California Educational Standards as they Correlate with *Kamome*

The book, *The Extraordinary Voyage of Kamome, A Tsunami Boat Comes Home*, by Dengler and Miller, can be used in the classroom to introduce and engage students at all grade levels to multicultural ideas, concepts of community, geography, art, reading, writing and speaking, mathematical concepts, science and engineering concepts, and to the essential practices of earthquake and tsunami safety and preparedness in California.

In California, the State Board of Education decides on the standards for all students, from kindergarten through high school. These are guided by national standards for each subject area and grade level. These standards outline specific topics, concepts and performance standards which build upon themselves as the students progress through each grade level. Note that the standards for each of the different subject areas have been developed and written at different times, and the Social Science Framework continues to be edited and formatted.

The Common Core standards (CCSS), which articulate with all subject areas, set requirements specifically for English Language Arts (ELA) and Mathematics in grades Kindergarten through Grade 12 (K-12). Students are expected to learn to read, write, speak, listen, and use language effectively in a variety of content areas. In addition, the CCSS are designed to develop College and Career Readiness (CCR) skills in reading, writing, speaking, listening, and language as well as in mathematics.

The Next Generation Science Standards (NGSS) outline science content standards in areas for K-12. The NGSS are arranged by grade level topic as well as by grade level disciplinary core idea. These standards outline connections with the CCSS. The three major elements of the NGSS are: scientific and engineering practices; crosscutting concepts that unify the study of science and engineering through their common application across fields; and core ideas in the major disciplines of natural science.

The History Social Science Framework (adopted by the State Board of Education in July 2016) outlines the social science concepts to be taught in grades K-12. This framework guides educators as they design, implement, and maintain a coherent course of study to teach content, develop inquiry-based critical thinking skills, improve reading comprehension and expository writing ability, and promote an engaged and knowledgeable citizenry in history and the related social sciences. The subject areas covered in this framework offer students the opportunity to learn about the world and their place in it, think critically, read, write, and communicate clearly.

Arts in the classroom are guided by the Visual and Performing Arts academic content standards for grades K-12. These standards are designed around five main themes. The themes are artistic perception, creative expression, historical and cultural context, aesthetic valuing and connections, relationships, and applications.

As educators share the book, *The Extraordinary Voyage of Kamome, A Tsunami Boat Comes Home*, with their students, along with the information and activities on the Kamome website (Humboldt.edu/kamome), they will build upon connections with California Educational Standards in English Language Arts, Mathematics, History and Social Science, Science and Engineering, and the Visual and Performing Arts . This book will guide educators and students in a meaningful way as they develop and build upon concepts of community and multiculturalism, science and engineering practices, while practicing their skills in listening, writing, reading, speaking, and doing.

Common Abbreviations

CCR	College and Career Ready
CCSS	Common Core State Standards
CCC	Cross Cutting Concept
DCI	Disciplinary Core Idea
ELL	English Language Learner
E	Energy (Topic Name)
ELA	English Language Arts
ED	Engineering Design (Topic Name)
ES	Earth's Systems (Topic Name)
ESS	Earth and Space Science
ETS	Engineering, Technology and Applications of Science
FI	Forces and Interactions (Topic Name)
HS	High School
IF	Interpreting Functions
IVT	Inheritance and Variety of Traits (Topic Name)
LS	Life Science
MD	Measurement and Data
MEOE	Matter and Energy in Organisms (Topic Name)
MP	Mathematical Practices
MS	Middle School
NBT	Numbers and Operations in Base Ten
OS	Operations and Algebraic Thinking
PS	Physical Science
Q	Quantities
RI	Reading Informational Text
RL	Reading Literature
RP	Ratios and Proportional Relationships
RST	Reading in Science and Technical Subjects
SEP	Science and Engineering Practices
SF	Structure and Function
SL	Speaking and Listening
SSE	Seeing Structure in Expressions
STEM	Science, Technology, Engineering and Mathematics
STS	Science, Technology and Society
W	Waves (Topic Name)
W	Writing (CCSS Connection)
WHST	Writing in History/ Social Sciences, Science and Technical Subjects
WER	Waves and Electromagnetic Radiation (Topic Name)

Links to the California Educational Standards sites

Visual and Performing arts:

http://www.cde.ca.gov/be/st/ss/vamain.asp

Common Core
http://www.cde.ca.gov/be/st/ss/

History and Social Science
http://www.cde.ca.gov/ci/hs/cf/sbedrafthssfw.asp
Appendix B of Framework: In the final version of the framework this appendix will contain the full text of the State Board of Education-adopted *History–Social Science Content Standards for California Public Schools,* as currently posted at http://www.cde.ca.gov/be/st/ss/index.asp

Science and Engineering
http://www.cde.ca.gov/pd/ca/sc/ngssstandards.asp

NGSS appendices
http://www.nextgenscience.org/get-to-know

The Extraordinary Voyage of Kamome. A Tsunami Boat Comes Home

Connections to the California Social Science Framework,
The Next Generation Science Standards for California,
The Common Core in English Language Arts and Mathematics for California,
And The Visual and Performing Arts for California

Big ideas and suggested general activity areas, which connect Kamome with California Standards are highlighted in orange and continue to be developed.

