Overview of Lessons 1-5 for the country of Russia
For Grade 3

Teacher will administer a **pre-assessment** in STAAR format, prior to beginning the lessons.

In **lesson 1**, students will receive a basic introduction of Russia's location and geographic characteristics. With the teacher's guidance using various websites, students will learn basic facts with the emphasis on climate and landforms. Students will use a QR reader to access information on the Internet from their tablets/ipad in order to complete a travel brochure. Teacher will model and guide students on the use of QR code readers.

In **lesson 2**, using the *Jigsaw Cooperative Learning technique*, students will be introduced to the culture of Russia. Expert Groups will be assigned a cultural aspect to research. These aspects will include Russian food, space exploration, arts/ crafts, musical instruments, architecture, and traditional clothing. Students will become experts in an assigned cultural aspect by researching the topic and creating a poster. Students will present their information in their Jigsaw Groups.

Musical Concert - During this time, students will be exposed to a musical performance provided by Musical Bridges. Students will get the full experience of the Russian culture through instrumental sounds and people in traditional clothing.

In **lesson 3**, students will watch a YouTube video about sound and will be guided in a discussion about how sound is produced. Students will investigate sound energy through the exploration of sound boxes and how they produce sound vibrations. Students will draw conclusions about how changes in the structure of the boxes affect pitch and volume. Students will complete a Semantic Feature Analysis Chart. The lesson will conclude with a vocabulary match activity.

In **lesson 4**, Students will continue to explore how sound is produced by learning about different types of instruments. They will classify instrument cards into wind, string, percussion, and other groups to understand the characteristics of each

instrument. Students will also become familiar with three dimensional shapes by categorizing the instruments based on their shape. Students will view a PowerPoint and take notes on a four-tab flip book. The teacher will lead a discussion of how the characteristics affect frequency, pitch and volume. At the end of the lesson, students will reflect what kind of reusable materials can be used to create their own instrument.

In **lesson 5**, students will be introduced to the Engineering Design Process (EDP), and will have the opportunity to begin their plan for creating their own instruments. Students will use the EDP sheet to guide them in the design and planning of their instrument. These instruments will be created using a variety of reusable materials provided by the teacher. The focus will be to design the instrument and to include area measurements.

Teaching timeline

Lesson 1- Geography of Russia:
Climate, Location, and Landforms of Earth's Largest Country
Lesson time: 60 minutes

Objectives:

The student will:

- Locate Russia on a globe and on a map
- Compare and differentiate the location and climate of USA to Russia

- Identify geographical facts of Russia using internet resources provided by the teacher
- Identify the basic structure and services of Russia's government
- Complete a country travel brochure which will include facts about the country's:
    - capital
    - population
    - currency
    - language
    - type of government
    - continent
    - flag
    - landforms

Materials

brochure template
projector
computer
pencils
crayons
globe
world map
tablets/iPads
brochure
vocabulary cards

Internet resources

National Geographic
Time for Kids
A to Z Kids Stuff

National Geographic QR code

Vocabulary

geography
climate
location
Russia
Eurasia
currency: ruble
government: federation
capital: Moscow
population
coastline
mountains
marshes
steppes
forest: taigas

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Science

3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations. The student is expected to:
(C) construct maps, graphic organizers, simple tables, charts, and bar graphs using tools and current technology to organize, examine, and evaluate measured data;

3.7 Earth and space. The student knows that Earth consists of natural resources and its surface is constantly changing. The student is expected to:

(C) identify and compare different landforms, including mountains, hills, valleys, and plains;

3.8 Earth and space. The student knows there are recognizable patterns in the natural world and among objects in the sky. The student is expected to:
(A) observe, measure, record, and compare day-to-day weather changes in different locations at the same time that include air temperature, wind direction, and precipitation;

3.5 Geography.
The student understands the concepts of location, distance, and direction on maps and globes. The student is expected to:
(A) use cardinal and intermediate directions to locate places on maps and globes such as the Rocky Mountains, the Mississippi River, and Austin, Texas, in relation to the local community;

3.17 Social Studies skills/Research.
The student applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including electronic technology. The student is expected to:
(A) research information, including historical and current events, and geographic data, about the community and world, using a variety of valid print, oral, visual, and Internet resources;
(E) interpret and create visuals, including graphs, charts, tables, timelines, illustrations, and maps; and

3.9 Government. The student understands the basic structure and functions of various levels of government. The student is expected to:
(A) describe the basic structure of government in the local community, state, and nation;
(C) identify services commonly provided by local, state, and national governments; and

Guided Lesson

1. Teacher will introduce the lesson by using a globe per group and a world map to locate Russia.
2. Once the groups have located Russia on their group globe, students will locate United States of America and compare distances. They will also discuss in their groups the geographic characteristics between the two countries. After students share, the teacher will lead a whole class discussion.
   Guided questions: What bodies of water are in between Russia and United States of America? What other states or countries do you see? Do you see mountains, lakes, or rivers in these countries? How do they look alike and how are they different? Which country is bigger? How can you tell? Which route would be shorter or longer? Which direction would you go to reach Russia from the United States?

