NGSS Chart with Common Core State Standards connections

2. Earth's Surface Systems: Processes that shape the Earth		
Students who demonstrate understanding can: **2-ESS2-1 Compare multiple solutions designed to slow or prevent wind and water from changing the shape of the land.** **2-ESS2-2 Develop a model to represent the shapes and kinds of land and bodies of water in an area.**		
The performance expectations above were developed using the following elements from *A Framework for K–12 Science Education* (NRC 2012):		
Science and Engineering Practices	**Disciplinary Core Ideas**	**Crosscutting Concepts**
Developing and Using Models Modeling in K–2 builds on prior experiences and progresses to include using, and developing models that represent concrete objects or design solutions. • Develop a model to represent patterns in the natural world. **Constructing Explanations and designing Solutions**. Constructing explanations and designing solutions in K–2	**ESS2.A: Earth Materials and Systems** • Wind and water can change the shape of the land. **ESS2.B: Plate Tectonics and Large-Scale System Interactions** • Maps show where things are located. One can map the shapes and kinds of land and water in any area. **ETS1.C Optimizing the Design Solution** • Because there is always	**Patterns** • Patterns in the natural world can be observed. **Stability and Change** • Some things stay the same while other things change.

builds on prior experiences and progresses to the use of evidence or ideas in constructing explanations and designing solutions. • Compare multiple solutions to a problem.	more than one solution to a problem, it is useful to compare designs, test them, and discuss their strengths and weaknesses.	

CCSS Connections for English Language Arts and Mathematics

SL.2.1 *Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and large groups.*

2MD.1 *Measure and estimate lengths in standard units: Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.*

Additional Resources by Group

Economically Disadvantaged Students

Calabrese Barton, A., E. Tan, and T. O'Neill, T. Forthcoming. Science education in urban contexts: New conceptual tools and stories of possibilities. In *Handbook of research in science education, eds.* S. K. Abell and N. G. Lederman. 2nd ed. Mahwah, NJ: Lawrence Erlbaum Associates.

González, N., L. C. Moll, and C. Amanti. 2005. *Funds of knowledge: Theorizing practices in households, communities, and classrooms*. Mahwah, NJ: L. Erlbaum Associates.

Krajcik, J. S., and P. Blumenfeld. 2006. Project-based learning. In *The Cambridge handbook of the learning sciences*, ed. R. K. Sawyer. New York: Cambridge.

Major Racial and Ethnic Groups

Anderson, C. 2010. Environmental literacy project. Michigan State University. *http://edr1.educ.msu.edu/EnvironmentalLit/publicsite/html/cc_tm_tools.html*

Ladson-Billings, G. 1995. Toward a theory of culturally relevant pedagogy. *American Educational Research Journal* 32 (3): 465–491.

Lee, O., and C.A. Buxton. 2010. *Diversity and equity in science education: Theory, research, and practice.* New York: Teachers College Press.

Students With Disabilities

Stancavage, F., F. Makris, and M. Rice. 2007. SD/LEP inclusions/exclusion in NAEP: An investigation of factors affecting SD/LEP inclusions/exclusions in NAEP. *www.air.org/publications/documents/NAEP_inclusion.pdf.*

English Language Learners

Fathman, A. K., and D. T. Crowther. 2006. Science for English language learners: K–12 classroom strategies. Arlington, VA: National Science Teachers Association.

Lee, O., H. Quinn, and G. Valdés. Forthcoming. Science and language for English language learners: Language demands and opportunities in relation to *Next Generation Science Standards*. *Educational Researcher.*

Rosebery, A. S., and B. Warren, eds. 2008. *Teaching science to English language learners: Building on students' strengths.* Arlington, VA: National Science Teachers Association.

Gender

Baker, D. 2013. What works: Using curriculum and pedagogy to increase girls' interest and participation in science and engineering. *Theory Into Practice* 52 (1): 14–20.

Milgram, D. 2011. How to recruit women and girls to the science, technology, engineering, and math (STEM) Classroom. *Technology and Engineering Teacher* 71 (3): 4–11.

Scantlebury, K., and D. Baker. 2007. Gender issues in science education research: Remembering where the difference lies. In *Handbook of research in science education, eds.* S. K. Abell and N. G. Lederman. 2nd ed. Mahwah, NJ: Lawrence Erlbaum Associates.

Students in Alternative Education

Almeida, C., C. Le, and A. Steinberg. 2010. *Reinventing alternative education: An assessment of current state policy and how to improve it.* Boston, MA: Jobs for the Future, Education for Economic Opportunity.

Hammond, C., D. Linton, J. Smink, and S. Drew. 2007. *Dropout risk factors and exemplary programs*. Clemson, SC: National Dropout Prevention Center, Communities in Schools, Inc.

Quinn, M. M., J. M. Poirier, S. E. Faller, R. A. Gable, and S. W Tonelson. 2006. *An examination of school climate in effective alternative programs*. *Preventing School Failure* 51 (1): 11–17.

Gifted and Talented Students

Renzulli, J. S. 2012. Reexamining the role of gifted education and talent development for the 21st century: A four-part theoretical approach**.** *Gifted Child Quarterly* 56 (3): 150–159.

Tomlinson, C. A. 2005. Quality curriculum and instruction for highly able students. *Theory into Practice* 44: 160–166.