Kamome Concepts: Connections with other cultures, Earthquakes and Tsunamis, Natural Selection, Power of Water (Forces and Motion), Geography, Earthquake and Tsunami Safety and Preparedness, Visual and Performing Arts

Framework Standards	Standards for grades K-2
Social Science Framework Connections (K-2) Key Themes: Patterns of Population Worlds of Exchange Expressing Identity Science, Technology, and the Environment	K.1 Students understand that being a good citizen involves acting in certain ways. Students describe the rights and individual responsibilities of citizenship. *(Discuss tsunami heroes and heroines)* 1.2 Students compare and contrast the absolute and relative locations of places and people and describe the physical and/or human characteristics of places. K.3 Students match simple descriptions of work that people do and the names of related jobs at the school, in the local community, and from historical accounts. *(Compare jobs between people in Rikuzentaka and your own city or town.)* K.4 Students compare and contrast the locations of people, places, and environments and describe their characteristics. (2). Distinguish between land and water on maps and globes and locate general areas referenced in historical legends and stories. (3). Identify traffic symbols and map symbols (e.g., those for land, water, roads, cities). (4). Construct maps and models of neighborhoods, incorporating such structures as police and fire stations, airports, banks, hospitals, supermarkets, harbors, schools, homes, places of worship, and transportation lines. *(Create a map of your neighborhood. Label a map with California, the continents and the country of Japan)* 1.4 Students compare and contrast everyday life in different times and places around the world and recognize that some aspects of people, places, and things change over time while others stay the same. *(Compare the culture of people in Japan to those living in your area. Examine the illustrations in Kamome to learn about how people in Japan dress, work and live)* 2.2 Students demonstrate map skills by describing the absolute and relative locations of people, places, and environments. *(Create a map or model of your neighborhood, noting structures which may be similar to those people have in Rikuzentakata, Japan)* 2.5 Students understand the importance of individual action and character and explain how heroes from long ago and the recent past have made a difference in others' lives. *(Discuss tsunami heroes and heroines)* K.6 Students understand that history relates to events, people, and places of other times. *(Who are some heroes and heroines of tsunamis in the*

	21st century?)
NGSS Science and Engineering Connections (K-2) Developing and Using Models	Develop a model to represent patterns in the natural world (2-ESS2-2) *(Develop a model to represent the shapes and kinds of land and bodies of water in an area such as where you live and/or the area of Rikuzentakate, Japan))*
NGSS Disciplinary Core Ideas – Connections by Standards: (K-2) Structure, Function, and Information Processing Space Systems: Patterns and Cycles Waves: Light and Sound Ecosystems: Interactions, Energy, and Dynamics Earth's Systems: Processes that Shape the Earth Biological Evolution: Unity and Diversity Engineering Design	PS2.A Forces and Motion PS4-4 Influence of Engineering, Technology, and Science, on Society and the Natural World. *People depend on various technologies in their lives; human life would be very different without technology. *(California has strict building codes to provide for earthquake safety)* The History of Planet Earth ESS1.C Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1) *(Earthquakes, such as the large earthquake described in Kamome, happen very quickly, as the seismic waves move in a time frame of minutes, whereas tsunami waves continue for hours and tsunami debris travels for years.)* Plate Tectonics and Large-Scale Interactions Maps show where things are located. One can map the shapes and kinds of land and water in any area. *(Identify and outline features on a map, using different colors, including plate boundaries, continents, oceans. Make a key for your map listing each characteristic you identified with color. Review a map of the world and locate Japan and compare its location on the map to yours)* Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. (3-LS4-2) *(Those barnacles which were attached to Kamome had adaptations which allowed them to thrive as the boat traveled across the ocean)* ESS3.B: Natural Hazards A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (3-ESS3-1) *(Practice an earthquake drill as well as evacuation from a tsunami hazard zone)* LS2.C: Ecosystem Dynamics, Functioning, and Resilience When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. *(Examine the illustration of barnacles stuck to Kamome. Discuss how they might have survived during their travel across the ocean and what happened to them once the boat was beached)* LS4.B: Natural Selection *(Consider organisms that came over with Kamome boat)*

Cross Cutting Concepts (K-2) Stability and Change Cause and Effect	**Stability and Change**. Things may change slowly or rapidly. (2-ESS1-1),(2-ESS2-1) *(Earthquakes, such as the large earthquake described in Kamome, happen very quickly and can cause rapid change in the landscape, as the seismic waves move in a time scale of minutes, the tsunami waves continue for hours, and tsunami debris takes years to travel.)* **Cause and Effect.** Cause and effect relationships are routinely identified. (3-PS2-1) *(Tectonic plate movement causes earthquakes which we feel and can measure)* Interdependence of Science, Engineering, and Technology Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process (3-PS2-4) *(California has developed and engineered strict building codes to provide for earthquake safety)*
Common Core ELA and Mathematics Connections (K-2) Reading, Writing, Speaking and Literacy across all academic content standards	R1.2.1 Ask and answer such questions as who, what, where, when, why and how to demonstrate understanding of key details in a text. *(Oral discussion of events in Kamome)* W.2.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. *(Write about events in Kamome)* W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations) (2ESS1-1) *(Refer to information from Kamome as a component of a research and writing project)* W.2.8 Recall information from experience or gather information from provided sources to answer a question. *(Recall information presented in Kamome as well as from personal experience from an earthquake and/or tsunami event. Refer to Kamome book to answer the question, what do the Japanese characters drawn on the Kamome boat mean?)* SL.2.5 Create audio recordings of stories or poems; add drawings or other visual displays of stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings (2-ESS2-2) *(Create an audio recording of Kamome)*
Visual and Performing Arts (K-2) 1.0 Artistic Perception 2.0 Creative Expression 3.0 Historical and Cultural Context 4.0 Aesthetic Valuing	1.0 ARTISTIC PERCEPTION Students perceive and respond to works of art, objects in nature, events, and the environment. They also use the vocabulary of the visual arts to express their observations. 1.1 Recognize and describe simple patterns found in the environment and works of art. *(Describe the geometric patterns in an Origami boat you build. Recognize and identify Japanese characters seen in Kamome as their written language.)* 1.2 Name art materials (e.g., clay, paint, and crayons) introduced in lessons.

