. D. (1997). Educational aspects of mathematics disabilities. *Journal of Learning Disabilities, 30*(1), 47–56. Reys, R., Reys, B., Lapan, R., Holliday, G. & Wasman, D. (2003). Assessing the impact of standards-based middle grades mathematics curriculum materials on student achievement. *Journal of Research in Mathematics Education, 34*(1), 74–95.
Readability		
Many students struggle to learn from core content-area textbooks that are written too high above their reading level. Students need access to textbooks written at a level they can read and understand, where the reading level is within the students' range of comprehension.	◆ Grade 4.0 or lower readability using the Spache formula ◆ Controlled vocabulary matched to student reading ability and use of synonyms to replace non-essential difficult words above grade 4 ◆ Simple sentence structures ◆ Limited sentence length	Allington, R. L. (2002). You can't learn much from books you can't read. *Educational Leadership*, 60(3), 16–19. Chall, J. S., & Conard, S. S. (1991). *Should textbooks challenge students? The case for easier or harder textbooks*. New York: Teachers College Press. *Readability calculations*. (2000). Dallas: Micro Power & Light Company.
Language Complexity and Sequence		
Students struggling with vocabulary and text comprehension need textbooks with accessible language.	◆ Simple, direct language using an active voice ◆ Clear organization to facilitate understanding ◆ Explicit language signals to show sequence of and links between concepts and ideas	Anderson, T. H., & Armbruster, B. B. (1984). Readable texts, or selecting a textbook is not like buying a pair of shoes. In R. C. Anderson, J. Osborne, & R. J. Tierney (Eds.), *Learning to read in American schools* (pp. 151–162). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc. Curtis, M. E. (2002, May 20). *Adolescent reading: A synthesis of research*. Paper presented at the Practice Models for Adolescent Literacy Success Conference, U.S. Department of Education. Washington, DC: National Institute of Child Health and Human Development. Retrieved September 15, 2003, from http://216.26.160.105/conf/nichd/synthesis.asp McAlpine, L., & Weston, C. (1994). The attributes of instructional materials. *Performance Improvement Quarterly, 7*(1), 19–30. Seidenberg, P. L. (1989). Relating text-processing research to reading and writing instruction for learning disabled students. *Learning Disabilities Focus, 5*(1), 4–12.
Vocabulary Use and Development		
Students need content-related vocabulary instruction in the context of readable and meaningful text.	◆ New vocabulary boldfaced on first occurrence, used in context, and defined in a sidebar ◆ Glossary with pronunciation, definition, and relevant graphic illustrations for all vocabulary words ◆ Direct vocabulary instruction introduced in the Teacher's Edition and reinforced in context throughout ◆ Multiple exposures to new vocabulary in text and practice exercises	Ciborowski, J. (1992). *Textbooks and the students who can't read them: A guide to teaching content*. Cambridge, MA: Brookline. Kameenui, E. J., & Simmons, D. C. (1990). *Designing instructional strategies*. Columbus, OH: Merrill Publishing Company. Marzano, R. J. (1998). *A theory-based meta-analysis of research on instruction*. Aurora, CO: Mid-Continent Research for Education and Learning. Retrieved October 1, 2003, from http://www.mcrel.org/topics/productDetail/asp?productID=83 McAlpine, L., & Weston, C. (1994). The attributes of instructional materials. *Performance Improvement Quarterly*, 7(1), 19–30. National Reading Panel. (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. Reports of the subgroups. Washington, DC: National Institute of Child Health and Human Development. Taylor, S. E., Frackenpohl, H., White, C. E., Nieroroda, B. W., Browning, C. L., & Birsner, E. P. (1989). *EDL core vocabularies in reading, mathematics, science, and social studies*. Austin, TX: Steck-Vaughn.

