# Tooling Around Arizona: Reading Arizona Maps

A lesson for students to become acquainted with Arizona cities while learning map skills.

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<td>4-5</td>
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<tr>
<td>Duration</td>
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## National Geography Standards
**ELEMENT ONE:**
THE WORLD IN SPATIAL TERMS
1. How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.

## Arizona Geography Standards
**ESSENTIALS. 3SS-E1**
Demonstrate understanding of the physical and human features that define places and regions in Arizona, including the use of geographic tools to collect, analyze, and interpret data, with emphasis on:

- PO 2 Explaining and using map titles, symbols, scale, cardinal and intermediate directions, and elevation on maps of Arizona.

## Arizona Language Arts Standards
**READING STANDARDS: ESSENTIALS**
R-E2 Use reading strategies, such as making inferences and predictions, summarizing, paraphrasing, differentiating fact from opinion, drawing conclusions, and determining the author’s purpose and perspective to comprehend written selections.

- PO 4 Compare and contrast the text.
- PO 7 Make an inference using contextual clues.

**WRITING STANDARDS: ESSENTIALS**
W-E1 Use correct spelling, punctuation, capitalization, grammar and usage, along with varied sentence structures and paragraph organization, to complete effectively a variety of writing tasks.

- PO 1 Spell correctly.
- PO 2 Punctuate correctly.
- PO 3 Apply rules of capitalization.
- PO 4 Apply standard grammar and usage.

W-E6 Write formal communications, such as a personal or business letter, message, directions, and applications in an appropriate format and for a specific audience and purpose.

- PO2 Organize ideas in a meaningful sequence using transitional words or phrases.
- PO3 Express ideas that are clear and directly related to the topic.
Overview

Maps provide us with information about the land around us—including our neighborhood, city, state, country, and world. Maps have a special language all their own. Map language includes numbers, names, and symbols. These names, numbers, and symbols all represent real things that are usually too big to put on a piece of paper.

Purpose

This lesson will provide practice for students in using maps to measure distance and direction through the use of Arizona maps.

Materials

- AZ Cities with Latitude and Longitude map (no compass rose)
- AZ Cities with Compass Rose map
- AZ Topography map
- Landform Regions of AZ map
- World Map and U.S. Map (for extensions)
- Determining Directions Worksheet and key
- Measuring Distance Worksheet and key
- Elevation Worksheet and key
- Sample Venn Diagram
- Possible Brainstorm List
- Tooling Assessment
- Tooling Assessment Answer Sheet

Books: (OPTIONAL TO PROVIDE BACKGROUND INFORMATION FOR STUDENTS RELATED TO MAPS)
- Me on the Map by Joan Sweeney
- Maps and Globes by Harriet Barton
- Maps and Mapping by Barbara Taylor

Objectives

The student will explain and use map titles, symbols, scales, cardinal and intermediate directions, and elevation using maps of Arizona.

Procedures

SESSION ONE

Hold up several kinds of maps. Tell students that these are all maps. If possible, show students a map of their home country. Point to different regions on the map and say the names out loud slowly: e.g title, compass rose, bodies if water etc. Cover up the map and ask the students to try and recreate the map as best they can. Use simple sentence structure. This will initiate the students to brainstorm ideas and knowledge that they already know about mapping. Building on previous knowledge is a vital part of a successful ESL program.

2. If possible, put the ESL students with a language buddy who can help to translate important vocabulary, this will allow for comprehensible input. As a whole class, share information from students' brainstorm sheets. Wherever possible, use visuals to show the information from the brainstorm sheets. Let the ESL students show the maps of their home country and name some of the characteristics on these maps. Show where each of these countries is situated in relation to USA. Being a home-country expert will allow ESL students to build on what they already know and also boost their confidence. Organize the information using any type of graphic organizer. Subtitles of organizer could include Kinds of Maps, Purposes of Maps, and Map Vocabulary. Use pictures to demonstrate the meaning of these words.

3. Based on students' knowledge, determine appropriate activity to continue lesson. If class has a common knowledge base, you are ready to continue with activities using maps. If class lacks adequate prior knowledge, begin by reading and discussing one of the suggested books. Also, have several types of maps on the board so that the students can visually see the ideas being discussed. It is important to teach within context. Use overhead to illustrate each concept. Reinforce understanding by asking student to come forward and point to mapping concepts. Example, “Where is the North. Can you see a river?” Use gestures or pictures so that the student knows what you want (comprehensible input.)

SESSION TWO

4. Hand out AZ Cities map (with compass rose added if your students need it), Landform Regions of AZ map, and AZ Topography map. Show the students how all these maps represent Arizona. Indicate how each map has a different title, (adding information to consolidate understanding.) Direct students to find the Salt River. Write on board, “Salt River. Where is it?” Draw a picture of a river. (Do not tell students which map to use.)

5. Give students a few minutes to look at the maps. Then hold up the three maps, or use the overhead to show the three maps together. Point to each map as you ask,” Is this the best map to
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show the Salt River?" (Use gestures for comprehensible input) Pose the question, "Which map would you use to help you find the Salt River? Why?"

