

Architects in Schools Standards Curriculum Guide Alignment with Common Core, NGSS and National Core Arts Standards



Topic/Lesson (In order of guide)	Subject	Practices	Performance Expectation, Disciplinary Core or type of standard	Crosscutting Concepts
How To Design a Functional Folder	Science	Constructing Explanations and Designing Solutions; Developing and Using Models	K-2 Engineering Design 3-5 Engineering Design	Structure and Function
Let's Think Out Loud	Science	Engaging in Argument from Evidence (practice use of talk moves)		
Let's Face It - The Eyes Are in the Middle!	Science	Developing and Using Models		
Now Let's Try It on a Building	Science	Developing and Using Models; Using Mathematics and Computational Thinking		

The Architecture Foundation of Oregon provides this information to benefit Architects in Schools participants with planning residencies that can address certain required education standards. AFO does not claim that the lessons listed will automatically meet standards, but will provide an aid for teachers to introduce and reinforce the concepts listed.

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SECTION 3 Visual Art Standards Addressed	Visual Art		<p>Anchor Standard 2: VA.2.CR1.4 Document, describe, and represent regional/state environments and histories.</p> <p>VA.2.CR1.5 Identify, describe and visually document objects of personal significance.</p> <p>Anchor Standard 5: VA.5.PR2.3 & VA.5.PR2.4 & VA.5.PR2.5 Identify and explain how and where different cultures record and illustrate stories and history of life.</p> <p>Anchor Standard 7: VA.7.CR1.5 Identify and analyze cultural associations suggested by visual imagery.</p> <p>Anchor Standard 11: VA.11.CO2.3 Through observation, interpret information about time, place and culture in which a work of art was created. Identify how artworks and ideas relate to everyday and cultural life and can influence values and perceptions.</p> <p>VA.11.CO2.4 Recognize that responses to art can change depending on knowledge of the time and place in which it was made, cultural influences and global perspectives.</p>	

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Architectural Periods and Styles	Science		<p>NGSS.ESS3.C Things that people do to live comfortably can affect the world around them.</p> <p>ESS3.A Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do.</p> <p>ETS1.B Developing Possible Solutions. Designs can be conveyed through sketches, drawings, and physical models. These representations are useful in communicating ideas for a problems's solutions to other people.</p>	<p>NGSS.K-ESS2-2</p> <p>Systems: Systems in the natural and desiged world have parts that work together</p> <p>Patterns: Patterns in the natural and human world designed world can be observed and used as evidence (K- LS1-1)</p> <p>Structure and Function: the shape and stability of structures of natural and designed objects are related to their function</p>
	Language Arts: Speaking and Listening		<p>CCSS.ELA-LITERACY.SL.3,4,5.1.A Come to discussions prepared, having read or studied required material. Explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.</p> <p>CCSS.ELA-LITERACY.SL.3,4,5.1.C Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.</p> <p>CCSS.ELA- LITERACY.SL.3,4,5.1.D Explain their own ideas and understanding in light of the discussion.</p>	

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SECTION 4 Visual Art Standards Addressed	Visual Art		<p>Anchor Standard 1: VA.1.CR1.4 Imagine and articulate numerous approaches for composition.</p> <p>VA.1.CR1.3 & VA.1.CR1.5 Generate ideas for an artwork based on cultural influences or social issues.</p> <p>VA.1.CR1.3 Apply knowledge of available resources, tools, and technologies to investigate one's own ideas. Constructively use and explore materials in creating a work of art or design to communicate an idea.</p> <p>Anchor Standard 2: VA.2.CR2.3 Demonstrate an understanding of the safe and proficient use of materials, tools and equipment. Individually or collaboratively construct representations, diagrams, or maps of places that are part of the students' everyday lives.</p> <p>VA.2.CR1.4 When making works of art, utilize and care for materials, tools and equipment in a manner that prevents danger to oneself and others.</p> <p>VA.2.CR1.5 Experiment and develop skills in multiple art-making techniques and approaches that reflect knowledge of form and structure. Demonstrate quality craftsmanship through care for and use of materials, tools and equipment. Identify, describe and visually document objects of personal significance.</p> <p>Anchor Standard 3: VA.3.CR3.3 Choose from experimental approaches and techniques to determine the most effective solution.</p>	