Independent Activity:

3. After the class discussion, the teacher will hand out travel brochure and guide the students through each section using the QR codes assigned. Each QR code is linked to National Geographic Kids. QR code posters will be placed at each group table.
4. Teacher will model how to use the QR codes using their QR readers on iPad/ Tablet. Students will complete the brochure with a partner or a group.
5. Teacher will end the lesson by having students recall interesting facts that they learned from their brochures.

Lesson 2- Culture of Russia:
Celebrating the Contributions of Science History
Lesson time: 60 minutes

Objectives:

The student will:

- Define the meaning of culture
- Recognize various aspects of the Russian Culture with emphasis on the contributions of science history
- Investigate an aspect of Russian culture using listed websites
- Construct and Organize information on a poster for the following topics: Russian food, space exploration, arts/crafts, musical instruments, architecture, and traditional clothing
- Report findings to the class by sharing completed poster

Materials:

matryoshka dolls
poster board
markers

crayons
color pencils
Russian national symbols cards for grouping
iPads/Tablets
chart paper
model poster
vocabulary cards
student grouping cards for Jigsaw Activity
paper Matryoshka

Internet Resources:

Russian powerpoint: Powerpoint
musical instruments website
information about Russia website

Vocabulary:

culture
food
satellite
Sputnik
tradition
ballet
balalaika- instrument
matryoshka doll
architecture
sarafan- clothing
cathedrals- buildings
borscht- soup

TEKS: Texas Essential Knowledge and Skills

Science

3.3 The student knows that information, critical thinking, scientific problem solving, and the contributions of scientists are used in making decisions. The student is expected to:
(D) grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists.

3.17 Social Studies skills/Research.
The student applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including electronic technology. The student is expected to:

(A) research information, including historical and current events, and geographic data, about the community and world, using a variety of valid print, oral, visual, and Internet resources;
(E) interpret and create visuals, including graphs, charts, tables, timelines, illustrations, and maps; and

Culture

3.15 The student understands the importance of writers and artists to the cultural heritage of communities. The student is expected to:
(A) identify various individual writers and artists such as Kadir Nelson, Tomie dePaola, and Phillis Wheatley and their stories, poems, statues, and paintings and other examples of cultural heritage from various communities; and
(B) explain the significance of various individual writers and artists such as Carmen Lomas Garza, Laura Ingalls Wilder, and Bill Martin Jr. and their stories, poems, statues, and paintings and other examples of cultural heritage to various communities.

Guided Lesson- (10 minutes)

1. Teacher will introduce the lesson by displaying Russian arts and crafts items (matryoshka dolls) and the powerpoint. Creating a word web on chart paper, the teacher will introduce the concept of culture by brainstorming with the students. The students will share words that come to mind when they hear the word "culture". The word culture will be defined and written on the word web chart, and displayed in the classroom. The teacher will inform the students that they will each be creating a poster and that they will present their posters in Jigsaw Groups. The teacher will then model a poster presentation, and give the students details about what to include in the poster.

Independent Group Activity- (30 minutes)

2. Students will be placed in *Jigsaw Cooperative Learning Groups* to complete this activity. Jigsaw groups provide a way for students to collaborate and become experts in a topic. In this learning strategy, students generally begin with their jigsaw groups and then get reorganized into expert groups. However this lesson will begin in their expert groups before they get reorganized into Jigsaw Groups (see attached webpage).
3. First, expert groups will be created using the *National Symbols of Russia* cards. Students will be grouped by matching symbols (for example, all Russian bears together; all birch trees together, etc.). Every group will be assigned a different topic. The topics include:

- food
- Russian science: space exploration, inventions

- art/crafts
- musical instruments
- architecture
- traditional clothing

** up to 4 students for each expert group

4. Each expert group will appoint a **group leader**, which will be in charge of keeping the group focused. Students will research their topic, create posters, and practice presenting their topic in this group. Posters will include 4 aspects of the topic. Each aspect will be labeled and a description will be written in no more than two to three sentences. Posters will also need to be colored for a more attractive presentation.

   Once posters are created, students will each practice presenting their poster with the goal of ensuring that what they are saying is understood and is helping others learn.

Jigsaw Group Presentations: (20 minutes)

5. Finally, expert groups, will be re-organized into jigsaw groups by numbers. Each student's number can be found on the corner of their national symbols card.

   Once students have settled in their jigsaw groups, they will present their information. Each presentation should not exceed 3 minutes. Once jigsaw groups have concluded their presentations, students can share one fact that interested them the most about Russia's culture.

