

MacGyver Wind Lift Challenge Sample 2 & 4 Day Unit Plans

Note: OEP recognizes participating schools will be implementing the program in different formats. Some will use it with their entire class. Others may choose to do the project with a STEM class or science club. Our goal is to provide maximum flexibility in implementing the Challenge while at the same time providing adequate support.



Sample 2-Day Unit Plan

| Day | Topic | Resources |
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| 1 | Student Pre-Poll Introduction to Engineering Design Process Introduction to Wind Introduce Design Challenge Small Group Brainstorming-Blade Design | Student Pre/Post Poll Engineering Design Process Poster Wind 101-Wind Energy, Forces & Motion and Blade Design -Handout How Do Wind Turbines Work? Video How to Build a MacGyver Wind Lift -Video |
| 2 | Review Turbine Blade Design Initial Blade Design, Planning & Build Review Electricity terminology | Blade Building Tips & Troubleshooting -Handout Student Worksheet-Elementary (no calculations) Student Worksheet-Intermediate (speed calculation) |

Sample 4-Day Unit Plan

| Day | Topic | Resources |
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| 1 | Student Pre-Poll Introduction to Engineering Design Process Activity- Group Brainstorming Icebreaker Present Day Inventor/Engineer-William Kamkwamba | Student Pre/Post Poll TeachEngineering.org : Seven step engineering process video & poster The Boy Who Harnessed the Wind Ted Talk & Resources |
| 2 | Introduction to Wind Introduce Design Challenge Review Turbine Blade Design | Wind 101 How Do Wind Turbines Work? Video The Science of Turbine Blade Building Teacher Handout |
| 3 | Initial Blade Design, Planning & Build | Student Worksheet-Elementary (no calculations) Student Worksheet-Intermediate (speed calculation) |
| 4 | Review Electricity terminology <ul style="list-style-type: none"> • Ohms, resistor, voltage, power (watts), amps • Review how to measure, use of a multimeter, calculations Test Initial Design <ul style="list-style-type: none"> • Measurements and calculations • Record work | Testing Set-Up & Using a Multimeter Teacher Handout or Video Electricity Terminology-NEED Intermediate Infobook (page 38) |