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SECTION 4 Visual Art Standards Addressed (continued)	Visual Art		<p>VA.3.CR3.4 Revise artwork in progress on the basis of insights gained through instructor feedback and peer discussion. Choose from among experimental approaches and techniques to determine the most effective solution. Utilize personal reflection and critical feedback to refine technical proficiency, intentionality, aesthetic judgement and expressive capability.</p> <p>VA.3.CR3.5 Refine and Adapt art works in consideration of audience, the context of the work with consideration to developing technical skills and organizational principles. Choose from among experimental approaches and techniques to determine the most effective solution. Utilize personal reflection and critical feedback to refine technical proficiency, intentionality, aesthetic judgement and expressive capability.</p> <p>Anchor Standard 10: VA.10.PCO1.5 Examine and apply internal and external resources to create meaningful artwork that reflects interests, knowledge, research and cultural understanding.</p> <p>Anchor Standard 7: VA.7.CR1.5 Identify and analyze cultural associations suggested by visual imagery.</p>	

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So You Thought Designing a Mask Would Be Simple?	Science	<p>Asking Questions and Defining Problems: Ask questions based on observations to find more information about the natural and or designed world; Developing and Using Models: Include using and developing models that represent concrete events or design solutions</p>	<p>NGSS.ETS1.A Defining and Delimiting Engineering Problems: asking questions, making observations, and gathering information are helpful in thinking about problems.</p> <p>ETS1.B Develop Possible Solutions</p> <p>ETS1.C Optimize the Design Solution: because there is always more than one possible solution to a problem, it is usefu to compare and test designs.</p>	
	Language Arts: Speaking and Listening		<p>CCSS.ELA-LITERACY.SL.3,4,5.1.A Come to discussions prepared, having read or studied required material. Explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.</p> <p>CCSS.ELA-LITERACY.SL.3,4,5.1.C Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.</p> <p>CCSS.ELA-LITERACY.SL.3,4,5.1.D Explain their own ideas and understanding in light of the discussion.</p>	

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What is Green Building and Sustainable Design?	Science	Asking Questions and Defining Problems: Ask questions based on observations to find more information about the natural and or designed world; Obtain, Evaluate, and Communicate Information; Constructing Explanations and Designing Solutions	<p>NGSS.PS3.B Conservation of Energy and Energy Transfer (sunlight warms Earth's surface).</p> <p>K-PS3-1 Make observations to determine the effect of sunlight on Earth's surface.</p> <p>K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive.</p> <p>K-ESS2-2 Construct and argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.</p> <p>ESS3.A Natural Resource</p> <p>ESS3. C Human Impacts on Earth Systems</p> <p>ETS1.B Developing Possible Solutions</p> <p>ETS1.A Defining and Delimiting and Engineering Problem</p> <p>4-ESS3- 1 Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.</p> <p>4-ESS3-2 Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.</p> <p>5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.</p>	<p>Cause and Effect: Events have causes that generate observable patterns</p> <p>Systems and Systems Models: Systems in the natural and designed world have parts that work together</p>
How Green is My School?	Science	Obtain, Evaluate, and Communicate Information		
Let's Get Out and See the World	Science	Developing and Using Models		
	Math		CCSS.MATH.CONTENT.5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	

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Drawing a Floor Plan of Things that Don't Move	Science	Models; Using Mathematical and Computational Thinking		
	Math		CCSS.MATH.CONTENT.5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	
Drawing a Floor Plan of Things that Move	Science	Models; Using Mathematical and Computational Thinking		
	Math		CCSS.MATH.CONTENT.5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	

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<p>Lighting With Natural Light/Making a Sundial</p>	<p>Science</p>	<p>Planning and Carrying Out Investigations; Constructing Explanations and Designing Solutions; Analyze and Interpret Data</p>	<p>NGSS.K-PS3-1 Make observations to determine the effect of sunlight on Earth's surface.</p> <p>K-PS3-2 Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.</p> <p>K-ESS3-3 Communicate solutions that will reduce the impact of humans on land, water, air, and or other living things in the local environment.</p> <p>1-PS4-4 Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.</p> <p>1-ESS1-1 Use observations of the sun, moon, and stars to describe patterns than can be predicted.</p> <p>1-ESS1-2 Make observations at different times of the year to relate the amount of daylight to the time of year.</p> <p>4-PS3-2 Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.</p> <p>5-ESS1 Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</p> <p>5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.</p>	<p>Cause and Effect: Events have causes that generate observable patterns</p> <p>Energy and Matter: Energy can be transferred in various ways and between objects</p>
<p>Lighting with Natural Light/Making a Sundial</p>	<p>Math</p>		<p>CCSS.MATH.CONTENT.5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.</p>	

