

**Lesson Plan:** Building to Solve a People Problem

**Grades and Subjects**

Grade 3 ELA Focus with Science and Social Studies Themes

**Topic**

Problem & Solution, Scientific Investigations and Population Distribution

**Conceptual Understanding**

- Most narratives have a problem and solution. Students will identify examples of problem and solution in a text and then work to create a solution to an existing problem through hands-on experiences.
- The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.
- Technology is any modification to the natural world created to fulfill the wants and needs of humans. The engineering design process involves a series of iterative steps used to solve a problem and often leads to the development of a new or improved technology.
- People utilize, adapt to, and modify the physical environment to meet their needs. They also identify regions based on geographic and human characteristics to help them interpret Earth's complexity.

**Primary Standards/Indicators**

**ELA**

**3-RL.8.1** Explain how the author uses words and phrases to inform, explain, or describe

**3-RI.11.1** Identify **problem and solution**, description, and question and answer structures to locate information and gain meaning.

**Social Studies**

**3-1.3** Explain interactions between the people and the physical landscape of South Carolina over time, including the effects on population distribution, patterns of migration, access to natural resources, and economic development.

**Secondary Standards/Indicators**

**ELA**

**3-RI.10.1** State the author's purpose; distinguish one's own perspective from that of the author.

**3-RL.8.1** Use text evidence to: a. describe characters' traits, motivations, and feelings and explain how their actions contribute to the development of the plot

**Social Studies**

**3-5.6** Describe the growth of tourism and its impact on the economy of South Carolina, including the development of historic sites, state parks, and resorts and the expanding transportation systems that allow for greater access to our state.

*Note - This lesson also covers many Science and Engineering indicators*



## **Academic Language**

### Vocabulary

- Architect
- *From book - Sphinx, circus troupe*
- Design
- Engineering
- Physical environment
- Migration
- Population distribution
- Natural resources

### Language Function

- Explain problem and solution in text and be able to distinguish the difference with cause and effect.
- Synthesize information about community issues in order to create a new structure/invention that can solve or alleviate the problem.
- Infer the impact of humans and geographic features on how and where people live.

## **Assessment Plan**

- Pre-Assessment-
  - Students will complete an [anticipation guide](#) that covers questions on problem and solution, design solution and cultural geography. These will be agree or disagree questions that will provide insight into current levels of understanding. This will not count as a grade.
- Post-Assessment-
  - Students will refer back to the anticipation guide. They will complete the “after” portion at this time to see how their answers have changed.
- Criteria for Mastery-
  - Student is able to successfully explain problem and solution.
  - Student is able to distinguish between problem and solution versus cause and effect.
  - Student can identify examples of how South Carolina’s physical landscape impacts people and invent a solution to a problem within the community.

## **Materials**

- [Anticipation guide](#)
- Padlet
- *Iggly Peck, Architect* by Andrea Beaty
- [Kahoot](#)
- Cardboard
- Tape
- Glue
- Construction paper, popsicles sticks, balloons, string, gauze, etc.



## **Teacher Preparation**

This lesson will serve as a review of problem and solution but will also push students to think of real life scenarios where solution oriented thinking is required. The lesson can be used as an introduction to how places develop or be extended to serve as a culminating project.

Due to time constraints this lesson could be divided several days, with one lesson focusing on ELA and the next several devoted to planning and construction of the building. Further, students could work in groups to develop several solution within one community. It is particularly helpful to have materials set and ready to go in order to make this lesson run smoothly.

## **Meat of Lesson**

### • **Hook**

1. Think of a time you helped make or build something. What did you build? Why did you build it?
  - a. Students record answers on Padlet.
  - b. Next, students turn and talk to share answers. The instructor may call on a few students to share their examples.
  - c. The instructor should highlight the **why** for each example. Usually humans build or make things to solve a problem. What problem did they solve when they made or built something?
2. Before we begin please complete the BEFORE Reading” portion of your anticipation guide.
3. Today we will read *Iggy Peck: Architect*. This is a story about a 2nd grader who loves building. However, there is a problem that he must overcome in order to continue building.
  - a. Read text to students.
  - b. Discuss book (See discussion guide for questions)
4. Students will then complete a brief Kahoot to check their understanding of problem and solution/cause and effect.
5. Introduction to lesson: Just like we saw at the beginning of our lesson, Iggy built something to solve a problem. Today you will be the architect. You must build a structure that solves a problem in the community. Just like Iggy had to build a bridge to solve a problem with the landscape and environment, you must solve a problem dealing with the land.