Research-Based Principles	AGS Globe Textbooks	References

Text Organization: Presentation and Structure

Students need an uncluttered page layout, with easy-to-read print, that clearly directs the reader to main ideas, important information, examples, and comprehensive practice and review. Reading comprehension is improved by structural features in the text that make it easier for learners to access the content.	*Print characteristics and page layout:* ◆ Serif font for body copy; sans serif font for boxed features, examples ◆ Maximum line length of 5" for ease of reading ◆ Unjustified (ragged) right margins ◆ Major/minor column page design presents primary instructional information in the major column and support content in the sidebar or in a box *Presentation characteristics:* ◆ Lesson introductions, summaries ◆ Explicit lesson titles, headings, and subheadings label and organize main ideas ◆ Signals alert readers to important information, content connections, illustrations, graphics ◆ Cues (e.g., boldface type) highlight important information *Text structure:* ◆ Lesson heads in question or statement format guide comprehension ◆ Text written to explicitly link facts and concepts within and across lessons; text cohesiveness ◆ Each skill or concept linked to direct practice and review	Armbruster, B. B., & Anderson, T. H. (1988). On selecting "considerate" content area textbooks. *Remedial and Special Education, 9*(1), 47–52. Beck, I. L., McKeown, M. G., & Grommoll, E. W. (1989). Learning from social studies texts. *Cognition and Instruction, 6*(2), 99–158. Chambliss, M. J. (1994). Evaluating the quality of textbooks for diverse learners. *Remedial and Special Education, 15*(5), 348–362. Ciborowski, J. (1992). *Textbooks and the students who can't read them: A guide to teaching content.* Cambridge, MA: Brookline. Dickson, S. V., Simmons, D. C., & Kameenui, E. J. (1995). *Text organization and its relation to reading comprehension: A synthesis of the research* (Technical Report No. 17) and *Text organization: Curricular and instructional implications for diverse learners* (Technical Report No. 18). National Center to Improve the Tools of Educators. Eugene, OR: University of Oregon. Retrieved January 26, 2000, from http://idea.uoregon.edu/~ncite/documents/techrep/tech17.html and http://idea.uoregon.edu/~ncite/documents/techrep/tech18.html Dickson, S. V., Simmons, D. C., & Kameenui, E. J. (1998). Text organization: Research bases *and* Text organization: Instructional and curricular basics and implications. In D. C. Simmons & E. J. Kameenui (Eds.), *What reading research tells us about children with diverse learning needs: Bases and basics* (pp. 239–278; 279–294). Mahwah, NJ: Lawrence Erlbaum Associates, Inc. Mansfield, J. S., Legge, G. E., & Bane, M. C. (1996). Psychophysics of reading. XV: Font effects in normal and low vision. *Investigative Ophthalmology and Vision Science, 37*, 1492–1501. McAlpine, L., & Weston, C. (1994). The attributes of instructional materials. *Performance Improvement Quarterly, 7*(1), 19–30. McNamara, D. S., Kintsche, E., Songer, N. B., & Kintsche, W. (1996). Are good texts always better? Interactions of text coherence, background knowledge, and levels of understanding in learning from text. *Cognition and Instruction, 14*(1), 1–43. Tyree, R. B., Fiore, T. A., & Cook, R. A. (1994). Instructional materials for diverse learners: Features and considerations for textbook design. *Remedial and Special Education, 15*(6), 363–377.