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How It Feels To Be a Structure	Science		NGSS.PS2.A Forces and Motion: pushes and pulls can have different strengths and directions.	<p>Structure and Function: The shape and stability of structures of natural and designed objects are related to their function</p> <p>Cause and Effect: Simple tests can be designed to gather evidence to support or refute student ideas about causes</p>
Building a Geodesic Dome	Science	Asking Questions and Defining Problems; Constructing Explanations and Designing Solutions	<p>NGSS.3-5 ETSI-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.</p> <p>3-5-ETSI-1 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problems.</p> <p>3-5 ETSI-2 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.</p>	

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What Makes Structures Stand Up?	Science	Developing and Using Models; Using Mathematics and Computational Thinking	<p>NGSS.PS2.A Forces and Motion: Pushes and pulls can have different strengths and directions.</p>	<p>Structure and Function: The shape and stability of structures of natural and designed objects are related to their function</p>
All About Bridges	Science	Asking Questions and Defining Problems; Constructing Explanations and Designing Solutions	<p>NGSS.3-5 ETSI-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.</p> <p>3-5-ETSI-1 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problems.</p> <p>3-5 ETSI-2 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.</p> <p>3-5-ETSI-3 Plan and carry out fair test in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.</p>	
	Math		<p>CCSS.MATH.CONTENT.5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. All grades, not specifically stated, graphing of number of pennies used for each bridge.</p>	

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Building a Skyscraper	Science	Asking Questions and Defining Problems; Constructing Explanations and Designing Solutions; Developing and Using Models	<p>NGSS.3-5 ETSI-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.</p> <p>3-5-ETSI-1 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problems.</p> <p>3-5 ETSI-2 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.</p>	Scale, Proportion, Quantity Cause and Effect Patterns
	Math	Make Sense of a Problem and Persevere in Solving; Attend to Precision; Construct Viable Arguments and Critique the Reasoning of Others		Scale, Proportion, Quantity Cause and Effect Patterns
	Language Arts: Speaking and Listening		<p>CCSS.ELA-LITERACY.SL.3,4,5.1.A Come to discussions prepared, having read or studied required material. Explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.</p> <p>CCSS.ELA-LITERACY.SL.3,4,5.1.C Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.</p> <p>CCSS.ELA-LITERACY.SL.3,4,5.1.D Explain their own ideas and understanding in light of the discussion.</p>	

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<p>What Will Cities Look Like 25 Years From Now?</p>	<p>Science</p>	<p>Developing and Using Models; Using Mathematics and Computational Thinking</p>	<p>NGSS.3-5 ETSI-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.</p> <p>3-5-ETSI-1 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problems.</p> <p>3-5 ETSI-2 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.</p> <p>CCSS.ELA-LITERACY.SL.3,4,5.1.C Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.</p>	
<p>A Special Structure for a Special Client; A Special Structure for a Bug Client</p>	<p>Science</p>	<p>Asking Questions and Defining Problems; Constructing Explanations and Designing Solutions</p>	<p>NGSS.3-5 ETSI-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.</p> <p>3-5-ETSI-1 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problems.</p> <p>3-5 ETSI-2 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.</p>	<p>Influence of Engineering, Technology, and Science on Society and the Natural World: People's needs and wants change over time, as do their demands for new and improved technologies; engineers improve existing technologies or develop new ones to increase their benefits, decrease know risks, and meet societal demands.</p>

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<p>What Makes a Sustainable Place to Live?</p>	<p>Science</p>	<p>Asking Questions and Defining Problems: Ask questions based on observations to find more information about the natural and or designed world; Obtain, Evaluate, and Communicate Information; Constructing Explanations and Designing Solutions</p>	<p>NGSS.PS3.B Conservation of Energy and Energy Transfer (sunlight warms Earth's surface). K-PS3-1 Make observations to determine the effect of sunlight on Earth's surface. K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive. K-ESS2-2 Construct and argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. ESS3.A Natural Resource ESS3.C Human Impacts on Earth Systems ETS1.B Developing Possible Solutions ETS1.A Defining and Delimiting and Engineering Problem 4-ESS3-1 Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment. 4-ESS3-2 Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans. 5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.</p>	<p>Cause and Effect: Events have causes that generate observable patterns Systems and Systems Models: Systems in the natural and designed world have parts that work together</p>