   **up to 6 students in each jigsaw group

Extension Activity- Teacher will send this activity home with the students or students may work on it when project is complete.

Students will make Paper Matryoshka dolls from template provided by the Teacher.

Musical Concert: sponsored by Musical Bridges
Performance by: The Flying Balalaika Brothers

Students will be able to observe and reflect on a live performance of a Russian band.
Students will:

- gain an appreciation of culturally diverse music
- exhibit proper audience etiquette
- recall and evaluate traditional Russian instruments and clothing

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Music
3.6 Response/evaluation. The student responds to and evaluates music and musical performance. The student is expected to:

(A) define basic criteria for evaluating musical performances; and

(B) exhibit audience etiquette during live performances.

Lesson 3: Did You Hear That?
Investigating Sound Vibrations through Different Structures
Lesson Time: 60 minutes

Objectives:
The student will:

- Describe how sound is produced and how it travels.
- Explore the pitch, vibrations, and frequency of sound boxes by manipulating the structure of the instruments, and making comparisons to the ways in which those structures and their sizes affect the sounds being produced.
- Recall and label words: sound pitch vibrations and frequencies

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Science

3.6 Force, motion, and energy. The student knows that forces cause change and that energy exists in many forms. The student is expected to:
(A) explore different forms of energy, including mechanical, light, sound, and heat/thermal in everyday life;

Materials:
projector
chart paper
computer
downloaded Youtube video of sound
boxes of various sizes
rubber bands of various sizes
vocabulary sheet
scissors
glue
construction paper
vocabulary cards

Internet Resources:
sound video
sound box chart

Vocabulary:
sound
energy
vibrations
frequency
volume
loud
soft
pitch
high
low
eardrum

Introduction:
Teacher will use a musical instrument to activate prior knowledge and elicit what students know about sound.
Guided Questions: What is sound? How did this sound get from the instrument to your ears? What are some other sounds that you have heard? What are some ways that these sounds can be grouped?

Guided Lesson

1. Teacher will introduce 5 vocabulary words: sound, vibrations, pitch, frequency and volume by displaying them on the board. She will explain that they will watch a short video about how sound is produced. The students will focus on these 5 vocabulary words and will also be able to share the meanings in their own words after the video is completed.
2. Students will watch the video *How Is Sound Produced* which is about 15 minutes long.

Independent Activity:

3. In groups students will operate and explore sound boxes. They will make inferences about the pitch and frequency of sounds. They will also compare the structural characteristics of the boxes to the sounds being produced. They will complete a Semantic Feature Analysis which will help them see the relationship between the two and master the concepts of sound, vibration, pitch and frequency.
4. The lesson will conclude with the teacher giving one vocabulary word to each group and the students in the group will discuss and agree upon a definition for their vocabulary word. One group member from each group will share the definition with the class.

Lesson 4: A Closer Look at Traditional Russian Instruments: Exploring the Properties

Lesson Time: 75 minutes

Objectives:

Students will:

- Review sound and how it is produced
- Categorize Russian instrument cards based on structures and materials they are made of
- Investigate the characteristics of each instrumental group
- Identify reusable materials

TEKS: Texas Essential Knowledge and Skills

Science

3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations. The student is expected to:

(A) plan and implement descriptive investigations, including asking and answering questions, making inferences, and selecting and using equipment or technology needed, to solve a specific problem in the natural world;

(F) communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion.

3.5 The student knows that matter has measurable physical properties and those properties determine how matter is classified, changed, and used.

3.6 Force, motion, and energy. The student knows that forces cause change and that energy exists in many forms. The student is expected to:

(A) explore different forms of energy, including mechanical, light, sound, and heat/thermal in everyday life;

Music

3.1 Perception. The student describes and analyzes musical sound and demonstrates musical artistry. The student is expected to:

(A) categorize a variety of musical sounds, including children's and adults' voices; woodwind, brass, string, percussion, keyboard, and electronic instruments; and instruments from various cultures;

Math

3.6 Geometry and measurement. The student applies mathematical process standards to analyze attributes of two-dimensional geometric figures to develop generalizations about their properties. The student is expected to:

(A) classify and sort two- and three-dimensional figures, including cones, cylinders, spheres, triangular and rectangular prisms, and cubes, based on attributes using formal geometric language;

Materials:
instrument sorting cards for categorizing activity
instruments sorting labels
instrument power point
Four Tab Book
scissors
pencils
Engineering Design Process planning sheet
EDP Poster
vocabulary cards
review vocabulary partner match
review vocabulary definition partner match
Four Tab Book

Internet Resources:
instrument sorting cards
instrument Powerpoint
instrument sorting labels

Vocabulary:
sound
string instrument
wind instrument
percussion instrument
balalaika
kuvikly
kalyuka
buben
garmon
Engineering Design Process (EDP)

Introduction: 20 minutes
1. Students will begin the lesson by participating in an activity that will require them to recall vocabulary words learned in the previous lesson 3. Each student will be given a vocabulary word card (blue) **or** a definition card (green) and will pair up together with the person who has the definition that matches their

vocabulary word. This pair will continue to work together for the remainder of the lesson.

