

Grade Level: 3rd

Time Allotment: Two 45 minute sessions

Learning Objective: The student will design and build a containing structure that will hold a 3x5 index card.

Teacher Information:

1. Read Because of Winn Dixie by Kate DiCamillo through chapter 4 in a whole group setting. Discuss the main character and why she wants to know things about her mother. Discuss and list what her father tells her. Ask students if they could remember a list of ten things about someone in their family or if they would write them down. Tell students they will have the opportunity to design and build a containing structure to hold a list of ten things.
2. Group the children in 4's.
3. Hand out design brief and read over together. Discuss materials that may be used. Discuss safe use of tools. Answer questions about materials and directions.
4. Show rubric to students and explain the various sections.
5. Hand out portfolios and have students brainstorm and fill them in.
6. Students will begin their designs. Remind them to refer to their portfolios and rubrics.

Tools: Scissors, ruler, markers, crayons, colored pencils

Materials: 5 craft sticks, brads, glue, 12 inches of masking tape, unlimited recycled materials such as cardboard tubes, 4 sheets of construction paper, 1 3x5 index card

VA SOLS: Science

3.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which

- a) observations are made and are repeated to ensure accuracy;
- b) predictions are formulated using a variety of sources of information;
- j) inferences are made and conclusions are drawn;
- l) models are designed and built; and

m) current applications are used to reinforce science concepts.

3.2 The student will investigate and understand simple machines and their uses. Key concepts include

- a) purpose and function of simple machines;
- b) types of simple machines;

#### Math

3.14 The student will identify, describe, compare, and contrast characteristics of plane and solid geometric figures (circle, square, rectangle, triangle, cube, rectangular prism, square pyramid, sphere, cone and cylinder) by identifying relevant characteristics including the number of angles, vertices, and edges, and the number and the shape of faces using concrete models .

#### English

3.1 The student will use effective communication skills in group activities.

- a) Listen attentively by making eye contact, facing the speaker, asking questions, and summarizing what is said.
- b) Ask and respond to questions from teachers and other group members.
- c) Explain what has been learned.
- d) Use language appropriate for context.
- e) Increase listening and speaking vocabularies.

3.5 The student will read and demonstrate comprehension of fictional text and poetry.

- d) Compare and contrast settings, characters, and events.
- g) Draw conclusions about text.
- h) Identify the problem and solution

#### STL Standards:

Standard 8: Students will develop an understanding of the attributes of design.

##### 3-5 Benchmarks

- C. The design process is a purposeful method of planning practical solutions to problems.
- D. Requirements for a design include such factors as the desired elements and features of a product or system or the limits that are placed on the design.

Standard 9: Students will develop an understanding of engineering design.

##### 3-5 Benchmarks

- C. The engineering design process involves defining a problem, generating ideas, selecting a solution, testing the solution(s), making the item, evaluating it, and presenting the results.
- D. When designing an object, it is important to be creative and consider all ideas.
- E. Models are used to communicate and test design ideas and processes.

Standard 10: Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.

##### 3-5 Benchmarks

- C. Troubleshooting is a way of finding out why something does not work so that it can be fixed.

- D. Invention and innovation are creative ways to turn ideas into real things.
- E. The process of experimentation, which is common in science, can also be used to solve technological problems.

Standard 11: Students will develop the abilities to apply the design process.

3-5 Benchmarks

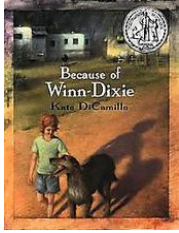
- D. Identify and collect information about everyday problems that can be solved by technology, and generate ideas and requirements of solving a problem.
- E. The process of designing involves presenting some possible solutions in visual form and then selecting the best solutions from many.
- F. Test and evaluate the solutions for the design process.
- G. Improve the design solutions.

Standard 12: Students will develop the abilities to use and maintain technological products and systems.

3-5 Benchmarks

- D. Follow step-by-step directions to assemble a product.
- E. Select and safely use tools, products, and systems for specific tasks.
- G. Use common symbols, such as numbers and words, to communicate key ideas.

## Memories



### Because of Winn Dixie

Design brief

Jacki Dull

**Background:** Opal doesn't remember her mother and asks her father for a list of ten things about her. Instead of writing them down, she tries to remember them all.