### • **Brainstorm**

1. First, students should brainstorm a list of possible problems to solve. This can be done independently, then with a partner and then the whole group. The instructor can provide examples to help them. (Alternatively, students can choose from a list provided by the teacher.) For example:
  - a. A new form of transportation to reduce traffic in the area
  - b. A machine to move people quickly when there is a hurricane or other weather event
  - c. Invention to make it easier to detect flooding
  - d. Create something that helps get fresh food to people



- e. Make an existing invention safer
  - f. A safer design for a school or home
- 2. Next, they should sketch their solution design on paper. Once this is complete they may gather materials.
- **Prototype**
  - 1. Students will work individually. Each student will receive cardboard, scissors and tape. They will use these materials to build their design.
  - 2. After they've done this, they may add decorations to their structure. They may cut, paste, draw, etc.
    - i. Students that struggle with this should be encouraged to talk with others who are having success designing their structure. At this point the teacher should try to step back and allow students to problem solve.
  - 3. Once students have put all of the pieces together, they should review their work. Does the object work? Does the object solve a problem? How can it be improved?
    - i. Instructor should be asking these questions of groups. If anyone finishes early, ask them how they can further improve their building.
- **Share**
  - 1. Each student should write the problem and solution for your invention. Students then show off their buildings. Ask them to talk about what problem they chose to solve and how their invention solves that problem. (Can be done as a whole class or in table groups)
  - 2. Instructor asks for feedback- What went well? What made this challenging?
- **Synthesize**
  - 1. Bring students back together for a final discussion. During this conversation, students will discuss the process of making. *See discussion guide for questions.*  
*\*Note- Three questions are also included on the back of the anticipation guide. It is recommended that students write their answers for these three.*
  - 2. Finally, have students complete the after section of the anticipation guide.

## **Supports for Student Learning**

### **Accommodations**

- **ELs**- Provide labels and written directions for each of the steps. The instructor can also use props to further help students understand major concepts and instructions. Due to the visual and hands-on nature of this lesson, there is little written work but it may be necessary to provide word sort or story in another language depending on student's present level.
- **Grade Level adaptations**- Stencils can be provided to scaffold for those that need more support. Definitions can be introduced and practiced ahead of time. Those that need help explaining their building can develop a script.
- **Advanced students**- Those students who are able to grasp these concepts quickly will be asked to incorporate Little Bits into their building. This can serve as a review on the electricity unit and add a level of complexity.



- **Additional supports**- As needed.

### **Discussion Guides**

- Hook- While or after reading, can ask students these questions:
  - Were Iggy's parents supportive of his interest in building things?
  - What did Iggy's 2nd grade teacher think about buildings? Why did she feel this way?
  - Why was 2nd grade boring to Iggy?
  - How did the students solve the problem to help Ms. Greer? How did class change as a result?
  - What were some of the materials Iggy used to build?
- Synthesis- Ask students:
  - What went well and what was difficult about making the building/structure? (*Allow them to share their answers and see if any talk about how they adapted their invention.*)
  - Were you like Iggy today? Why or why not? (*Stress the idea of problem and solution*)
  - How do our inventions relate to things that are built or discussed in our community? In South Carolina? (*Students may discuss traffic, hurricanes, changing landscapes. This may be a concept they need help with*)
  - What limitations might real life buildings and structures have? (*Discussion of geography, population, cost, etc*)
  - How does this lesson connect to science? (*Answers will vary but want them to realize that they've gone through the design process.*)

### **More to Explore (Resources)**

<http://www.stemread.com/iggy-peck-architect/>

<https://www.commonsense.org/education/lesson-plans/iggy-peck-architect-activity>

<https://www.scribd.com/document/148036340/Iggy-Peck-Architect-Teacher-s-Guide>

<https://geoalliance.asu.edu/createcity>

[http://schr.ws/hosted\\_files/watg15/e8/STEAM%20City%20Planning%20Lesson%20Plan.pdf](http://schr.ws/hosted_files/watg15/e8/STEAM%20City%20Planning%20Lesson%20Plan.pdf)

<http://renovatedlearning.com/2016/10/24/cardboard-challenge-2016/>