5.0 Connections, Relationships, Applications	*(Origami boat)* 1.5 Identify and describe elements of art in works of art, emphasizing line, color, shape/form, texture, space, and value. *(Describe the elements of art in the Kamome illustrations)* 2.1 Use lines, shapes/forms, and colors to make patterns. *(Draw the Japanese characters written on the Kamome boat, discussing the lines, forms and shapes used.)* 2.2 Demonstrate beginning skill in the use of tools and processes, such as the use of scissors, glue, and paper in creating a three-dimensional construction. *(Origami boat building)* 2.3 Make a collage with cut or torn paper shapes/forms. *(Make a collage from a scene illustrated in Kamome)* 2.3 Demonstrate beginning skill in the manipulation and use of sculptural materials (clay, paper, and paper maché) to create form and texture in works of art. *(Origami boat building)* 2.5 Create a representational sculpture based on people, animals, or buildings. *(Create a sculpture based on an illustration in Kamome or of a local coastal landscape)* 2.6 Use geometric shapes/forms (circle, triangle, square) in a work of art. *(Origami boat building)* 2.8 Create artwork based on observations of actual objects and everyday scenes. *(Create a sculpture based on an illustration in Kamome or of a local coastal landscape)* 3.1 Explain how artists use their work to share experiences or communicate ideas. *(Describe Origami, The Japanese art of paper folding, and how it can be used to communicate ideas)* 3.2 Recognize and use the vocabulary of art to describe art objects from various cultures and time periods. *(Origami is the Japanese Art of Paper Folding)* 3.3 View and then describe art from various cultures. *(Describe Origami, The Japanese art of paper folding)* 3.4 Identify art objects from various cultures (e.g., Japanese screen painting, Mexican tin art, African masks) and describe what they have in common and how they differ. *(Learn about Origami, The Japanese art of paper folding)* 4.1 Discuss their own works of art, using appropriate art vocabulary (e.g., color, shape/form, texture). *(Origami boat building)* 4.1 Compare ideas expressed through their own works of art with ideas expressed in the work of others. *(Create drawings of your own landscape and compare them with illustrations in Kamome)* 4.1 Discuss works of art created in

	the classroom, focusing on selected elements of art (e.g., shape/form, texture, line, color). *(Discuss collages, sculptures, maps and Origami made in response to ideas and illustrations presented in Kamome)* 4.2 Identify and describe various reasons for making art. *(How can art show a response to natural disaster events such as earthquakes and tsunamis?)* 4.3 Discuss how and why they made a specific work of art. *(discuss Origami boat building)*
Framework Standards	Standards For Grades 3-5
Social Science Framework Social Science Framework Connections (3-5) (3-5) Key Themes: Patterns of Population Worlds of Exchange Expressing Identity Science, Technology, and the Environment	3.1 Students describe the physical and human geography and use maps, tables, graphs, photographs, and charts to organize information about people, places, and environments in a spatial context. (1). Identify geographical features in their local region (e.g., deserts, mountains, valleys, hills, coastal areas, oceans, lakes). 3.4 Students understand the role of rules and laws in our daily lives and the basic structure of the U.S. government. (2.)Discuss the importance of public virtue and the role of citizens, including how to participate in a classroom, in the community, and in civic life. *(Discuss tsunami heroes and heroines)* 4.1 Students demonstrate an understanding of the physical and human geographic features that define places and regions in California. (1). Explain and use the coordinate grid system of latitude and longitude to determine the absolute locations of places in California and on Earth. *(Use latitude and longitude date of earthquake epicenters to plot their locations on a global map).* (4). Identify the locations of the Pacific Ocean, rivers, valleys, and mountain passes and explain their effects on the growth of towns. *(Use maps to identify the proximity of the Pacific Ocean to Japan and to California. How has this affected the size and growth of towns in these areas?)*
NGSS Science and Engineering Practices Asking Questions and Defining Problems	Asking Questions and Defining Problems: Ask questions that can be investigated based on patterns such as cause and effect relationships (3-PS2-3) *(Asking questions such as why do earthquakes happen in Japan and in California lend themselves to a study of a map of plate boundaries, the Ring of Fire and the location of Japan in relation to this boundary)* Define a simple problem that can be solved through the development of a new or improved object or tool (3-PS2-4) *(Identify a problem a large earthquake or tsunami creates and design a solution which could be new or an improvement on an exiting solution)* Science Knowledge is Based on Empirical Evidence *(Earthquake data)* Science findings are based on recognizing patterns *(Global and local patterns of earthquake locations)* Scientific Investigations Use a Variety of Methods

	Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. *(Design (draw and/or build) an earthquake safe structure. Design a tsunami warning system)* Identify the evidence that supports particular points in an explanation. (4-ESS1-1) *(Discuss the physical appearance of the Kamome boat, such as the barnacles attached to it, the Japanese characters written on it and how this can be part of the evidence of a large event (tsunami) in a far away place (Japan) and a long voyage of the boat over a great distance)* Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution. (4-ESS3-2) *(Design and evaluate several different earthquake safe structures)*
NGSS Disciplinary Core Ideas (3-5) Inheritance and Variation of Traits: Life Cycles and Traits Interdependent Relationships in Ecosystems Forces and Interactions Engineering Design Earth's Systems Earth and Human Activity Energy Waves and their Applications in Technologies for Information Transfer	PS2.A Forces and Motion Each force acts on one particular object and has both strength and a direction. (Earthquakes have magnitude 3-PS2-2.Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion. *(Observe a seismograph recording an earthquakes magnitude. A seismograph records a zig-zag trace that shows the varying amplitude of ground movements (oscillations) beneath the instrument. Review a seismogram. Use art to create a seismogram)* ESS1.C: The History of Planet Earth Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed. (4-ESS1-1) *(Visit a geologic site to examine patterns which indicate earthquake forces have altered the landscape over time)* ESS2.B: Plate Tectonics and Large-Scale System Interactions The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Major mountain chains form inside continents or near their edges. Maps can help locate the different land and water features areas of Earth. (4-ESS2-2) *(Study a map showing the patterns of earthquakes in California and Japan and discuss the resulting landforms in these areas. Build models of different types of plate boundaries and show how their movement creates different landforms)* ESS3.B: Natural Hazards A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts. (4-ESS3-2) *(Practice an earthquake drill and your tsunami evacuation route)*

	ETS1.B: Designing Solutions to Engineering Problems Testing a solution involves investigating how well it performs under a range of likely conditions. *(Design and build a structure and test it on a shake table. Compare your results to structure of different design and materials.)*
Cross Cutting Concepts: Patterns Cause and Effect Influence of Science, Engineering and Technology	Patterns of change can be used to make predictions (3-PS2-2) *(Review global as well as California earthquake locations, identify patterns and use these to make predictions)* Cause and effect relationships are routinely identified (3-PS2-1) *(Use Kamome to discuss plate boundaries and earthquake probabilities for Japan and California)* Cause and effect relationships are routinely identified, tested, and used to explain change (3-PS2-3) *(Use Kamome to discuss plate boundaries and earthquake probabilities for Japan and California)* Influence of Science, Engineering, and Technology on Society and the Natural World Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands (3-5-ETS1-2) *(Practice an earthquake drill and discuss why California has strict earthquake building standards)*
Common Core ELA and Mathematics Connections Reading, Writing, Speaking and Literacy across all academic content standards.	R1.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. *(Discuss the where, when, why and how of the Japan tsunami discussed in Kamome.)* R1.3.7 Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate an understanding of the tests (e.g., where, when, why and how key events occur) *(Refer to the map in Kamome to explain where the Japan earthquake occurred and where tsunami debris was observed)* R1.5.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (3-5-ETS1-2) *(Write a specific quote from Kamome, for example, the name Kamome given the boat and infer the significance of that name).* W3.8 Recall information from experience or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories (3-PS2-1, 3-PS2-2)*(Take notes on relevant information in Kamome and organize into categories.)* W.5.7 Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic (3-5-ETS1-1, 3-5-ETS1-3) *(Refer to relevant information in Kamome as one of your sources in a written report.)* W.5.8 Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work and provide a list of sources (3-5-ETS1-1, 3-5-ETS1-3) *(Take notes on relevant information in Kamome and organize into categorie.s Refer to relevant information in Kamome in a written report.)*

	MP.2 Reason abstractly and quantitatively (3-PS2-1) RI.5.1Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-ESS3-1) *(Write a specific quote from Kamome, for example, the name Kamome given the boat and infer the significance of that name).* RI.5.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. *(Research tsunami boats to answer questions about where, when, why, how a boat gets carried away by a tsunami)* (5-ESS2-1),(5-ESS2-2),(5-ESS3-1) RI.5.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-ESS3-1) *(Use information from Kamome along with several other sources on tsunami boats to write or speak on this topic)* W.5.8 Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (5ESS2-2),(5-ESS3-1)*(Use information from Kamome along with several other sources on tsunami boats to write on this topic)* W.5.9.a,b Draw evidence from literary or informational texts to support analysis, reflection, and research. (5-ESS3-1)*(Refer to Kamome in writing a reflection on the 2011 Japan tsunami.)* SL.5.5 Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5-ESS2-1),(5-ESS2-2) *(Incorporate multimedia into a presentation on a topic about earthquake and tsunami preparedness and safety)* MP.2 Reason abstractly and quantitatively. (5-ESS2-1),(5-ESS2-2),(5-ESS31) MP.4 Model with mathematics. (5-ESS2-1),(5-ESS2-2),(5-ESS3-1) *(Use the equation for speed to determine the speed a tsunami travels. Speed = distance/time. V=d/t)*
Visual and Performing Arts (grades 3-5) Standards: 1.0 Artistic Perception 2.0 Creative Expression 3.0 Historical and Cultural Context 4.0 Aesthetic Valuing	1.1 Identify and describe the principles of design in visual compositions, emphasizing unity and harmony. 1.5 Identify and describe elements of art in works of art, emphasizing line, color, shape/form, texture, space, and value. 2.3 Paint or draw a landscape, seascape, or cityscape that shows the illusion of space. *(Paint or draw a landscape similar to one in Kamome , showing the illusion of space)* 2.4 Create an expressive abstract composition based on real objects. *(Create an abstract based on the Kamome boat)* 2.6 Use perspective in an original work of art to create a real or imaginary scene. 2.7 Communicate values, opinions, or personal insights through an original

