

The Robot Fairy Project

Problem	How does one design a prototype robotic fairy puppet for “A Midsummer Night’s Dream” that employs the relevant principles of puppetry?
Lesson Summary	This lesson plan extended for a week beginning with an overview of the engineering process, specifically highlighting the “What is the Problem” stage. The Hummingbird Robotic Kit was then introduced with a viewing of the wiring video. Additionally, the “Robot Fairy Project” handout (see attached) was reviewed which provides an overview of the content, need and specifications of the project. Lastly, the Handspring Puppet Company’s Principles of Puppetry video was viewed that illustrates the principles of puppetry that they developed and will be used in the project. Groups were designated at this time. The second day involved viewing of the Create Lab Visual Programmer videos and beginning the brainstorming process. The remaining days encompassed <i>the generation of design solutions, creation and improvement of the prototype, and communication of findings</i> on the last day.

Major Topic & SOL:

English Pre-AP 10	10.1
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Length of Time:	5- 50 minute periods
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Student Objectives:

- TSW learn and utilize the steps of the engineering process.
- TSW program their Hummingbird robotics kit using the Create Lab Visual Programmer.
- TSW wire their Hummingbird robot to make their fairy animated.
- TSW use design principles to create a fairy that follows the principles of puppetry.
- TSW communicate the outcome of their design project through a verbal presentation and a demonstration of their robotic fairy puppet.

21st Century Skills:

- Critical-Thinking and Problem Solving
- Communication
- Creativity and Innovation
- Collaboration
- Information and Media Literacy
- Contextual Evidence

Assessment Evidence:

- Presentation of fairy robot puppet with a demonstration of its functioning and a general explanation of how it meets the principles of puppetry.
- Typed report outlining the *Generation of Design Solutions* and *Creation and Improvement of Models* stages of engineering process (see hand-out).

Supplies/Materials/Technology:

- Laptop computer
- Hummingbird kits
- glue guns
- boxes
- cardboard tubes
- scissors
- tape
- foam sheets (white, various colors and sparkly)
- other fun craft supplies

Lesson 1:

- Distribute & discuss hand-out, including the engineering process
- Distribute Hummingbird User Guide to each student
- View of Hummingbird connection/wiring video
- View Handspring Puppet Company's training video on the principles of puppetry: [Puppetry Video](#)

Lesson 2:

- Distribute of computers to group
- View of Create Visual Programmer video
- Beginning of brainstorming, including gathering of materials

Lesson 3:

- Groups work on project

Lesson 4:

- Groups work on project

Lesson 5:

- Groups work and presentation

Tighe—Pre-AP 10 English
The Robot Fairy Project



As part of a puppet design team for an upcoming presentation of Shakespeare's A Midsummer Night's Dream, you are asked to design a robotic fairy as a prototype for future puppet shows. This fairy must interact well with the other non-robotic puppets so as not to cause a distraction in the show. For this reason, it must demonstrate all the puppet-related principles of puppetry as laid out by the Hands Spring Puppet Company in their training video. These principles are as follows:

1. Devotional State--How a puppeteer enters into a self-hypnotic state due to their unity with the puppet.
2. Eyes & Eyeline—The realistic depiction of a puppet's vision, meaning how their eyes are designed and how they maintain a realistic gaze on other puppets.
3. Breath & Breathing—The rhythmic and arrhythmic quality of a puppet's breathing on stage.
4. Puppeteer vs Puppet—A puppeteer should never upstage the puppet.
5. Stillness—How your puppet will be still on stage and maintain a presence without looking out of place.

6. Movement of the Figure—The puppet's actions across the stage, as well as the micro movements. There should be no extraneous movements.
7. Passing the ball—How the focus of the action is passed from one puppet to another.
8. Gesture—The puppet's demonstration of emotion and purpose.
9. Rhythm—The need for a puppeteer to stay in sync with their respective puppet and not take on other character's energy.
10. Speed—The demonstration of a puppet's energy level on stage in a way that does not make them a distraction—the general characterization of a puppet's personality.
11. Touch—The most important principle—the interaction of your puppet with each other puppets on stage. Remember that emotion is held in a puppet's fingers.

Project Requirements:

Each group must:

- ❖ Construct a working fairy robot using the Hummingbird robotics kit. The fairy must be from MSND. The choices are: Oberon, Titania, Puck, Cobweb, Peaseblossom, Moth, or Mustardseed.
- ❖ Complete a typed report that includes the following areas:
 - **Generation of Design Solutions:** This section should include how you brainstormed, researched, then shared and selected ideas. This should also include a description of what each group member did, including at least one way that they directly contributed to the design of the fairy.
 - **Creation and Improvement of Models:** This section will include a detailed description of how their fairy robot meets the above principles of puppetry that directly apply to a puppet. It will also include at least a paragraph on how you

tested and evaluated the fairy and made any improvements on the design.

- ❖ Present the fairy robot to the class on Wednesday, April 15, 2015. Your design team needs to demonstrate how the fairy works and provide a general overview of how it adheres to the principles of puppetry. Each member of the design team needs to take part in the presentation, and it should be no longer than 5-7 minutes long.
- ❖ If necessary, the final draft of the paper may be turned in on Thursday, April 16th.