

STEAMtrax STAR Portal

Live Demo Instructions



STAR
Portal

STEAM
trax
K-12 ENGINEERING



BDSYSTEMS™

DEMONSTRATION OVERVIEW

- This STAR Portal demonstration is intended to give your customer a live view of one of the STEAMtrax engineering modules.
- The demonstration features **Tinkering with Turbines**, an Earth Space Science Elementary School engineering module. It is aligned to 5th grade standards.
- “DEMO!” call-outs are provided to help reinforce key points.

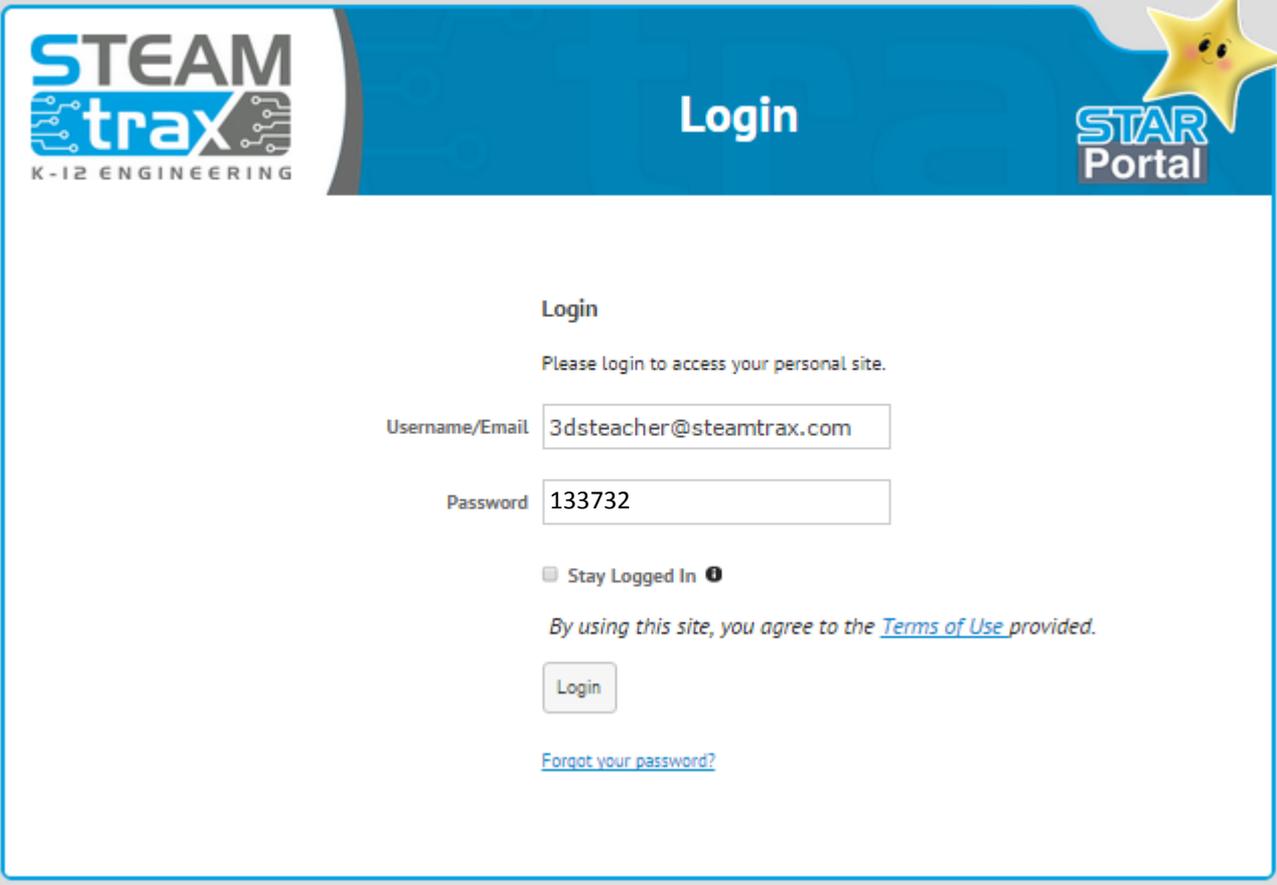
DEMO!