5.0 Connections, Relationships, Applications	work of art. 3.2 Identify and discuss the content of works of art in the past and present, focusing on the different cultures that have contributed to California's history and art heritage 3.4 Identify and describe objects of art from different parts of the world observed in visits to a museum or gallery. *(Describe Japanese objects of art in a local museum.)* 3.4 View selected works of art from a major culture and observe changes in materials and styles over a period of time. 3.5 Write about a work of art that reflects a student's own cultural background. 4.2 Identify and describe how a person's own cultural context influences individual responses to works of art. 4.2 Compare the different purposes of a specific culture for creating art. 4.3 Discuss how the subject and selection of media relate to the meaning or purpose of a work of art. 4.4 Assess their own works of art, using specific criteria, and describe what changes they would make for improvement. 4.4 Identify and describe how various cultures define and value art differently. 5.3 Construct diagrams, maps, graphs, timelines, and illustrations to communicate ideas or tell a story about a historical event. 5.4 Describe how artists (e.g., architects, book illustrators, muralists, industrial designers) have affected people's lives.
Framework Standards	Standards for grades 6-8
Social Science Framework Connections Key Themes: Patterns of Population Worlds of Exchange Expressing Identity Science, Technology, and the Environment	7.5 Students analyze the geographic, political, economic, religious, and social structures of the civilizations of Medieval Japan. *(Use Kamome as an introduction to present day Japan and lead into "The Orphan Tsunami of 1700" and a study of Medieval Japan)* 2. Discuss the reign of Prince Shotoku of Japan and the characteristics of Japanese society and family life during his reign. *(Read Kamome to a younger age group followed with research on Prince Shotoku. Compare and contrast characteristics of Medieval Japan and present day Japan).* 5. Detail advances made in literature, the arts, science, mathematics, cartography, engineering, and the understanding of human anatomy and astronomy. *(How have advances in these areas influenced earthquake and tsunami preparedness and safety)* 7.11 Students analyze political and economic change in the sixteenth, seventeenth, and eighteenth centuries (the Age of Exploration, the Enlightenment, and the Age of Reason). (2). Discuss the exchanges of plants, animals, technology, culture, and ideas among Europe, Africa, Asia, and the Americas in the fifteenth and sixteenth

	centuries and the major economic and social effects on each continent. *(How has the exchange of ideas between Japan and California changed over time? How would the interpretation of the discovery of Kamome be different in the past?)* 8.12 Students analyze the transformation of the American economy and the changing social and political conditions in the United States in response to the Industrial Revolution. (1). Trace patterns of agricultural and industrial development as they relate to climate, use of natural resources, markets, and trade and locate such development on a map. *(Discuss the proximity of the Pacific Ocean to Japan and to California and its influences on use of natural resources, trade and local development.)* Grade Six – World History and Geography: Ancient Civilizations Global Overview: Early Beginnings to 300 CE How did the environment influence human migration, ancient ways of life, and the development of societies? What were the early human ways of life and how did they change over time? (hunting and gathering, agriculture, civilizations, urban societies, states, and empires) How did societies interact with each other? How did connections between societies increase over time? *(Discuss connections made between Rikuzentakata and Crescent City and how current interactions differ from long ago)* Grade 7 Increasing human impact on the natural and physical environment, including the diffusion of plants, animals, and microorganisms to parts of the world where they had previously been unknown. *(Discuss how barcacles attached to Kamome could impact areas where they may not have been before.)* An increase in the interconnection and encounters between distant regions of the world. Expansion of long-distance sea-going trade, as well as commercial, technological, and cultural exchanges. *(Discuss connections made between Rikuzentakata and Crescent City)* Grade Eight – United States History and Geography: Growth and Conflict
NGSS Science and Engineering Obtaining, Evaluating, and Communicating Information Constructing Explanations and Designing Solutions Engaging in Argument from Evidence	Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used, and describe how they are supported or not supported by evidence. (MS-LS1-8) *(Research tsunami boats from multiple sources and carefully evaluate the validity of your findings)* Apply scientific ideas or principles to design, construct, and test a design of an object, tool, process or system. (MS-PS3-3) *(Design and construct an earthquake safe structure)* Construct, use, and present oral and written arguments supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon. (MS-PS3–5) Evaluate competing design solutions based on jointly developed and agreed-upon design criteria. (MS-ETS1-2)*(Design and construct earthquake safe structures which all follow specific design criteria)*

