

Introduction

About the lessons

Mapping Our World Using ArcGIS Online is a collection of computer activities, data, and resources that can serve as a valuable supplement to topics you are already teaching in world geography, social studies, environmental science or Earth science. Students will investigate global patterns of human and physical features, explore issues of concern to millions of people, analyze data from diverse regions, and develop skills essential for understanding a world characterized by vast quantities of raw information. Best of all, it will be fun!

These materials can be utilized with either a Public ArcGIS Online account or an Organization subscription. Mapping Our World uses the very same tools as those used by professionals around the world, and businesses of all kinds.

Where to begin

We recommend you do the following before using these lessons in class:

1. Finish reading this section and skim through the student and teacher materials.
2. Locate the lessons, answer sheets, answer keys, worksheets, handouts, assessments, and rubrics. Some reside in the Teacher Materials and some reside in the Student Materials.
3. Test to be sure the ArcGIS Online site is not blocked by your school or district filters
4. Work through module 1 by yourself.
5. Work through module 1 with your students. The lesson in this module introduces students to the concept of GIS, basic ArcGIS Online skills, and the steps of the geographic inquiry process.

Modules

After module 1, you and your students are free to explore modules 2 to 7 in any order you wish. You can teach each module or lesson independently of the others, and you can tailor the material to suit the specific needs of your class and curriculum. Most modules consist of two lessons: a global perspective and a regional investigation.

How the materials are organized

These materials contain teacher materials for each lesson, including the following:

- A lesson overview with a summary, materials list, time it will take to complete the lesson, learning objectives, a list of the main GIS tools and functions encountered in the activity, and key curriculum standards covered.

- Notes about teaching the lesson, including a “no-tech” activity to introduce lesson, tips on conducting the GIS activity, and how to conclude the lesson and give the optional assessment. Ideas for extending the lesson are listed as well.
- A list of the lesson components to be printed or copied for students (or used from the student workbooks).
- Assessment rubrics (see “Rubric-based assessments” below).
- Answer keys for the student answer sheets and any supplemental worksheets.

The accompanying student materials contain the activity sheets, answer sheets, and supplements that students will need to do the lessons. Use the best print or digital methods that work for your student situation (e.g. photocopy, iPad, laptop or desktop computer dissemination).

Rubric-based assessments

The lessons encourage students to explore a variety of geographic and Earth science concepts and topics. A single letter or number grade won't be an accurate representation of the depth or completeness of their understanding of all concepts they've dealt with. The rubrics included with each lesson will allow you to evaluate student performance in a number of different ways. A learner may show mastery of one particular concept but perform another task at the introductory level. The rubrics will also help you provide specific feedback to your students, showing them exactly where they need additional assistance or practice. The four levels are defined as follows:

1. Exemplary: The student has gone above and beyond the standard. The student has a strong understanding of the concept and has the ability to mentor other students.
2. Mastery: This is the target level for all students. The student has a good understanding of the concept.
3. Introductory: The student has limited understanding of the standard or shows little evidence of understanding.
4. Does not meet requirements: The student does not show basic understanding of the standard.

The rubrics may be used as follows:

- Distribute a copy of the rubric to students when you return their evaluated work. Circle or highlight the student's level of achievement for each standard. This provides the greatest amount of feedback for the student on each standard. Use the back of the page to make additional comments.
- Use the rubric as a form of student self-evaluation. Give students an unmarked copy of the rubric and ask them to evaluate their own work.

The companion Website

ArcGIS Online repository is the location for all of the lessons, ancillary documents, maps and data required for Mapping Our World. To access these materials and data visit <http://edcommunity.esri.com/MOW>

Taking it further

After your students have completed the lessons you have selected, you can do the following:

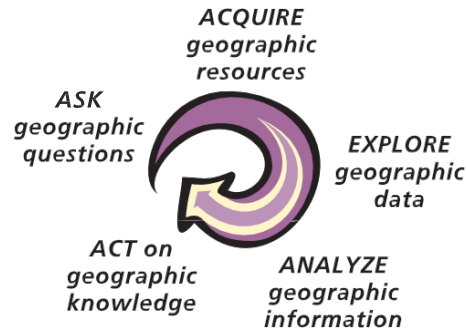
- Find out who's doing what with GIS near you and contact them for ideas. The following resources can help:
- Esri GIS Education Community, <http://edcommunity.esri.com>
- Esri Education User Conference, <http://www.esri.com/educ>
- GIS.com Web site, <http://www.gis.com>
- Invite a GIS specialist from your city government or other local organization to do a presentation on GIS for your class.
- Make GIS a permanent part of your classroom. Check on a districtwide or statewide software license that may already cover your school.