“DEMO” Call-Outs such as this are provided throughout this module to provide additional product details.

- It is recommended that the live demonstration takes place after taking your customer through the STEAMtrax Overview PowerPoint presentation.
- Please save “**build.steamtrax.com**” as a favorite website on your preferred browser – this is STAR Portal login site.

LOGGING IN - TEACHER

- Go to build.steamtrax.com and fill in the student login credentials:
 - Username/Email = **3dsteacher@steamtrax.com**
 - Password: **133732** (August 2015)



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Login

STAR
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Login

Please login to access your personal site.

Username/Email

Password

Stay Logged In ⓘ

By using this site, you agree to the [Terms of Use](#) provided.

[Forgot your password?](#)

TEACHER DASHBOARD

- Once you login as a teacher, you will see the Teacher-facing dashboard. The next series of slides will call out key features for you to share with your customer.

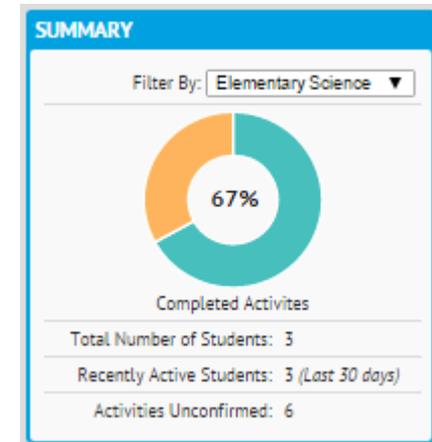
The screenshot shows the STEAMtrax Teacher Dashboard. At the top, it says "Welcome, 3DTeacher! 3D Systems DEMO Teacher" and includes the STAR Portal logo. The dashboard is divided into several sections:

- SUMMARY:** A donut chart shows 67% Completed Activities. Below it, statistics include: Total Number of Students: 3, Recently Active Students: 3 (Last 30 days), and Activities Unconfirmed: 6. A filter is set to "Elementary Science".
- MY CLASSES:** A table shows the "Elementary Science" class with buttons for "Class Details", "Assigned Exercises", "Students", and "Login Cards".
- AVAILABLE MODULES:** A list of modules is shown, with "3rd-5th" selected. A module titled "[DEMO] Tinkering With Turbines" is highlighted, with a description: "Students design, print, and test a wind turbine model that transforms wind energy into electric energy after researching types of energy and energy transformations." A "Preview All Modules" link is at the bottom.
- RECENT STUDENT ACTIVITY:** A list of recent activities with timestamps and user names:
 - Student3 Sample completed the activity Assessment in [DEMO] Tinkering With Turbines 10 minutes ago
 - Student2 Sample completed the activity Assessment in [DEMO] Tinkering With Turbines 11 minutes ago
 - Student2 Sample completed the activity Self & Group Evaluation in [DEMO] Tinkering With Turbines 11 minutes ago
 - Student2 Sample completed the activity What is a Wind Turbine? in [DEMO] Tinkering With Turbines 15 minutes ago
 - Student1 Sample completed the activity Assessment in [DEMO] Tinkering With Turbines 2 hours ago
- LATEST NEWS:** A news item titled "Welcome to the STAR Portal!" dated Friday, May 1, 2015. The text says: "The STAR (Student Teacher Administrator Resources) Portal is your one-stop-shop for accessing your modules and interacting with your students." A "Read More" link is provided.
- 3D PRINTING RESOURCES:** Two sections are visible:
 - 3DS Sense 3D Scanner Videos:** "Watch these short how-to videos to learn quick tips and tricks when using your Sense 3D Scanner!"
 - 3DS Cube 3 Printer Videos:** "Watch these short how-to videos to learn quick tips and tricks"
- RECENTLY ASSIGNED ACTIVITIES:** A table showing assigned activities:

Self & Group Evaluation in [DEMO] Tinkering With Turbines	Elementary Science
Assessment in [DEMO] Tinkering With Turbines	Elementary Science
What is a Wind Turbine? in [DEMO] Tinkering With Turbines	Elementary Science