NGSS Disciplinary Core Ideas By Topic: Energy Engineering Design Matter and Energy in Organisms and Ecosystems Interdependent Relationships in Ecosystems History of Earth Earth's Systems Human Impacts Natural Selection and Adaptations Forces and Interactions	LS2.C: Ecosystem Dynamics, Functioning, and Resilience Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. (MS-LS2-4) *(How did the barnacles attached to Kamome effect the ecosystem to which they arrived (in Crescent City)? Are there any types of organisms that have gotten carried by tsunamis and introduced to ecosystems they have not been found in before? Describe how this could effect an ecosystem)* LS2.C: Ecosystem Dynamics, Functioning, and Resilience Biodiversity describes the variety of species found in Earth's terrestrial and oceanic ecosystems. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health. (MS-LS2-5) *(What do the barnacles on Kamome tells us about open ocean (pelagic) life forms?)* ESS1.C: The History of Planet Earth Tectonic processes continually generate new ocean sea floor at ridges and destroy old sea floor at trenches. (HS.ESS1.C GBE) (secondary to MS-ESS2-3) *(Review a map of plate boundaries and identify ridges and trenches, paying particular attention to those in the Pacific Ocean between Japan and California)* ESS2.A: Earth's Materials and Systems The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future. (MS-ESS2-2) *(Earthquakes, such as the large earthquake described in Kamome, happen very quickly, as the seismic waves move in a time frame of minutes, whereas tsunami waves continue for hours and tsunami debris travels for years.)* ESS2.B: Plate Tectonics and Large-Scale System Interactions Maps of ancient land and water patterns, based on investigations of rocks and fossils, make clear how Earth's plates have moved great distances, collided, and spread apart. (MS-ESS2-3) *(Analyzing rock and fossil patterns on the Earth's continents defines where the continents have been in the past, that they have moved over time and provides evidence for plate tectonics and the resulting earthquakes as the plates shift and move.)* ESS3.B: Natural Hazards Mapping the history of natural hazards in a region, combined with an understanding of related geologic forces can help forecast the locations and likelihoods of future events. (MS-ESS3-2) *(Mapping earthquake locations can help forecast the likelihood of earthquakes in a region. Epicenter data (latitude and longitude) is readily available online for students to use to plot on maps.)* ETS1.A: Defining and Delimiting Engineering Problems The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful.

	Specification of constraints includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions. (MS-ETS1-1) *(California has strict building codes based on seismic safety standards. Students could compare and contrast the seismic safety of different building materials and designs. They could also compare and contrast building codes in Japan with those of California.)* LS4.C: Adaptation Adaptation by natural selection acting over generations is one important process by which species change over time in response to changes in environmental conditions. Traits that support successful survival and reproduction in the new environment become more common; those that do not become less common. Thus, the distribution of traits in a population changes. (MS-LS4-6) *(Examine the illustration of barnacles stuck to Kamome. Discuss how they might have survived during their travel across the ocean and what happened to them once the boat was beached. Compare and contrast traits of these pelagic barnacles to those in other parts of the ocean.)* PS3.A: Definitions of Energy Motion energy is properly called kinetic energy; it is proportional to the mass of the moving object and grows with the square of its speed. (MS-PS3-1) *(Discuss the power of water. Tossing different sizes of filled water containers back and forth can give students a kinesthetic feel for the force applied by increasing amounts of water, as in a tsunami.)* PS3.C: Relationship Between Energy and Forces When two objects interact, each one exerts a force on the other that can cause energy to be transferred to or from the object. (MS-PS3-2) *(The Japan Tsunami was caused by an undersea earthquake that pushed massive amounts of energy through the water.)* PS4.A: Wave Properties A simple wave has a repeating pattern with a specific wavelength, frequency, and amplitude. (MS-PS4-1) A sound wave needs a medium through which it is transmitted. (MS-PS4-2) *(The P wave is the fastest kind of seismic wave and can move through solid rock and fluids. It pushes and pulls the rock it moves through just like sound waves push and pull the air.)*
Cross Cutting Concepts: Cause and Effect Scale, Proportion and Quantity Systems and System Models Connections to Engineering, Technology and Applications of	Cause and effect relationships may be used to predict phenomena in natural systems. (MS-LS1-8) *(Use Kamome to discuss plate boundaries and earthquake probabilities for Japan and California)* Phenomena that can be observed at one scale may not be observable at another scale. (MS-LS1-1) *(Earthquakes, such as the large earthquake described in Kamome, happen very quickly, as the seismic waves move in a time frame of minutes, whereas tsunami waves continue for hours and tsunami debris travels for years.)* Systems may interact with other systems; they may have sub-systems and be a part of larger complex systems. (MS-LS1-3) Engineering advances have led to important discoveries in virtually every field of science, and scientific discoveries have led to the development of

Science	entire industries and engineered systems. (MS-LS1-1) Proportional relationships (e.g., speed as the ratio of distance traveled to time taken) among different types of quantities provide information about the magnitude of properties and processes. (MS-PS3-4) Energy may take different forms (e.g., energy in fields, thermal energy, energy of motion). (MS-PS3–5) The transfer of energy can be tracked as energy flows through a designed or natural system. (MS-PS3-3) *(Record seismic waves following an earthquake)* The uses of technologies and limitations on their use are driven by people's needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions. Thus technology use varies from region to region and over time. (MS-ESS3-3) *(Explain where and why there are tsunami detection systems throughout the globe, in particular those with proximity to Japan and California)* Cause and effect relationships may be used to predict phenomena in natural or designed systems. (MS-LS2-1) Phenomena may have more than one cause, and some cause and effect relationships in systems can only be described using probability. (MS-LS4-5) *(Tsunamis may be caused by earthquakes, undersea volcanoes or landslides)* Small changes in one part of a system might cause large changes in another part. (MS-LS2-4, MS-LS2-5) *(Earthquakes can cause tsunamis of different sizes)* Patterns can be used to identify cause and effect relationships. (MS-LS2-2) *(Earthquakes occur along tectonic plate boundaries.)*
Common Core ELA and Mathematics Connections (6-8) Reading, Writing, Speaking and Literacy across all academic content standards	California Common Core State Standards Connections: RST.6–8.1 Cite specific textual evidence to support analysis of science and technical texts. (MS-LS1-3) *(Cite evidence presented in Kamome to support the Japan 2011 tsunami event)* RI.6.8 Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not. (MS-LS1-3) *(Evidence in Kamome book can be used to support the argument that earthquakes occur along plate boundaries)* WHST.6–8.1.a–e Write arguments focused on discipline-specific content. (MS-LS1-3) *(Use evidence presented in Kamome to support arguments on earthquake and tsunami locations)* WHST.6–8.7 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. (MS-LS1-1) *(Use evidence presented in Kamome to support arguments on earthquake and tsunami locations)*

