

Curriculum Map Module 1: Art, Math, & Science of Kite Making And Flying

Essential Questions

- How does art, math, and science work together in kite making and flying?
- How are kites more than what meets the eye?
- What steps are involved in making a kite?

Learning Objectives – In this Module, students will:

1. Access previous knowledge and ask questions about how art, math, and science are involved in kite making and kite flying;
2. Interact with digital storytelling as a learning tool;
3. Interpret and gather details from media and text;
4. Synthesize and Visualize information in a table;
5. Research and contribute knowledge for a better understanding of kite making and flying;
6. Articulate the role of art, math and science in kite making and flying;
7. Collaborate and engage in a project based learning art activity;
8. Present, provide meaningful feedback on peers' creative work, and reflect.

Learning Outline

This module is organized around the Art Math & Science of Kite Making video presentation by Scott Hampton. It can be used as a whole learning experience, or in chosen sections as time allows:

- 40 minutes: Launch Activity–Pre-Viewing: Accessing Previous Knowledge: The Art, Math, and Science of Kite Making
- 25 minutes: While Viewing: Learning about the Art, Math, and Science of Kite Making & Kite Flying
- 30 minutes: Post-Viewing: Synthesizing and Visualizing: Turning Your KWL Chart Into A Kite Diagram
- 90+ minutes: Demonstration: Diving Deeper into the Art, Math & Science Of Kite Making and Kite Flying
- 120 minutes: Making Connections: Arts Integration Project–Mini Kite Making & Flying

Standards Targeted Throughout Curriculum(Expanded Version Below)

Module 1: Utah' Rivers At A Crossroads– Save Our Water!

Core Standards for Math (7-12):

Geometry (7.G.4–6; 8.G.6–8; G.CO.6–8;G.CO.12–13)

NGSS Science Standards (grades 7-12):

Reading for Literacy: Standards 1,2,7-9

Writing for Literacy: Standards 7,9

Strand 7.1 Forces are Interactions between Matter (*the content serves as a basis to further discuss forces involved in kite flying; the teachers would need to elaborate to satisfy this standard)

Physics: Strand 1: Forces and Interactions (*the content serves as a basis to further discuss forces involved in kite flying; the teachers would need to elaborate to satisfy this standard)

Core Standards for Social Studies (7-12):

World Geography (WG) Strand 3: Culture (WG3.3)

Core Standards for English Language Arts (7-12):

Reading Informational Text (RI 7.3-12.3)

Writing: (W7.7-12.7;7.9-12.9)

Speaking and Listening: (SL7.1-12.1; SL7.5-12.5)

National Arts Standards (Visual & Media Arts 7-12):

Creating: Anchor Strands (1-3)

Performing, Presenting, Producing: Anchor Strands (4-6)

Responding: Anchor Strands (7-9)

Connecting: Anchor Strands (10-11)

AASL National School Library Standards:

Shared Foundations Anchors:

Inquire

Include

Collaborate

Standards: Expanded

Core Standards for Math (7-12):

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume (Standards 7.G.4–6); Understand and apply the Pythagorean Theorem and its converse (Standards 8.G.6–8); Understand congruence in terms of rigid motions and their assumed properties can be used to establish the usual triangle congruence criteria, which can then be used to prove other theorems (Standards G.CO.6–8). Make geometric constructions (Standards G.CO.12–13).

NGSS Science Standards (grades 7-12):

Reading for Literacy: Standards 1,2, 7,9

Standard 1: Cite specific textual evidence to support analysis of science and technical texts.

Standard 2: Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

Standard 7: Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

Standard 9: Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

Writing for Literacy: Standards 1,2, 7,9

Standard 7: Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

Standard 9: Draw evidence from informational texts to support analysis, reflection, and research.

Strand 7.1 Forces are Interactions between Matter (*the content serves as a basis to further discuss forces involved in kite flying; the teachers would need to elaborate to satisfy this standard) Forces are push or pull interactions between two objects. Changes in motion, balance and stability, and transfers of energy are all facilitated by forces on matter. Forces, including electric, magnetic, and gravitational forces, can act on objects that are not in contact with each other. Scientists use data from many sources to examine the cause and effect relationships determined by different forces.

