

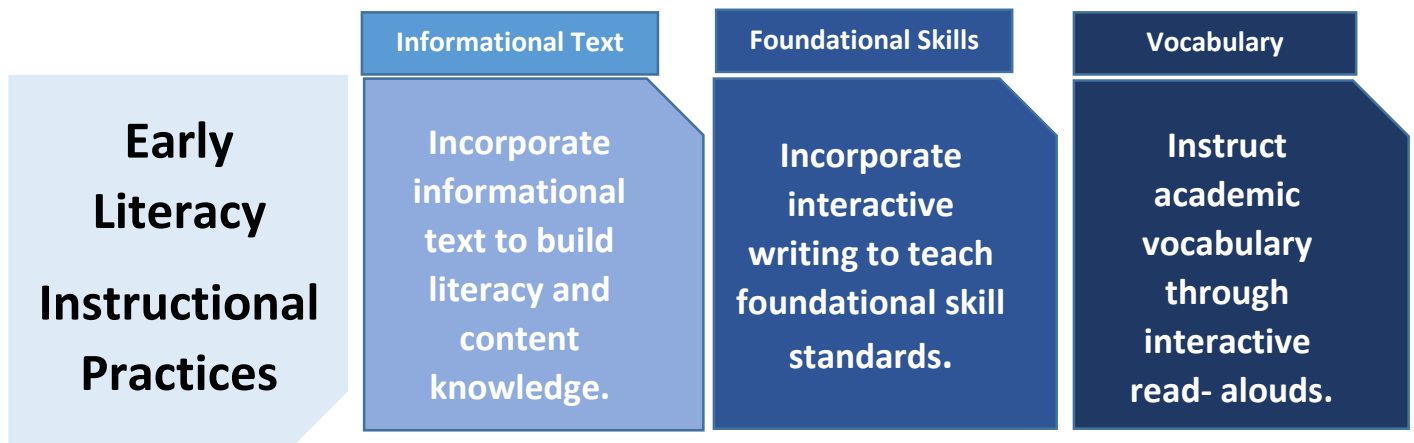
If classroom instruction is:

- [Intentional](#), aligned with standards, and designed to be student-centered and personalized (or relevant) to the needs of the students in the classroom,
- [Integrated](#) so that it brings relevance and rigor to the learning, allows students to connect ideas and transfer knowledge across content areas,
- Supported with [timely and focused interventions](#) when necessary, then student achievement and engagement in early literacy and mathematics will increase.

The state academic standards simply state the goals related to content of what students are expected to know; designing and implementing instruction that support students in achieving these goals is a decision made by educators in local districts and classrooms. The Office of Education Improvement and Innovation has launched the Early Literacy and Mathematics Initiative (ELMI) to support educators with successful implementation of the state standards for English Language Arts (ELA) and mathematics. Messaging and supports are designed to highlight six examples of instructional practices, three for early literacy and three for early mathematics.

Specific Early Literacy Instructional Practices

There are many specific instructional practices that have been shown to be effective in raising the literacy achievement of children in prekindergarten through third grade. Within the standards categories highlighted, we have chosen three examples of instructional practices that explore: interactive read-aloud with a vocabulary focus, interactive writing, and using informational text to build literacy and content knowledge. Our criteria for selecting these three example practices were as follows: (a) supported by research (see below); (b) could be used in different parts of the school day (e.g., in science as well as during time set aside specifically for reading and writing instruction); (c) relatively easy to implement; and (d) enhanced other approaches districts, schools, and teachers may already be using to teach literacy. In addition, these particular practices have been written in school-improvement friendly language so that these goals can easily be included as resources to support school improvement plans.



Studies Supporting Interactive Read Aloud with Vocabulary Focus

Beck, I. L., & McKeown, M. G. (2007). Increasing young low-income children's oral vocabulary repertoires through rich and focused instruction. *The Elementary School Journal*, 107(3), 251-271.

Biemiller, A., & Boote, C. (2006). An effective method for building meaning vocabulary in primary grades. *Journal of Educational Psychology*, 98(1), 44.

Coyne, M. D., McCoach, D. B., & Kapp, S. (2007). Vocabulary intervention for kindergarten students: Comparing extended instruction to embedded instruction and incidental exposure. *Learning Disability Quarterly*, 30(2), 74-88.

Hargrave, A. C., & Sénéchal, M. (2000). A book reading intervention with preschool children who have limited vocabularies: The benefits of regular reading and dialogic reading. *Early Childhood Research Quarterly*, 15(1), 75-90.

Mol, S. E., Bus, A. G., & de Jong, M. T. (2009). Interactive book reading in early education: A tool to stimulate print knowledge as well as oral language. *Review of Educational Research*, 79(2), 979-1007.