6. Make sure the students have the words: Topography, Landforms, Rivers, Latitude and Longitude in their graphic organizer. To demonstrate Topography: place several objects of different heights on a table covered with blue paper. Demonstrate how the table represents the sea. Get the students to measure the different objects. Tell students that different elevations are shown on a topography map. Show a picture of several well-known mountains (Everest etc) and indicate the elevation of the mountains. (Direct modeling gives a better insight into the context.) Show how the legend on the Topography maps indicates elevation. Check for understanding by pointing to a specific area on the map and ask the student to use the legend to find out the elevation. Landforms: Show pictures of various landforms (mountains, rivers, valleys.) Draw a large circle with the word “Landforms” written inside and use arrows leading away from the circle which point to different kinds of landforms. (Mindmapping is an excellent tool for ESL students.) Rivers: Show a picture of a river. Longitude and Latitude: Show the students a globe and indicate the measures of longitude and latitude. Refer back to the map and point to the different cities. Ask, “Where are these cities?” Show how we can get an exact location of a city by using the longitude and latitude numbers.

7. Hold up the three maps and say to a student, “Look at the Topography Map and show me where the Gila River is.” If the student has not understood, indicate where the title of the map is. (Use gestures for comprehension.)

8. On the overhead or board make three columns representing each map. Hold up each map and ask students to indicate what he/she can see on that map. Write a list of these suggestions in the corresponding column. Use a colored marker to draw connecting lines to common features on each map. In each column circle red any item that doesn’t have a corresponding “partner” in another column. Active student participation and direct modeling will help with comprehension.

9. Put the students into small groups. Let the students work together to make a Venn Diagram. Point to the board and show how the three columns that they have just completed will help them with the Venn Diagram. Working in small groups provides a discourse rich environment and allows the students to collaborate with their peers.

10. Show the students a globe and say, “Maps are drawings that show all the earth (make a big circle with arms) or any part of it (use hands to show a small gesture.) Hold up a map and ask a student, “Where is the title?” If he/she doesn’t understand, show the front cover of a book and point to the “Title.” Making inferences will help with comprehension. Reinforce understanding by asking students to respond to the different maps when prompted to do so.

11. Look at the three maps. Hold up the Arizona cities map. Ask, “Is this a good map to find a river?” Hold up the landform map, ask, “Is this a good map to find elevation.” Use gestures so that the students follow the conversation. If the students don’t understand a word, have them use their graphic organizer. This will become their “Bible.”

12. Refer to one of the above books to demonstrate symbols and how they represent features on a map. Look at each map and study the symbols and meanings.

13. Point to the scale on each map. Use Total Physical Response (T.P.R.) to demonstrate scale. This keeps instruction concrete. Have the students count the number of steps it takes to cross the width of the classroom. Write the number of steps on the board. Then write 1” = 1 step. Represent this with a scale. Have another student measure the length of the room with his steps. Draw a simple diagram of the classroom to scale. Ask each student to take out a ruler and measure the scales on the three maps. Write what their responses on the board: e.g. 1” = 100km

15. Use the Measuring Distance worksheet to practice measuring distances between two cities in Arizona. Let the students work with a partner if he needs the extra support. This creates a low-anxiety environment.

16. Say, “A compass rose shows the directions on a map. Sometimes it includes only cardinal directions. Sometimes it also includes intermediate directions.” Discuss cardinal and intermediate directions. If necessary, use T.P.R. to demonstrate this concept. Take students outside during the middle of the day, and have them look at their shadows. Show the students a compass and tell them that their shadows point North at around noon. Confirm this by looking at the compass. Go
back inside and label the walls of the class North, South, East and West. Draw a Compass Rose on the board which also shows intermediate directions. Add this word to their vocabulary list in their organizer if they haven’t already done so.

17. Look at Arizona’s Cities, with Latitude and Longitude map with added compass rose, and determine what kind of directions the compass rose shows. If your students are more advanced, give them the Arizona Cities map without the compass rose.

SESSION THREE
18. Use Determining Directions Worksheet to practice determining direction on map when going from one city in Arizona to another. Let the students work with a language buddy or in a small group.

19. Say, “Elevation is the measurement of the altitude of the land in relation to sea level. Look at the “Arizona Topography map.” Let the student refer to his graphic organizer to remind him of elevation. Discuss the key that shows the different elevations in Arizona. (This concept was already demonstrated above.) If you feel that the student has understood this concept let him ask him questions to demonstrate his understanding to the rest of the class. Active participation and ownership over learning promotes self-confidence.

20. Use the Elevation Worksheet to practice recognizing elevations in Arizona. Let the students work with a language buddy or in a small group.

21. Administer the multiple-choice assessment following completion of the above activities. This worksheet has been “visually” adapted for ESL students.

22. After reviewing worksheets with students, provide an opportunity for them to work with a language buddy and let them write directions/questions for other classmates to follow and complete using AZ maps. Have students use their completed worksheets as a sample for writing directions for other students to follow. Once students have written directions, have them trade and complete.

Demonstrate the various characteristics of maps.

Assessment

A multiple-choice assessment will be administered to students once the concepts/activities have been introduced and practiced. Mastery will be considered 80% or higher on each worksheet. Reading skills can be assessed informally using the graphic organizer. Student directions written for other students can be assessed using the simplified Six Traits Rubric using the traits of conventions and organization. Mastery will be considered a score of 4 or higher.

Extensions

Provide students with additional maps including United States and world maps and complete the same activities above.

Sources