	WHST.6–8.8 Gather relevant information from multiple print and digital sources (primary and secondary), using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. CA (MS-LS1-8) *(Use evidence presented in Kamome to support arguments on earthquake and tsunami locations)* SL.8.5 Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. (MS-LS1-2) *(Use evidence presented in Kamome to support arguments on earthquake and tsunami locations)* MP.2 Reason abstractly and quantitatively. (MS-PS3-4),(MS-PS3–5) 6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. (MS-ESS3-3) *(use the equation (v=d/t) speed = distance/time to determine the speed a tsunami travels)* WHST.6–8.2.a–f Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes. (MS-LS1-6) WHST.6–8.9 Draw evidence from informational texts to support analysis, reflection, and research. (MS-LS1-6),(MS-LS2-4) *(research tsunami warning systems)* SL.8.1.a–d Engage effectively in a range of collaborative discussions (one-on one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly. (MS-LS2-2) SL.8.4 Present claims and findings (e.g., argument, narrative, response to literature presentations), emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.) *(research the locations and effectiveness of tsunami warning systems on public safety)* (a) Plan and present a narrative that: establishes a context and point of view, presents a logical sequence, uses narrative techniques (e.g., dialogue, pacing, description, sensory language), uses a variety of transitions, and provides a conclusion that reflects the experience. CA (MS-LS2-2) *(Create a presentation on Kamome, using narrative techniques)* MP.4 Model with mathematics. (MS-LS2-5)) *(use the equation (v=d/t) speed = distance/time to determine the speed a tsunami travels)* 7.EE.4.a,b Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. (MS-ESS3-1) *(use the*

	equation (v=d/t) *speed = distance/time to determine the speed a seismic wave, a tsunami, and ocean currents (debris) travels)*
Visual and Performing Arts (6-8) 1.0 Artistic Perception 2.0 Creative Expression 3.0 Historical and Cultural Context 4.0 Aesthetic Valuing 5.0 Connections, Relationships, Applications	1.1 Identify and describe all the elements of art found in selected works of art (e.g., color, shape/form, line, texture, space, value). (Describe elements of art in Kamome illustrations) 1.2 Discuss works of art as to theme, genre, style, idea, and differences in media. 1.2 Identify and describe scale (proportion) as applied to two-dimensional and three-dimensional works of art. *(Evaluate the scale of an Origami boat and compare it to an illustration of Kamome)* 1.4 Describe how balance is effectively used in a work of art (e.g., symmetrical, asymmetrical, radial). 2.1 Develop increasing skill in the use of at least three different media. 2.5 Select a medium to use to communicate a theme in a series of works of art. 2.7 Design a work of public art appropriate to and reflecting a location. 3.2 Compare and contrast works of art from various periods, styles, and cultures and explain how those works reflect the society in which they were made. 3.2 Compare, contrast, and analyze styles of art from a variety of times and places in Western and non-Western cultures. 3.3 Compare, in oral or written form, representative images or designs from at least two selected cultures. 3.4 Discuss the contributions of various immigrant cultures to the art of a particular society. 4.1 Define their own points of view and investigate the effects on their interpretation of art from cultures other than their own. 4.2 Identify and describe ways in which their culture is being reflected in current works of art. 5.3 Create artwork containing visual metaphors that express the traditions and myths of selected cultures.
Grade Level	9-12
Social Science Framework Connections Key Theme 1: Patterns of Population Key Theme 3: Worlds of Exchange Key Theme 5: Expressing Identity	Chronological and Spatial Thinking 3. Students use a variety of maps and documents to interpret human movement, including major patterns of domestic and international migration, changing environmental preferences and settlement patterns, the frictions that develop between population groups, and the diffusion of ideas, technological innovations, and goods. 4. Students relate current events to the physical and human characteristics of places and regions. Historical Research, Evidence, and Point of View 1. Students distinguish valid arguments from fallacious arguments in historical interpretations. 2. Students identify bias and prejudice in historical interpretations. 4. Students construct and test hypotheses; collect, evaluate, and employ information from multiple primary and secondary sources; and apply it in

