

Learning the Design Process through Building a Galimoto

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| **Introduction**  |
| Have you ever made a flower crown or folded a paper airplane? All around the world, children create fun pastimes by using the objects around them. One example of this is a galimoto. A galimoto is a small toy model of a car, plane, bike, or other moving object made from repurposed materials, such as wire scraps and bits of rubber. This galimoto was made in Malawi, a country in Southern Africa. Galimotos are built by children in many different countries in Southern Africa. In fact, if you go to markets in Southern Africa, you might find galimotos for sale! Galimotos are especially popular because they are made from recycled materials, meaning that they are not very expensive to make, depending on how many materials one is able to repurpose. Making a galimoto requires a lot of creativity because the builder must be able to see the potential of materials that other people might have just thrown away.   The galimoto in this 3D model uses wire and rubber. Galimotos should be able to mimic the movement of the object they are modelled after. For example, the galimoto in the 3D photo can be pushed to move across the ground like a car. Galimotos that are meant to look like airplanes are often held up by a wire or flown like a kite. This means that building a galimoto requires a person to think of how the model will look, as well as how it will function.In this lesson, students will learn how to repurpose materials around themselves to engineer a galimoto car, connecting the importance of the human experience to innovation, evaluating the utility of commonly discarded items, and implementing and reflecting on the design process. |
| **Indiana Standards Connections:** ETE 4.4 Develop a product using the design process, while maintaining appropriatedocumentationENV 8.6 Understand and describe the concept and the importance of natural and human recycling in conserving our natural resources. | **Compelling Question(s):** How can we utilize the resources around us better to serve our needs without negatively impacting the environment?What factors contribute to and inspire the process of innovation? |
| **Lesson Objectives:** Students will: * Gain exposure to a narrative of an African country as innovative and resourceful
* Create and implement a design process to build a working galimoto
* Evaluate how to reduce environmental impact through discussion with classmates
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| **Materials**  |
| * Class Projection Device
* Access to Indiana University Digital Toolbox
* Recycled Materials for building a Galimoto (rubber bands, popsicle sticks, newspaper, wires, glue, buttons, etc.)
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| **Learning Plan** |
| **Activities** 1. To begin this lesson, project the 3D image of the Galimoto (https://skfb.ly/6YOnt). Ask the students what they think this object is and who made it. Have students focus on the structure of the item and how it might work.
2. Read the book “Galimoto” by Karen Lynn Williams. Have a group discussion about how this book compares to previous books or depictions of Africa they are familiar with and discuss the importance of literature depicting different cultures. Ask students what they think the message of the book is and what moral the author wants readers to learn. Emphasize the importance of recycling materials to build something new
3. Break students into small groups and have them come up with a list of 5 things that people could repurpose instead of throw away. Give them examples before sending them to groups, i.e. Instead of throwing away newspapers, people could use them to wrap gifts.
4. To help students understand the engineering behind the galimoto, have them watch a video on how to construct one (https://moa.wfu.edu/2020/08/malawi-make-a-galimoto/)
5. After the small groups have a solid understanding of engineering a galimoto and are warmed up to the idea of thinking creatively about recycling, have them design their own galimoto together. Have the students show the design to the teacher for feedback. Once the teacher gives feedback, students try to build their own galimoto
6. The groups show their galimoto to the class, explain how they designed their galimoto, and show the original sketch. When showing the galimoto, students discuss what went well in their process and what they would have changed. It is okay if their galimoto does not work. Emphasize the importance of bad results in the design process. Thomas Edison famously said, “I haven't failed -- I've just found 10,000 ways that won't work." when inventing the lightbulb.
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| **Assessment Suggestions**  Have students write a reflection on the design process that includes how they contributed to the initial design, what they learned about working in a team to design a piece, and what they would have done differently if they were to do the same project again. |
| **Extensions** To further the discussion of sustainability, have students design their own repurposed item from recycled materials found at home. Item possibilities could include toys, clothing, jewelry, or an invention to help them in their everyday life, like a pencil box, a cell phone holder, or a mask from an old tshirt. Have students bring in the item they created and present it to the class. |

Galimoto Activity Possibilities

Some of the best opportunities for education are *integrative*—meaning that students are able to make connections across disciplines to reinforce the knowledge that they are developing. For example, they may be learning about Renaissance Italy in World Studies at the same time that they read Dante’s *Inferno* in English class while also studying Botticelli in Art. Feel free to combine and adapt some of the ideas across disciplines and standards to best suit your particular context. You can also collaborate with other teachers at your school or supplement the resources provided by contacting your librarian.

**Note: The following ideas are meant to give general guidance for teachers to include artifacts and other material culture in their classrooms. They are not meant to be treated as comprehensive activities or lessons that are one-size-fits-all for any classroom. They should be personalized to best fit the needs of a teacher’s individual context in accordance with prior student learning, student abilities, available resources, and any curriculum.**