Geographic inquiry and GIS

Geography is the study of the world and all that is in it: its peoples, its places, its environments, and all the connections among them. Knowing where something is located, how its location influences its characteristics, and how its location influences relationships with other phenomena is the foundation of geographic thinking. Geographic inquiry asks you to see the world and all that is in it in spatial terms. Like other research methods, it also asks you to explore, analyze, and act upon the things you find. The Geographic Inquiry model is as follows:

Step	What to do
1. Ask a geographic question	Ask a question about spatial relationships in the world around you
2. Acquire geographic resources	Identify data and information that you need to answer your question
3. Explore geographic data	Turn the data into maps, tables, and graphs, and look for patterns and relationships
4. Analyze geographic information	Determine what the patterns and relationships mean with respect to your question
5. Act on geographic knowledge	Use the results of your work to educate, make a decision, or solve a problem

The five steps of geographic inquiry are addressed in detail in module 1, lesson 2. In the other lessons, these steps are implicit, and you will naturally integrate geographic inquiry into the process of doing the exercises throughout the book.



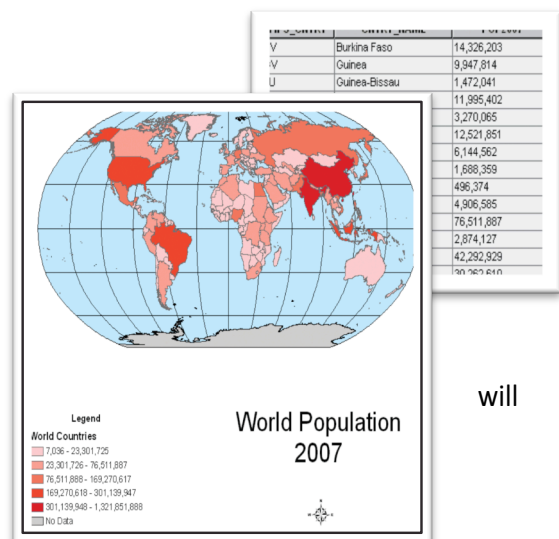
What is GIS?

Chances are that GIS technology has already touched your life. If you flipped on a light switch today, chances are that GIS was used to help make sure the electricity was there to light up the room. When you drove down a highway, chances are that GIS was used to keep track of the signs and streets along the way. If you received a delivery, chances are that GIS helped the driver find the way to your house. If you bought fresh vegetables, chances are that GIS helped manage the land and calculate the fertilizer needed for the crop. If you looked at a map on the Internet, chances are that GIS had a hand in that too.

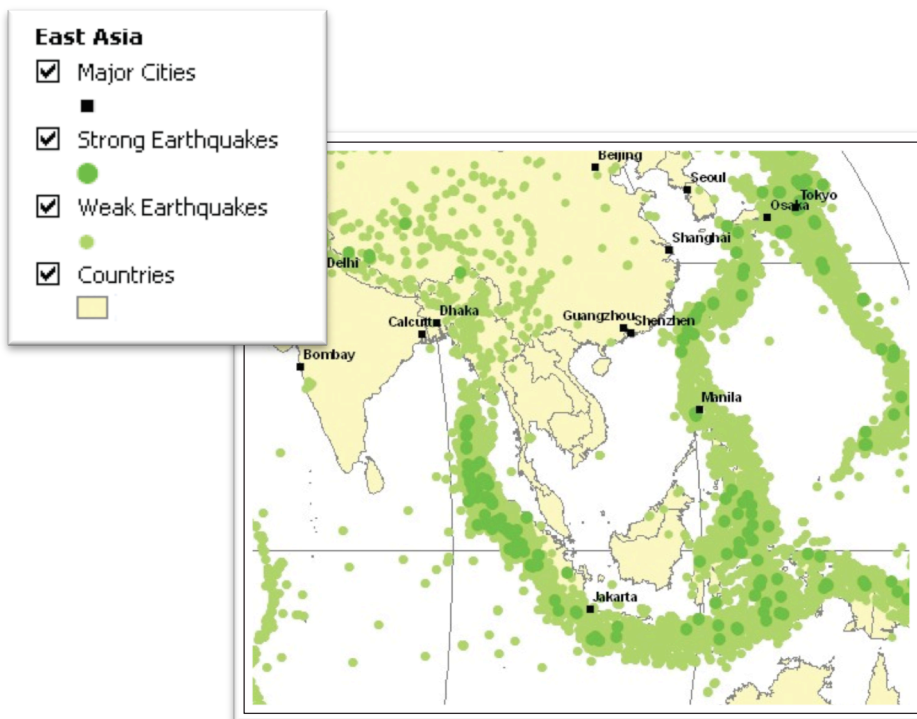
A geographic information system (GIS) uses computers and software to organize, develop, and communicate geographic knowledge. In simple terms, GIS takes the numbers and words from the rows and columns in databases and spreadsheets and puts them on a map.

Visualizing information

The vast amounts of information available today require powerful tools like GIS to help people determine what it all means. GIS can make thematic maps (maps coded by value) to help illustrate patterns. To explore cities at risk for an earthquake, you might first make a map of where earthquakes have already occurred. You could then code the earthquakes by magnitude. You might use one color for those that were strong and a second color for those that were weak. By analyzing the patterns, you will be able to find an answer to your question about cities at risk. You will pursue this inquiry in module 2.



will



Putting it all together

GIS is a tool that can simplify and accelerate geographic investigations. Like any tool, GIS has no answers packed inside it. Instead, for those who use the tool and the process of geographic inquiry, it provides a means to discover pathways through our remarkable world of unending geographic quest