Differentiated Instruction and Learning Styles

Student learning is more successful when tasks are aligned with academic skill levels and developmental stage, and adjustments are made to allow students multiple means to engage and express their learning strengths and styles at appropriate levels of challenge and support. Differentiated instruction allows teachers to organize instruction to adjust for diverse learning needs within a classroom. Learning activities that capitalize on students' learning styles can structure planning for individual differences based on multiple intelligences theory.	◆ Multiple features, including Learning Styles activities, help teachers match assignments to students' abilities and interests ◆ Variety of media to select from—print, audio, visual, software ◆ Step-by-step, part-by-part basic content and skill-level lessons in the Student and Teacher's Editions ◆ Modified Activities written at a lower reading level in the Teacher's Resource Library ◆ Variety of review materials, activities, sidebars, and alternative readings ◆ Multiple assessments—lesson or chapter reviews, end-of-chapter tests, cumulative midterm/final mastery tests, alternative assessment items *Learning Styles activities include:* ◆ Auditory/Verbal ◆ Body/Kinesthetic ◆ Interpersonal/Group Learning ◆ Logical/Mathematical ◆ Visual/Spatial *ELL/ESL Strategies provide support for students who are learning English and lesson content concurrently.*	Allington, R. L. (2002). You can't learn much from books you can't read. *Educational Leadership, 60*(3), 16–19. Carnine, D. (1994). Introduction to the mini-series: Diverse learners and prevailing, emerging, and research-based educational approaches and their tools. *School Psychology Review, 23*(3), 341–350. Forsten, C., Grant, J., & Hollas, B. (2003). *Differentiating textbooks: Strategies to improve student comprehension and motivation.* Peterborough, NH: Crystal Springs Books. Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences.* New York: Harper and Row. Gersten, R., & Baker, S. (2000). The professional knowledge base on instructional practices that support cognitive growth for English-language learners. In R. Gersten, E. P. Schiller, & S. Vaughn (Eds.), *Contemporary special education research: Syntheses of the knowledge base on critical instructional issues* (pp. 31–80). Mahwah, NJ: Lawrence Erlbaum Associates, Inc. Hall, T. (2002, June). *Effective classroom practices report: Differentiated instruction.* Wakefield, NJ: National Center on Accessing the General Curriculum. Retrieved September 29, 2003, from http://www.cast. org/cac/index.cfm?i=2876 Lazear, D. (1999). *Eight ways of knowing: Teaching for multiple intelligences* (3rd ed.). Arlington Heights, IL: Skylight Training and Publishing. Orlich, D. C., Harder, R. J., Callahan, R. C., & Gibson, H. W. (2001). *Teaching strategies: A guide to better instruction* (6th ed.). Boston: Houghton Mifflin Company. Roderick, M. & Camburn, E. (1999). Risk and recovery from course failure in the early years of high school. *American Educational Research Journal, 36*(2), 303–343. Tomlinson, C. A. (1999). *The differentiated classroom: Responding to the needs of all learners.* Alexandria, VA: Association for Supervision and Curriculum Development.

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Instructional Design: Lesson Structure and Learner Support Strategies

Instruction that includes the components of effective instruction, utilizes effective strategies and interventions to facilitate student learning, and aligns with standards improves learning for all students, especially diverse learners and students who are struggling.

Elements of effective instruction:

Step 1: Introduce the lesson and prepare students to learn
Step 2: Provide instruction and guided practice
Step 3: Provide opportunities for applied practice and generalization

Organizational tools:
Advance organizers
Graphic organizers

Instructional process techniques:
Cooperative learning
Student self-monitoring and questioning
Real-life examples
Mnemonics

Step 1: Introduce the lesson and prepare students to learn
In the Student Edition:
◆ "How to Use This Book" feature explicitly teaches text organization
◆ Chapter and lesson previews with graphic and visual organizers
◆ Goals for Learning
◆ Sidebar notes review skills and important facts and information

In the Teacher's Edition:
◆ Lesson objectives
◆ Explicit *3-Step Teaching Plan* begins with "Warm-Up Activity" to inform students of objectives, connect to previous learning and background knowledge, review skills, and motivate students to engage in learning

Step 2: Provide instruction and guided practice
In the Student Edition:
◆ Short, manageable lessons break content and skills into smaller, step-by-step, part-by-part pieces
◆ Systematic presentation of lesson concepts and skills
◆ Chapter and lesson headings presented as questions or statements
◆ Graphic organizers arrange content visually— charts, graphs, tables, diagrams, bulleted lists, arrows, graphics, mnemonics, illustrations, and captions
◆ Models or examples link directly to the explanation of the concept
◆ Multiple opportunities for direct practice throughout

In the Teacher's Edition:
◆ *3-Step Teaching Plan* for each lesson includes "Teaching the Lesson" with direct instruction, and helps teachers present and clarify lesson skills and concepts through guided practice and modeling of important ideas
◆ Supplemental strategies and activities, including hands-on modeling, transparencies, graphic organizers, visual aids, learning styles

Step 3: Provide opportunities for applied practice and generalization
In the Student Edition:
◆ Each skill or concept lesson is followed by direct practice or review questions
◆ Multiple exercises throughout
◆ Generalization and application activities in sidebars and lessons link content to real-life applications
◆ Chapter reviews and summaries highlight major points

Allsopp, D. H. (1990). Using modeling, manipulatives, and mnemonics with eighth-grade math students. *Teaching Exceptional Children*, 31(2), 74–81.