**Challenge:** You have the opportunity to design and build a containing structure for Opal to store her list in. It must have a moving part so that it can open and close. You cannot just take a side off to have it open or close. That means the side that opens should still be attached. It should hold a 3x5 index card, be one of our 3D (solid) shapes, and be decorated for Opal.

**Criteria:** Must be a containing structure  
Must open and close with a moving part  
Must hold a 3x5 card  
Must be one of our 3D (solid) shapes  
Must be decorated for Opal

**Materials:** 5 craft sticks, brads, glue, 12 inches of masking tape, unlimited recycled materials such as cardboard tubes, 4 sheets of construction paper, 1 3x5 index card

**Tools:** Scissors, ruler, markers, crayons, colored pencils

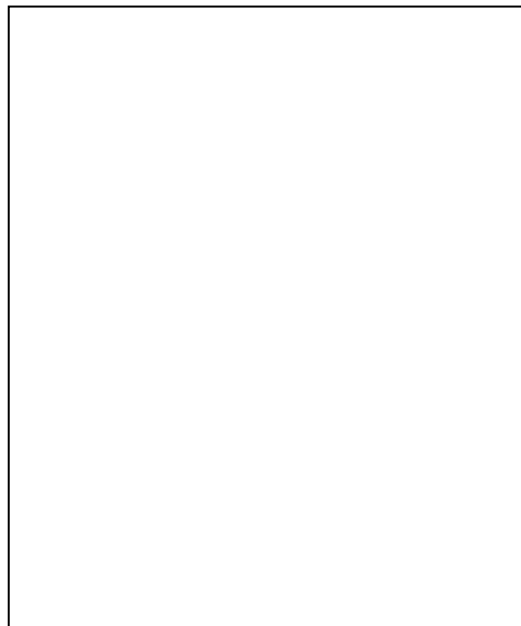
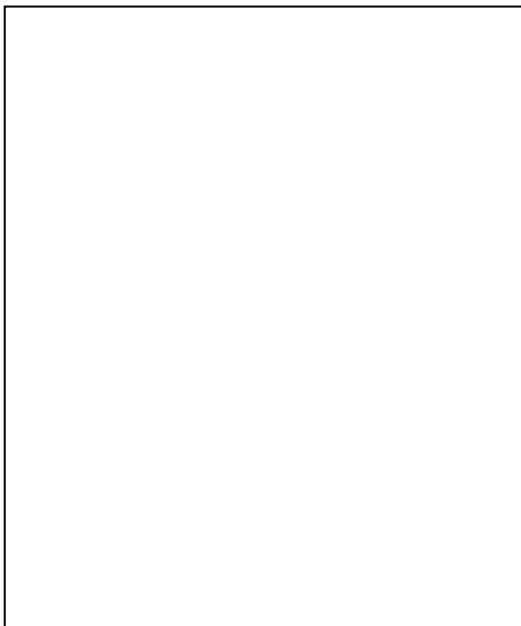
**Standards:** Science 3.1 and 3.2, Math 3.14, English 3.1 and 3.5, STL 8-12

Team Members: \_\_\_\_\_, \_\_\_\_\_,  
\_\_\_\_\_, \_\_\_\_\_

1. What is the problem in your own words? \_\_\_\_\_

---

2. Brainstorm and sketch 2 of your ideas in the boxes below.



3. Decide with your group which solution is best and create it.

4. Test your design and answer these questions

Did you use only the provided materials?	Yes	No
Will it hold a 3x5 index card?	Yes	No
Does it open and close with a moving part?	Yes	No
Is it decorated for Opal?	Yes	No
Is it one of our 3D shapes?	Yes	No

5. Evaluate your solution and tell me if you would change any of it. Why or why not?

---

---

---

---

6. What are ten things you would like to remember about someone in your family?

---

---

---

---

---

---

---

---

Rubric for Memories

Jacki Dull

Criteria Assessed	4-Meets criteria	3-Almost there! Meets most of criteria	2-Needs improvement Meets some of the criteria	1-Attempted but we need to talk
Restates problem				
Sketches 2 ideas				
Evaluated solution				
Wrote prediction				
Polite to team members				
Gave members a chance to express opinions				
Helped create and build design				
Is a containing structure				
Must open and close with a moving part				
Must hold a 3x5 index card				
Must be one of our 3D shapes				
Must be decorated for Opal				
Must be able to explain design to class				
Share something that was difficult about design with class				
Share changes that were made with class				