Strachan, S. L. (under review). Kindergarten students' social studies and literacy learning from interactive read-alouds. *Journal of Social Studies Research*.

Whitehurst, G. J., Arnold, D. S., Epstein, J. N., Angell, A. L., Smith, M., & Fischel, J. E. (1994). A picture book reading intervention in day care and home for children from low-income families. *Developmental Psychology*, 30(5), 679.

Meta-analyses

Marulis, L. M., & Neuman, S. B. (2010). The effects of vocabulary intervention on young children's word learning: A meta-analysis. *Review of educational research*, 80(3), 300-335.

Marulis, L. M., & Neuman, S. B. (2013). How vocabulary interventions affect young children at risk: A meta-analytic review. *Journal of Research on Educational Effectiveness*, 6(3), 223-262.

Studies Supporting Interactive Writing

Craig, S. A. (2003). The effects of an adapted interactive writing intervention on kindergarten children's phonological awareness, spelling, and early reading development. *Reading Research Quarterly*, 38(4), 438-440.

Roth, K., & Guinee, K. (2011). Ten minutes a day: The impact of interactive writing instruction on first graders' independent writing. *Journal of Early Childhood Literacy*, 11, 331- 361.

Referenced as a strategy for use in teaching writing with younger students

Graham, S., Bollinger, A., Booth Olson, C., D'Aoust, C., MacArthur, C., McCutchen, D., & Olinghouse, N. (2012). *Teaching elementary school students to be effective writers: A practice guide* (NCEE 2012-

4058). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from: http://ies.ed.gov/ncee/wwc/publications_reviews.aspx#pubsearch. (Pages 6 – 39).

Studies Supporting Using Informational Text to Build Literacy and Content Knowledge

Anderson, E. (1998). *Motivational and cognitive influences on conceptual knowledge: The combination of science observation and interesting texts*. Unpublished doctoral dissertation, University of Maryland.

Baker, S. K., Santoro, L. E., Chard, D. J., Fien, H., Park, Y., & Otterstedt, J. (2013). An evaluation of an explicit read aloud intervention taught in whole-classroom formats in first grade. *Elementary School Journal, 113*, 331-358.

Cervetti, G. N., Barber, J., Dorph, R., Pearson, P. D., & Goldschmidt, P. (2012). The impact of an integrated approach to science and literacy in elementary school classrooms. *Journal of Research in Science Teaching, 49*(5), 631-658.

Guthrie, J.T., McRae, A., & Klauda, S.L. (2007). Contributions of concept-oriented reading instruction to knowledge about interventions for motivations in reading. *Educational Psychologist, 42*(4), 237–250.

Romance, N.R., & Vitale, M.R. (2001). Implementing an in-depth expanded science model in elementary schools: Multiyear findings, research issues, and policy implications. *International Journal of Science Education, 23*(4), 373–404.

Vitale, M. R., & Romance, N. R. (2011). Adaptation of a knowledge-based instructional intervention to accelerate student learning in science and early literacy in grades 1 and 2. *Journal of Curriculum and Instruction, 5*(2), 79-93.

Recommended as part of comprehension instruction K to 3

Shanahan, T., Callison, K., Carriere, C., Duke, N. K., Pearson, P. D., Schatschneider, C., & Torgesen, J. (2010). Improving reading comprehension in kindergarten through 3rd grade: A practice guide (NCEE 2010-4038). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from: whatworks.ed.gov/publications/practiceguides.

Supporting Early Mathematics Instructional Practices

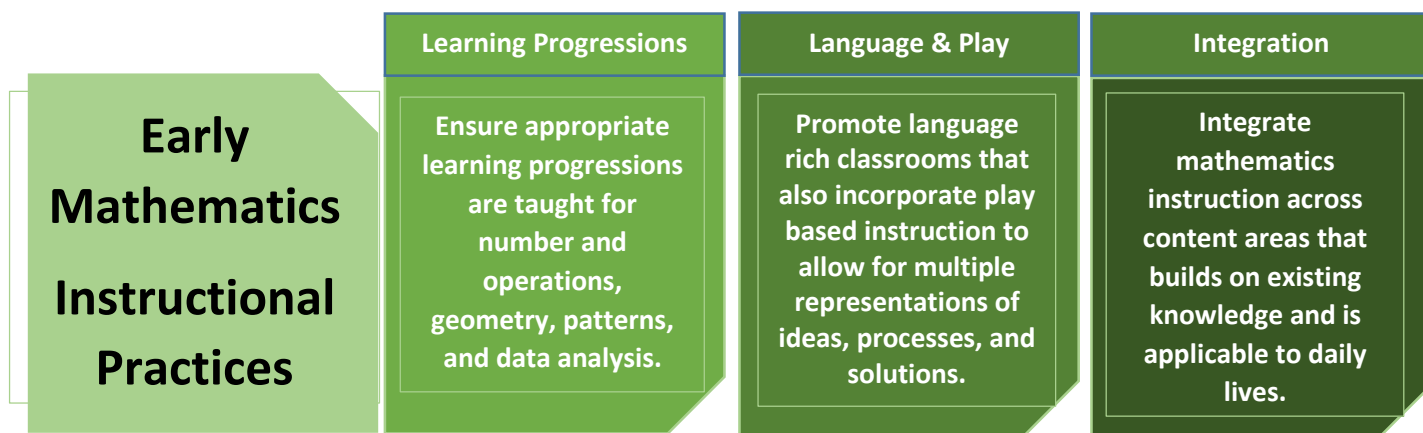
If classroom instruction is:

