

Design Project: Using Pro/DESKTOP as a Design Tool: Pull-Toy

Introduction

While this workshop is intended to develop your knowledge and skills in using PTC's Pro/DESKTOP®, it is also intended to provide you with an experience using the software as a design tool to develop a real-world product. Through design, you will apply what you have learned and discover strengths and weaknesses in what you know and what you can do. You will work in a team, the way designers and engineers work in the "real world."

The *Standards for Technological Literacy* (ITEA, 2000) emphasize design as the process of technology and engineering. At the Middle and High School levels *Standard 8: The Attributes of Design* and *Standard 9: Engineering Design*, focus on how the products of technology come about. *Standard 11: Apply the Design Process*, requires students to actually design products and model and test their work.

Pro/DESKTOP can help provide the tools students need to work creatively and realistically. Design work is inherently engaging, so students are motivated to investigate and learn more about what they need to solve a problem, including both knowledge and skills.

The Design & Technology in Schools Program is intended to provide you with both the tools and the instructional resources to facilitate a design approach to teaching and learning about technology. This activity is meant as a short introduction to this instructional strategy.

Using the Guided Portfolio

The following pages will guide you through the Pull-Toy project. First, read the problem *Design Brief* and discuss it with the members of your group. Initial discussions should involve ideas for the toy theme as well as establishing design standards and dividing up tasks. Design standards might include such things as sizes of wheels and axles so parts created by different team members fit together. At the conclusion of the activity, your group will present your design to the other workshop participants.

This guided portfolio is an abbreviated version of one that might be used with students. The activity must take place in just a couple of hours, so a number of steps that would help students develop realistic and quality product designs have been left out. As a teacher you have experiences and skills that your students do not have, and you can draw upon these experiences to help create a successful design.

Product Design: Pull-Toy

Design Brief

This is your starting point for the project. The design brief will tell you what you need to do and what the successful product (solution) will be like.

Design and model a producible (can actually be made) pull-toy for a 2-3 year old child. The toy should be safe, attractive and fun to play with. The primary material for the toy will be wood. Keep in mind that the toy must appeal to the adult who will purchase the toy for the child.

Identify Stakeholders

Stakeholders are those individuals and groups that have an interest in the product and who must be satisfied for the product to be successful. Identify the major stakeholders in the design and briefly explain what would satisfy each one.

<u>Stakeholder Name</u>	<u>What this person/group looks for in a successful design</u>
1: Child	
2:	
3:	
4:	

Investigation & Research

The point of this section is to find the answers to questions that will help you in your design work. Spend only a few minutes discussing these questions as a group and jot down a few thoughts.

1. What conflicts can you identify among the major stakeholders?
2. What makes a toy interesting and fun to a 2 or 3 year old child?
3. What makes a toy safe?
4. How can a pull-toy be designed to roll easily over both carpet and smooth floors ?

You may not have time to address all the issues but other considerations include: How can the toy be designed to minimize production costs? How can the toy be designed for shipping in quantity? How might it be designed for packaging? What other materials and processes might be more realistic for toy production?

Initial Design Ideas

Discuss ideas as a group and then sketch a couple of initial ideas for the pull-toy design on this page. Remember, the more ideas you have the better the chance that one of them will be a good one.

Refine Your Design Idea

Select one of the designs on the previous page and refine the idea; include rough dimensions.
(approximate overall sizes only)

Finalize Your Design

On this page sketch out the part(s) you will be designing for the team. Include dimensions that will enable your parts to fit together with parts designed by others in your team. You will refer to this page while designing in Pro/DESKTOP.