Physics: Strand 1: Forces and Interactions (*the content serves as a basis to further discuss forces involved in kite flying; the teachers would need to elaborate to satisfy this standard)

Uniform motion of an object is natural. Changes in motion are caused by a nonzero sum of forces. A “net force” causes an acceleration as predicted by Newton’s 2nd Law. Qualitative and quantitative analysis of position, velocity, and acceleration provide evidence of the effects of forces. Momentum is defined for a particular frame of reference; it is the product of the mass and the velocity of the object. In any system, total momentum is always conserved. If a system interacts with objects outside itself, the total momentum of the system can change; however, any such change is balanced by changes in the momentum of objects outside the system. The time over which these paired forces are exerted determines the impact force.

Core Standards for English Language Arts (7-12):

Speaking and Listening (SL):

SL7.1-12.1: Initiate and participate effectively in a range of collaborative discussions (one-to-one, in groups, and teacher-led) with diverse partners, building on others’ ideas and expressing their own clearly and persuasively.

SL7.5-12.5: Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.

National Arts Standards (Visual & Media Arts 7-12):

Creating: (Anchor Strands 1-3)

Anchor Strand 1: Generate and conceptualize artistic ideas and work.

Anchor Strand 2: Organize and develop artistic ideas and work.

Anchor Strand 3: Refine and complete artistic work.

Performing, Presenting, Producing: Anchor Strands (4-6)

Anchor Strand 4: Select, analyze and interpret artistic work for presentation.

Anchor Strand 5: Develop and refine artistic techniques and work for presentation.

Anchor Strand 6: Convey meaning through the presentation of artistic work.

Responding: Anchor Strands (7-9)

Anchor Strand 7: Perceive and analyze artistic work.

Anchor Strand 8: Interpret intent and meaning in artistic work.

Anchor Strand 9: Apply criteria to evaluate artistic work.

Connecting: Anchor Strands (10-11)

Anchor Strand 10: Synthesize and relate knowledge and personal experiences to make art.

Anchor Strand 11: Relate artistic ideas and works with societal, cultural and historical context to deepen understanding.

AASL National School Library Standards

Shared Foundations Anchors:

INQUIRE

Display curiosity and initiative by: Formulating questions about a personal interest or a curricular topic; Recalling prior and background knowledge as context for new meaning.

Engage with new knowledge by following a process that includes: Using evidence to investigate questions; Devising and implementing a plan to fill knowledge gaps; Generating products that illustrate learning.

Adapt, communicate, and exchange learning products with others in a cycle that includes: Interacting with content presented by others; Providing constructive feedback; Acting on feedback to improve; Sharing products with an authentic audience.

Participate in an ongoing inquiry-based process by: Continually seeking knowledge; Engaging in sustained inquiry; Enacting new understanding through real-world connections; Using reflection to guide informed decisions.

INCLUDE

Contribute a balanced perspective when participating in a learning community by: Articulating an awareness of the contributions of a range of learners; Adopting a discerning stance toward points of view and opinions; expressed in information resources and learning products; Describing their understanding of cultural relevancy and placement within the global learning community.

Adjust their awareness of the global learning community by: Interacting with learners who reflect a range of perspectives; Evaluating a variety of perspectives during learning activities; Representing diverse perspectives during learning activities.

Exhibit empathy with and tolerance for diverse ideas by: Engaging in informed conversation and active debate; Contributing to discussions in which multiple viewpoints on a topic are expressed.

Demonstrate empathy and equity in knowledge building within the global learning community by: Seeking interactions with a range of learners; Demonstrating interest in other perspectives during learning activities; Reflecting on their own place within the global learning community.

COLLABORATE

Identify collaborative opportunities by: Demonstrating their desire to broaden and deepen understandings; Developing new understandings through engagement in a learning group; Deciding to solve problems informed by group interaction.

Participate in personal, social, and intellectual networks by: Using a variety of communication tools and resources; Establishing connections with other learners to build on their own prior knowledge and create new knowledge.

Work productively with others to solve problems by: Soliciting and responding to feedback from others; Involving diverse perspectives in their own inquiry processes.

Actively participate with others in learning situations by: Actively contributing to group discussions;
Recognizing learning as a social responsibility.