

Environmental Science: Human Impacts on the Illinois River (Grade Level 9-12)

Illinois Learning Standards:

- ILS 13B – Know and apply concepts that describe the interaction between science, technology and society.
- ILS 12B – Know and apply concepts that describe how living things interact with each other and with their environment.
- ILS 12E – Know and apply concepts that describe the features and processes of the Earth and its resources.

Objectives: Students will be able to:

- Identify historical changes and their impact on their environment
- Explain the relation between human populations and river quality
- Determine changes to apply science to identifying problems impacting society
- Relate key factors that contributed to economic development of Illinois and the impact of those on the environment.

Technology/Equipment/Supplies Needed:

- (1-to-1) computer lab with internet access, sharing might also work for this activity
- LCD projector connected to a computer
- Access to “Of Time and the River: 12,000 Years of Human Use of the Illinois River” Website
- “Inspiration” or other Visual Learning Software
- Dry Erase Board or Chalkboard

of Sessions/Lesson Length: 2 class sessions/50 minutes each

Process (strategies & activities):

Day 1

1. For an introduction, lead students through to portion of Website they will be using today, namely the Resources section. Show them the chapters of focus, the 1800-1876 section within the Colonial and Territorial chapter and the Industrial chapter (1877-1930). In a discussion with students, have them provide some significant historical events that occurred within these time periods. Assign a student (or two) to list the brainstormed ideas on a chalk or dry erase board. This will help students contextualize the time period based on prior history knowledge.
2. Provide a brief explanation for the work they are doing, including referencing the objectives of the lesson. This should be very minimal, simply laying the groundwork for why they are learning about this and what products you would like to see as a result.
3. For Day 1, inform students that they will be responsible for creating a concept map relating to one of the following five topics: industry, agriculture, livestock, transportation, and population growth. Each group’s concept map should focus on the factors that impacted their area, how it changed over the period between 1800 and 1877, and the impact it had on the Illinois River. Students will have about 20-25 minutes to create their concept map.
4. Assign students to groups, being sure to inform students of roles they should take on including: leader, concept map designer, and research specialist(s). Limit groups to four if possible, but expand as needed, or possibly have two groups with the same focus. Smaller group size will maximize student learning in the group setting and ensure each student has an active roll in the process. Then make sure each group is then given its topic.

5. Monitor student groups' progress through their concept map work time, providing feedback and using small group questioning techniques to promote self-directed learning process.
6. After work time is complete, and assuming most groups have a fairly complete concept map, bring class back together. Tell students that they will be using a group work technique called "jig-sawing". At least 2 group members will move to 2 other groups. When they visit the other group, they should go over the concept map that group had created. When appropriate, they should note similar effects on the river or related inputs that impacted the growth of their area. These notes will be used during the final stage of the day's assignment. This jig-sawing portion should take about 10 minutes.
7. Have students reconvene within their original groups to record any notes about the other topics that directly impacted their concept map topic. The goal before the end of the class period is to have their concept map completed, with the impact of one of the other areas noted in thorough detail. They may wish to look into the information in the Resources section of the site

Day 2

1. To begin the second day, students will be presenting their concept maps created during the previous class period. They should use the projector to allow entire class to see their concept map. Inform students of expectations during presentations for both presenters and audience members. Be sure to inform students to look for connections between the topics.
2. The presentation time should take about 15-20 minutes to allow for each group to show connections made about their topic and then to provide some question and discussion time among the class. A major focus should be given to the lack of scientific examination done on any of the problems that were apart of the changes along the Illinois River.
3. The last part of this assignment is to have students look into the 1877-1930 section. Inform students that they should maintain their same focus, but now examining this new time period, they should add more facts to their concept map that show changes over time. An example might help students understand this concept more fully. For example: The group covering transportation might have discussed the I & M Canal, but now they should add information on developing locks and dams to increase depth for other water travel.
4. Students should look thoroughly through this information and site some actual data that show an impact of changes in their area during this time period. Students should take the remainder of the class period to update and modify their concept map and then print the final work before the class period is over.

Assessment:

One choice is simply to assess the final concept maps for their understanding of this assignment. Students should have met learning objectives if they followed assignment guidelines, and grades should be based on objectives met.

However, you may want them to synthesize their learning over the past two class periods a bit more. An option is to hang their final concept maps around the room and then given a couple of essay prompts, have them spend some time creating an essay using the entire class's concept maps as a tool. If you would like, they might also type their essays and use peer editing improve their final copies.