	oral and written presentations. 10.3 Students analyze the effects of the Industrial Revolution in England, France, Germany, Japan, and the United States. 2. Examine how scientific and technological changes and new forms of energy brought about massive social, economic, and cultural change 5. Understand the connections among natural resources, entrepreneurship, labor, and capital in an industrial economy. 10.11 Students analyze the integration of countries into the world economy and the information, technological, and communications revolutions. *(What countries have tsunami warning systems? Are they in all the areas they could be for human safety?)* 11.7 Students analyze America's participation in World War II. (1). Examine the origins of American involvement in the war, with an emphasis on the events that precipitated the attack on Pearl Harbor. *(Compare our relationship with Japan to that prior to Pearl Harbor. Would we be sharing our discovery of Kamome at that time in history?)* 5. Discuss the constitutional issues and impact of events on the U.S. home front, including the internment of Japanese Americans. *(How did the internment of Japanese Americans affect our current relationship with places like Rikuzentakate, Japan?)* 7. Discuss the decision to drop atomic bombs and the consequences of the decision (Hiroshima and Nagasaki). *(Compare our relationship with Japan to that prior to Pearl Harbor. How would we react to the discovery of Kamome in California at that time in history?)* 12.3 Students evaluate and take and defend positions on what the fundamental values and principles of civil society are (i.e., the autonomous sphere of voluntary personal, social, and economic relations that are not part of government), their interdependence, and the meaning and importance of those values and principles for a free society. (1). Explain how civil society provides opportunities for individuals to associate for social, cultural, religious, economic, and political purposes. *(Discuss how the sharing of the Kamome boat found in Crescent City with Rikuzentakate, Japan is an act that is valued in a civil society.)* 12.8 Students evaluate and take and defend positions on the influence of the media on American political life. (3). Explain how public officials use the media to communicate with the citizenry and to shape public opinion. *(Does the manner in which a tsunami event and the travel of tsunami debris to another part of the world shape public opinion about tsunamis? How does media coverage of potentially contaminated debris from a tsunami affect how local governments react to the potential threat of this debris? About different cultures?)*
NGSS Science And Engineering	Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with

Practices Constructin Explanations and Designing Solutions Engaging in Argument from Evidence	scientific ideas, principles, and theories. *(Design, build and test several earthquake safe structures)* Apply scientific reasoning to link evidence to the claims to assess the extent to which the reasoning and data support the explanation or conclusion. (HS-ESS1-6) *(Analyze global earthquake data and correlate it to plate boundaries)* Use evidence behind currently accepted explanations or solutions to determine the merits of arguments. (HS-ESS1-5) *(Analyze global earthquake data to support locations of plate boundaries)*
NGSS Disciplinary Core Ideas: Earth Materials and Systems Plate Tectonics and Large-Scale Interactions	Earth's systems, being dynamic and interacting, cause feedback effects that can increase or decrease the original changes. (HS-ESS2-1) Plate tectonics is the unifying theory that explains the past and current movements of the rocks at Earth's surface and provides a framework for understanding its geologic history. (ESS2.B Grade 8 GBE) (secondary to HS-ESS1-5),(HS-ESS2-1) *(Analyze global earthquake data to support locations of plate boundaries)* Plate movements are responsible for most continental and ocean-floor features and for the distribution of most rocks and minerals within Earth's crust. (ESS2.B Grade 8 GBE) (HS-ESS2-1)
Cross Cutting Concepts: Energy and Matter Structure and Function Stability and Change	The total amount of energy and matter in closed systems is conserved. (HS-ESS2-6) Energy drives the cycling of matter within and between systems. (HS-ESS2-3) The functions and properties of natural and designed objects and systems can be inferred from their overall structure, the way their components are shaped and used, and the molecular substructures of its various materials. (HS-ESS2-5) Much of science deals with constructing explanations of how things change and how they remain stable. (HS-ESS2-7) Feedback (negative or positive) can stabilize or destabilize a system.
Common Core ELA and Mathematics Connections Reading, Writing, Speaking and Literacy across all academic content standards	RST.11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. (HS-LS1-1) WHST.9–12.2.a–e Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes. (HS-LS1-1) WHST.9–12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. (HS-LS1-3) WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to

	maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation. (HS-LS1-3) WHST.9–12.9 Draw evidence from informational texts to support analysis, reflection, and research. (HS-LS1-1) WHST.9–12.2.a–e Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes. (HS-LS1-6),(HS-LS2-3) WHST.9–12.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (HS-LS1-6),(HS LS2-3) WHST.9–12.9 Draw evidence from informational texts to support analysis, reflection, and research. (HS-LS1-6) MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics. (HS-LS2-4)) *(use the equation (v=d/t) speed = distance/time to determine the speed a tsunami travels)* N-Q.A.1-3 Reason quantitatively and use units to solve problems.★ (HS-LS2-4) *(use the equation (v=d/t) speed = distance/time to determine the speed a tsunami travels)* WHST.9–12.1.a–e Write arguments focused on discipline-specific content. (HS-LS3-2) WHST.9–12.2.a–e Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes. (HS-LS2-1),(HS-LS2-2) N-Q.1-3 Reason quantitatively and use units to solve problems) *(use the equation (v=d/t) speed = distance/time to determine the speed a tsunami travels)* SL.11-12.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest. (HS-LS1-2)*(students can share Kamome with elementary students and supplement the reading of the book with a a digital presentation including textual, graphical, audio, visual and/or interactive elements)*
Visual and Performing Arts (9-12) 1.0 Artistic Perception 2.0 Creative Expression 3.0 Historical and Cultural Context	1.5 Analyze the material used by a given artist and describe how its use influences the meaning of the work. *(Japanese art of paper folding, Origami)* 3.1 Identify similarities and differences in the purposes of art created in selected cultures. 3.3 Identify and describe trends in the visual arts and discuss how the issues of time, place, and cultural influence are reflected in selected works of art.

4.0 Aesthetic Valuing 5.0 Connections, Relationships, Applications	4.1 Articulate how personal beliefs, cultural traditions, and current social, economic, and political contexts influence the interpretation of the meaning or message in a work of art. 5.2 Create a work of art that communicates a cross-cultural or universal theme taken from literature or history. *(Create artwork which follows tsunami debris from one country to another. Create artwork comparing earthquake and tsunami preparedness in various cultures.)*