- [Intentional](#), aligned with standards, and designed to be student-centered and personalized (or relevant) to the needs of the students in the classroom,
- [Integrated](#) so that it brings relevance and rigor to the learning, allows students to connect ideas and transfer knowledge across content areas,
- Supported with [timely and focused interventions](#) when necessary, then student achievement and engagement in early literacy and mathematics will increase.

The state academic standards simply state the goals; designing and implementing instruction that support students in achieving these goals is a decision made by educators in local districts and classrooms. The Office of Education Improvement and Innovation has launched the Early Literacy and Mathematics Initiative to support educators with successful implementation of the state standards for English Language Arts and mathematics. Messaging and supports are designed to highlight six examples of instructional practices, three for early literacy and three for early mathematics.

Specific Mathematics Instructional Practices

There are many specific instructional practices that have been shown to be effective in raising the mathematics achievement of children in prekindergarten through third grade. We have chosen to highlight practices focused on learning-progressions, language-rich and play-based classrooms, and integration. Our criteria for selecting these three example practices were as follows: (a) supported by research (see below); (b) could be used in different parts of the school day (e.g., in science as well as during time set aside specifically for reading and writing instruction); (c) relatively easy to implement; and (d) enhanced other approaches districts, schools, and teachers may already be using to teach literacy. In addition, these particular example practices have been written in school-improvement friendly language so that these goals can easily be included as resources to support school improvement plans.



Studies Supporting Learning Progressions

Frye, D., Baroody, A., Burchinal, M., Carver, S., Jordan, N., & McDowell, J. *Teaching Math to Young Children*. (2013) U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, What Works Clearinghouse.

Clements, D. H. & Sarama, J. (2009). *Learning and teaching early math: The learning trajectories approach*. New York, NY: Routledge.

Clements, D., Baroody, A., & Sarama, J. (2014). *Background Research for the National Governor's Association (NGA) Project on Early Mathematics*. Retrieved from:
<http://www.nga.org/files/live/sites/NGA/files/pdf/2013/1311SEME-Background.pdf>

Studies Supporting Language-Rich Classrooms

National Association for the Education of Young Children. (2002). *Early Childhood Mathematics: Promoting Good Beginnings*. Retrieved from:
<https://www.naeyc.org/files/naeyc/file/positions/psmath.pdf>

Notari-Syverson, A. & Sadler, F. (2009). Math is for everyone: Strategies for supporting early mathematical competencies in young children. *Young Exceptional Children*, 11(3), 2 – 16.
doi:10.1177/1096250608314589.

Studies Supporting Integration

Frye, D., Baroody, A., Burchinal, M., Carver, S., Jordan, N., & McDowell, J. *Teaching Math to Young Children*. (2013) U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, What Works Clearinghouse.

National Association for the Education of Young Children. (2002). *Early Childhood Mathematics: Promoting Good Beginnings*. Retrieved from:
<https://www.naeyc.org/files/naeyc/file/positions/psmath.pdf>

Clements, D., Baroody, A., & Sarama, J. (2014). *Background Research for the National Governor's Association (NGA) Project on Early Mathematics*. Retrieved from:
<http://www.nga.org/files/live/sites/NGA/files/pdf/2013/1311SEME-Background.pdf>

Early Literacy and Mathematics (K-3) Instructional Practices

**Early
Literacy
Instructional
Practices**

**Incorporate
Informational
Text
throughout
the Day**

**Address
Foundational
Skills**

**Expand
Content
Knowledge and
Vocabulary
Acquisition**

**Early
Mathematics
Instructional
Practices**

**Ensure
Appropriate
Learning
Progressions**

**Promote
Language
Rich
Classrooms**

**Integrate
Mathematics
Instruction
across
Content Areas**