

Design Brief Challenge: How can you recreate a decorative Native American toy?

<http://www.nativetech.org/games/ball&tri.html>



Background: After learning about Native Americans artifacts and new technology, we know that many regions used different resources to make what they needed. How can we recreate a decorative Native American toy and be as resourceful as Native Americans?

Design Challenge: Design and create functional toy costing less than \$10 in materials. Create an 8x11 poster to communicate your toy including instructions and final cost.

Day 1- Instructions, Plan and Design

Day 2- Build, Test & Improve

Day 3- Re-build & Communicate- Toy Fair!

Criteria:

Your toy MUST:

- Cost no more than \$10 in materials
- Be functional and pleasing to the eye
- Completed instruction/cost sheet for Toy Fair

| Materials: What can you use? | | | Tools: What can you use to make your design? | |
|---|------------------|------------------------|---|---------------|
| Select from the list below. You can spend \$6 Day 2 and \$4 Day 3 | | | Select from the list below. | |
| popsicle stick- \$1 | 1 m string- \$1 | cup- \$2 | ● Scissors | ● Glue |
| pipe cleaner- \$1 | pony bead- \$1 | brass fastener- \$1 | ● Markers | ● Hole Punch |
| straw- \$1 | pom pom- \$1 | toilet paper tube- \$3 | ● Crayons | ● Crop-A-Dile |
| index card- \$1 | tape- 30 cm- \$1 | styrofoam tray- \$4 | ● Colored Pencils | |

| Prior Knowledge & Skill | Materials & Preparation | Safety Issues | Class Management | Materials Provided |
|--|--|---|--|---|
| <ul style="list-style-type: none"> artifact | <ul style="list-style-type: none"> Listed on pg 1 | <ul style="list-style-type: none"> Use of scissors and other tools and materials correctly | <ul style="list-style-type: none"> 1 peer partner group | <ul style="list-style-type: none"> Design Brief Self - reflection |

How can you recreate a decorative Native American toy?

Group Members:

| | |
|--|--|
| | |
| | |



1. **What is the problem?** State the problem in your own words.



2. **Brainstorm solutions.** Sketch and/or describe **at least 2** possible solutions. Remember to label your materials and keep track of costs!

| | | | | | |
|--|-----------|------|--|-----------|------|
| | Materials | Cost | | Materials | Cost |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | Materials | Cost | | Materials | Cost |
| | | | | | |
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3. Create the solution you think is best. Keep notes about your problems and how you solve them. Make sketches, if they help. LABEL the materials you will need. Use the checklist to help you get your materials.

| The materials we will use are: (please check) | | |
|---|--|--|
| <ul style="list-style-type: none"> <input type="checkbox"/> popsicle stick- \$1 <input type="checkbox"/> pipe cleaner- \$1 <input type="checkbox"/> straw- \$1 <input type="checkbox"/> index card- \$1 | <ul style="list-style-type: none"> <input type="checkbox"/> 1 m string- \$1 <input type="checkbox"/> pony bead- \$1 <input type="checkbox"/> pom pom- \$1 cup- \$2 <input type="checkbox"/> Tape- 30 cm- \$1 | <ul style="list-style-type: none"> <input type="checkbox"/> cup- \$2 <input type="checkbox"/> brass fastener- \$1 <input type="checkbox"/> toilet paper tube- \$3 <input type="checkbox"/> styrofoam tray- \$4 |

4. Test your solution. Circle yes/no.

| | | |
|---|-----|----|
| Does your toy cost no more than \$10 in materials | YES | NO |
| Is your toy functional? | YES | NO |
| Is your toy pleasing to the eye? | YES | NO |
| Have you completed instruction/cost sheet for Toy Fair? | YES | NO |



Was it the best solution? Why or why not?

5. Evaluate your solution.

Look back at your brainstorming page. Would one of your other ideas have been better? Explain your reasoning.

What did you learn by designing and creating this model?

Rubric – Can You Build a Sentence?

Name: _____

Date: _____

0—no evidence; 1—limited understanding; 2—some understanding with room for improvement; 3—good understanding with room for improvement;
4—substantial understanding

| Student Evaluation | 0 | 1 | 2 | 3 | 4 |
|--|---|---|---|---|---|
| Oral Presentation: The student <ul style="list-style-type: none"> ● used complete sentences ● used descriptive words. | | | | | |
| | | | | | |
| | | | | | |
| Guided Portfolio: The student participated in <ul style="list-style-type: none"> ● restating the problem ● brainstorming solutions ● creating a solution ● testing the solution ● evaluating the solution. | | | | | |
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| | | | | | |
| Team Skills: The student <ul style="list-style-type: none"> ● used appropriate voice ● encouraged team members ● listened to team members ● was involved in all aspects of the project | | | | | |
| | | | | | |
| | | | | | |

| | | | | | |
|---|--|--|--|--|--|
| <ul style="list-style-type: none"> respected team members. | | | | | |
| | | | | | |
| | | | | | |

| Tested Criteria | YES | NO |
|---|-----|----|
| The group used at least 3 items provided to them. | | |
| The design is freestanding. | | |
| The design is made of all lowercase letters. | | |
| The design is at least 4 unifix cubes tall. | | |

Can You Build a Sentence?

Self-Reflection ☺

Name: _____

1. Was I a good member of my group?

YES ☺

SORT OF

NO ☹

2. Did I help design the word?

YES ☺

SORT OF

NO ☹

3. Did I share with my team members?

YES ☺

SORT OF

NO ☹

4. Did I show that I can work together and pick the best idea?

YES ☺

SORT OF

NO ☹