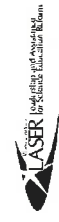


<p>www.nextgenscience.org/</p>  <p>NEXT GENERATION SCIENCE STANDARDS For States. By States.</p>	<p>www.k12.wa.us/CoreStandards</p>  <p>COMMON CORE STATE STANDARDS — WASHINGTON —</p>	<p>www.careertech.org/career-technical-education/cctc/info.html</p>  <p>Learning that works for America CTE CCTC Common Career Technical Core</p>	<p>www.d21.org/overview/skills-framework</p> <p>21st CENTURY SKILLS</p> 	
<p><i>Science and Engineering Practices</i></p> <p>S1. Asking questions (for science) and defining problems (for engineering)</p> <p>S2. Developing and using models</p> <p>S3. Planning and carrying out investigations</p> <p>S4. Analyzing and interpreting data</p> <p>S5. Using mathematics and computational thinking</p> <p>S6. Constructing explanations (for science) and designing solutions (for engineering)</p> <p>S7. Engaging in argument from evidence</p> <p>S8. Obtaining, evaluating, and communicating information</p>	<p><i>Mathematical Practices</i></p> <p>M1. Make sense of problems and persevere in solving them</p> <p>M2. Reason abstractly and quantitatively</p> <p>M3. Construct viable arguments and critique the reasoning of others</p> <p>M4. Model with mathematics</p> <p>M5. Use appropriate tools strategically</p> <p>M6. Attend to precision</p> <p>M7. Look for and make use of structure</p> <p>M8. Look for and express regularity in repeated reasoning</p>	<p><i>English Language Arts Practices</i></p> <p>E1. They demonstrate independence</p> <p>E2. They build strong content knowledge</p> <p>E3. They respond to the varying demands of audience, task, purpose, and discipline</p> <p>E4. They comprehend as well as critique</p> <p>E5. They value evidence</p> <p>E6. They use technology and digital media strategically and capably</p> <p>E7. They come to understand and other perspectives and cultures</p>	<p><i>Career Ready Practices</i></p> <ol style="list-style-type: none"> 1. Act as a responsible and contributing citizen and employee. 2. Apply appropriate academic and technical skills. 3. Attend to personal health and financial well being. 4. Communicate clearly, effectively and with reason. 5. Consider the environmental, social and economic impacts of decisions. 6. Demonstrate creativity and innovation. 7. Employ valid and reliable research strategies. 8. Utilize critical thinking to make sense of problems and persevere in solving them. 9. Model integrity, ethical leadership and effective management. 10. Plan education and career path aligned to personal goals. 11. Use technology to enhance productivity. 12. Work productively in teams while using cultural/global competence. 	<p><i>Skills</i></p> <ol style="list-style-type: none"> 1. Learning & Innovation Creativity and innovation Critical thinking and problem solving Communication and collaboration 2. Information, Media and Technology Information literacy Media literacy Information, communications and technology literacy 3. Life and Career Flexibility and adaptability Initiative and self-direction Social and cross-cultural skills Productivity and accountability Leadership and responsibility <p><i>Core Subjects and 21st Century Themes</i></p> <p>Global awareness Financial, economic, business and entrepreneurial literacy Civic literacy Health literacy Environmental literacy</p>



Washington State SCIENCE EALRS



Crosscutting Concepts and Abilities

Science is an active process that involves thinking in systems, asking and answering questions through *investigations*, and applying science and technology to solve real-world problems. As illustrated in the chart below, these crosscutting concepts and abilities increase in complexity, depth, and range as students mature from one grade band to the next.

Cross-cutting Science	EALR 1 Systems	EALR 2 Inquiry	EALR 3 Application
The Big Ideas of Science	...is a way of thinking that makes it possible to analyze and understand complex phenomena.	... is a process of asking and answering questions about the natural world that forms the bedrock of science.	...is about the interaction between science and technology, and how both can help solve real-world problems.
Grades 9-12	Predictability and Feedback Create realistic models with feedback loops, and recognize that all models are limited in their predictive power.	Conducting Analyses and Thinking Logically Expand and refine skills and abilities of inquiry to gain a deeper understanding of natural phenomena.	Science, Technology, and Society Transfer and apply abilities in science and technological design to develop solutions to societal issues.
Grades 6-8	Inputs, Outputs, Boundaries & Flows Look at a complex situation and see how it can be analyzed as a system with boundaries, inputs, outputs, and flows.	Questioning and Investigating Investigate an answerable question through valid experimental techniques. Conclusions are based on evidence and are repeatable.	Science, Technology, and Problem Solving Work with other members of a team to apply the full process of technological design and relevant science concepts to solving a problem.
Grades 4-5	Complex Systems Analyze a system in terms of subsystems functions as well as inputs and outputs.	Planning Investigations Plan different kinds of investigations, including field studies, systematic observations, models, and controlled experiments.	Different Technologies Define technologies and the technological design process to understand the use of technology in different cultures and career fields.
Grades 2-3	Role of Each Part in a System See how parts of objects, plants, and animals are connected and work together.	Conducting Investigations Carry out investigations by using instruments, observing, recording, and drawing evidence-based conclusions.	Solving Problems Develop a solution to a problem by using a simplified technological design process. Investigate the use of tools.
Grades K-1	Part-Whole Relationships Identify parts of living and non-living systems.	Making Observations Answer questions by explaining observations of the natural world.	Tools and Materials Use simple tools and materials to solve problems in creative ways.

Washington State STANDARDS FOR TECHNOLOGICAL LITERACY

Some selected Technology Standards in the catapult lesson:

- #2. Students will develop an understanding of the core concepts of technology.
- #3. Students will develop an understanding of the relationships among technologies and the connections between technology and other fields of study.
- #8. Students will develop an understanding of the attributes of design.
- #9. Students will develop and understanding of engineering design.
- #10. Students will develop an understanding of the role of troubleshooting, research and design, invention and innovation, and experimentation in problem solving.
- #11 Students will develop the abilities to apply the design process.
- #16. Students will develop an understanding of and be able to select and use energy and power technologies.