Chambliss, M. J. (1994). Evaluating the quality of textbooks for diverse learners. *Remedial and Special Education*, 15(5), 348–362.

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Dixon, R. C., Carnine, D. W., Lee, D., Wallin, J., & Chard, D. (1998). *Review of high quality experimental mathematics research: Report to the California State Board of Education.* Sacramento, CA: California State Board of Education.

Jarrett, D. (1999). *The inclusive classroom: Mathematics and science instruction for students with learning disabilities—It's just good teaching.* Portland, OR: Northwest Regional Educational Laboratory.

Johnson, D. W., Johnson, R. T., & Stanne, M. B. (2000, May). *Cooperative learning methods: A meta-analysis.* Minneapolis: The Cooperative Learning Center, University of Minnesota. Retrieved October 29, 2003, from http://www.coop-learn.org/pages/cl-methods.html

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Lovitt, T. C., & Horton, S. V. (1994). Strategies for adapting science textbooks for youth with learning disabilities. *Remedial and Special Education*, 15(2), 105–116.

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Marzano, R. J., Pickering, D. J., & Pollock, J. E. (2001). *Classroom instruction that works: Research-based strategies for increasing student achievement.* Alexandria, VA: Association for Supervision and Curriculum Development.

Miller, S. P., & Mercer, C. D. (1993). Mnemonics: Enhancing the math performance of students with learning difficulties. *Intervention in School and Clinic*, 29(2), 78–82.

Montague, M. (1997). Cognitive strategy instruction in mathematics for students with learning disabilities. *Journal of Learning Disabilities*, 30(2), 164–177.

Reiser, R. A., & Dick, W. (1996). *Instructional planning: A guide for teachers* (2nd ed.). Boston: Allyn and Bacon.

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Steele, M. (2002). Strategies for helping students who have learning disabilities in mathematics. *Mathematics Teaching in the Middle School*, 8(3), 140–143.

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Instructional Design: Lesson Structure and Learner Support Strategies, *continued from previous page*

In the Teacher's Edition:
◆ *3-Step Teaching Lesson Plan* concludes with "Reinforce and Extend" to reinforce, reteach, and extend lesson skills and concepts
◆ Unit or chapter projects link and apply unit or chapter concepts
◆ Multiple supplemental/alternative activities for individual and group learning and problem solving
◆ Career, home, and community application exercises

In the Teacher's Resource Library:
◆ Multiple exercises in Student Workbook and reproducibles offer applications, content extensions, additional practice, and modified activities at a lower reading level

Skill Track:
◆ Monitors student learning and guides teacher feedback to student

Ongoing Assessment and Tracking Student Progress

Textbooks can incorporate features to facilitate and support assessment of learning, allowing teachers to monitor student progress and provide information on mastery level and the need for instructional changes.

Assessment should measure student progress on learning goals over the course of a lesson, chapter, or content-area textbook.

Students and teachers need timely and ongoing feedback so instruction can focus on specific skill development.

◆ Test-taking tips and strategies for students who benefit from explicit strategy instruction
◆ Lesson and chapter reviews check student understanding of content
◆ Workbook and reproducible lesson activities (Teacher's Resource Library) offer additional monitoring of student progress
◆ Discussion questions allow teachers to monitor student progress toward lesson objectives
◆ Self-Study Guides (Teacher's Resource Library) allow teacher and student to track individual assignments and progress
◆ Chapter assessment activities and curriculum-based assessment items correlate to chapter Goals for Learning:
  • Chapter reviews
  • End-of-chapter tests
  • Cumulative Midterm and Final mastery tests
  • Alternative chapter assessments
  • Skill Track assesses and tracks individual student performance by lesson and chapter

Deshler, D. D., Ellis, E. S., & Lenz, B. K. (1996). *Teaching adolescents with learning disabilities: Strategies and methods* (2nd ed.). Denver, CO: Love Publishing Company.

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