2. Teacher will show students a balalaika and an acoustic guitar and ask students to compare the instruments. In pairs, students will work together to complete another activity in which they will sort pictures of Russian musical instruments into the categories of *String, Wind, Percussion and Other*. This activity requires students to analyze and draw conclusions about the structure of the instruments and how it produces sound. The students will decide if they grouped the instruments into the correct category by viewing the first slide in the powerpoint. The teacher will allow students to sort the instruments into other categories, such as color, texture, size and shape. Teacher will show the slide of 3D shapes and will ask students to sort their cards by 3d shapes. After discussion, the teacher will ask students to put away the cards back into their bags.

Guided Lesson: 20 minutes

3. Teacher will show students the instrument powerpoint. As the teacher reviews the powerpoint students will complete a **four tab book** in which they will investigate and write down the characteristics of the instruments with the teacher's guidance. The teacher can ask the following questions for each category as student write notes.

Guidance Questions: How do these instruments work? What are they made of? What common characteristics does this group have?

4. After the four tab book guided activity. The teacher will inform the students that they will be designing their own instruments out of reusable materials. Now that students are familiar with various characteristics of the structures of instruments and how various elements of sound are produced, students will begin to think about creating instruments from reusable materials. The teacher and students will discuss what a reusable material is and what materials can be used to create an instrument. **Teacher will notate student responses on an anchor chart.** This chart will be used for the introduction of lesson 5.

Lesson 5: Creative Engineers: Making an Instrument

Lesson Time: 75 minutes

Objectives:

Students will:

- Identify the steps in the Engineering Design Process
- Design a musical instrument using reusable materials
- Create a musical instrument using the EDP plan
- Calculate the total perimeter of their instrument, sketch and label the measurements
- Reflect on the design of their final product

TEKS: Texas Essential Knowledge and Skills:

Science

3.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following school and home safety procedures and environmentally appropriate practices. The student is expected to:
(B) make informed choices in the use and conservation of natural resources by recycling or reusing materials such as paper, aluminum cans, and plastics.

(2) Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations. The student is expected to:
(A) plan and implement descriptive investigations, including asking and answering questions, making inferences, and selecting and using equipment or technology needed, to solve a specific problem in the natural world;
(B) collect data by observing and measuring using the metric system and recognize differences between observed and measured data;

Math

3.7 Geometry and measurement. The student applies mathematical process standards to select appropriate units, strategies, and tools to solve problems involving customary and metric measurement. The student is expected to:
(B) determine the perimeter of a polygon or a missing length when given perimeter and remaining side lengths in problems;

Materials:

EDP sheet

white construction paper (8x11) for instrument perimeter activity

Reusable materials such as: boxes of all sizes, rubberbands, bags, plastic bottles and jugs, different-sized plastic lids/caps, cardboard paper rolls, straws, deflated balloons, containers of all sizes, etc..

crayons
markers
scissors
tape
glue
rulers

Internet Resources:

Engineer Design Process

Vocabulary:

engineer
Engineer Design Process- EDP
constraints
ask
imagine
plan
create
improve

Introduction: 10 minutes

The teacher will have a whole group discussion to get the students familiar with the Engineering Design Process. The teacher will begin by asking students what an engineer does. **What is an engineer? What role did the engineer have when creating a specific instrument?** The teacher will display a poster of the Engineering Design Process and will briefly explain the steps.

The engineering design process helps engineers and other problem solvers come up with a creative solution to their problems. This process can be used interchangeably, which means, you don't have to follow the steps in numerical order. An engineer may need to revisit a step more than once or may skip a step and come back to it at a later time.

Phase 1- Designing the Instrument: 15 minutes

Students will reconvene in their partners from the previous lesson 4. Teacher will hand out the EDP sheet. Students will complete numbers 1-3, discussing how they will design their instrument. When students have completed Phase 1 of the EDP sheet, they will gather their materials from the Materials Table.

Phase 2- Creating the Instrument: 20 minutes

During this time students will create their instruments. The teacher will walk around monitoring and observing the creating process.

Instrument Perimeter Activity: 15 minutes

To begin this activity, the teacher will guide students in finding the perimeter of an instrument, as well as the diameter and height for instruments that are cylindrical. On construction paper, students will draw a diagram of their instrument and label

the instrument with their measurements. Students will calculate the perimeter. In cases where instruments are cylindrical, students will label the diameter and height of the instrument. Students' instruments will be displayed around the room. Students will conclude the lesson with a Gallery Walk to view the various creations of instruments.