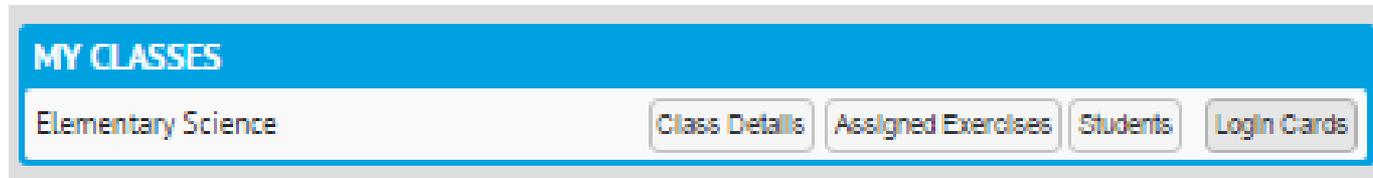
TEACHER DASHBOARD: SUMMARY WIDGET

- Teachers can assign activities for the students to complete, including the Assessment.
- The Summary widget on the upper left corner shows a quick summary of student's completion rate of assigned activities.
- As you can see here, for the three “sample” students in this class, 89% of all assigned activities have been completed.
- This gives the teacher a quick gauge to know when and with whom to follow-up.
- This widget can be filtered by class if the teacher has multiple classes.



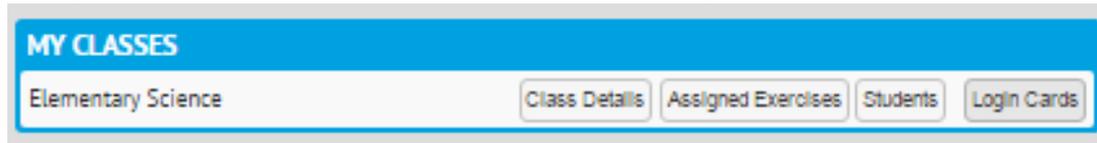
TEACHER DASHBOARD: MY CLASSES

- As part of the set-up service, we create classes. This is a customized feature.
- Typically for Elementary Schools a teacher will have one class. For Middle School, a teacher may have multiple science periods. We can create as many classes as needed.
- In this example, the teacher has one class called “Elementary Science”.

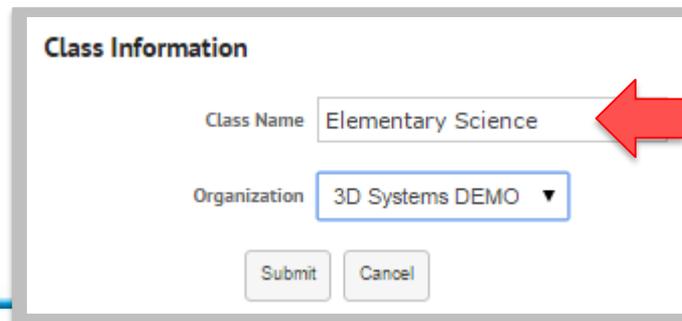


TEACHER DASHBOARD: MY CLASSES

- Under My Classes click on “Elementary Science”



- Under Class Details click on “Edit Details” to update Class Name



TEACHER DASHBOARD: LOGIN CARDS

- Login cards can be printed out and given to students. It includes their login credentials for the Portal. The teacher can update the student login as needed. For example, when a student misplaces their password.

The screenshot displays the 'Login Cards' section of the STEAMtrax Teacher Dashboard. At the top, there is a blue header with the STEAMtrax logo on the left, the text 'Login Cards' in the center, and the 'STAR Portal' logo on the right. A user email '3dssteacher@steamtrax.com' is visible in the top right corner. Below the header, the dashboard is titled 'Elementary Science' and '3DSTeacher Teacher'. A 'Print' button is located in the top right of the content area. There are three login card templates, each with a title and a table of credentials:

Student1 Sample	Student2 Sample
Username: 3dsstudent1 Password: 774892 Login: http://build.steamtrax.com/	Username: 3dsstudent2 Password: 813564 Login: http://build.steamtrax.com/
Student3 Sample	
Username: 3dsstudent3 Password: 119374 Login: http://build.steamtrax.com/	

TEACHER DASHBOARD: STUDENTS

- Navigate to “Students” tab:

3dssteacher@steamtrax.com

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Elementary Science

STAR Portal

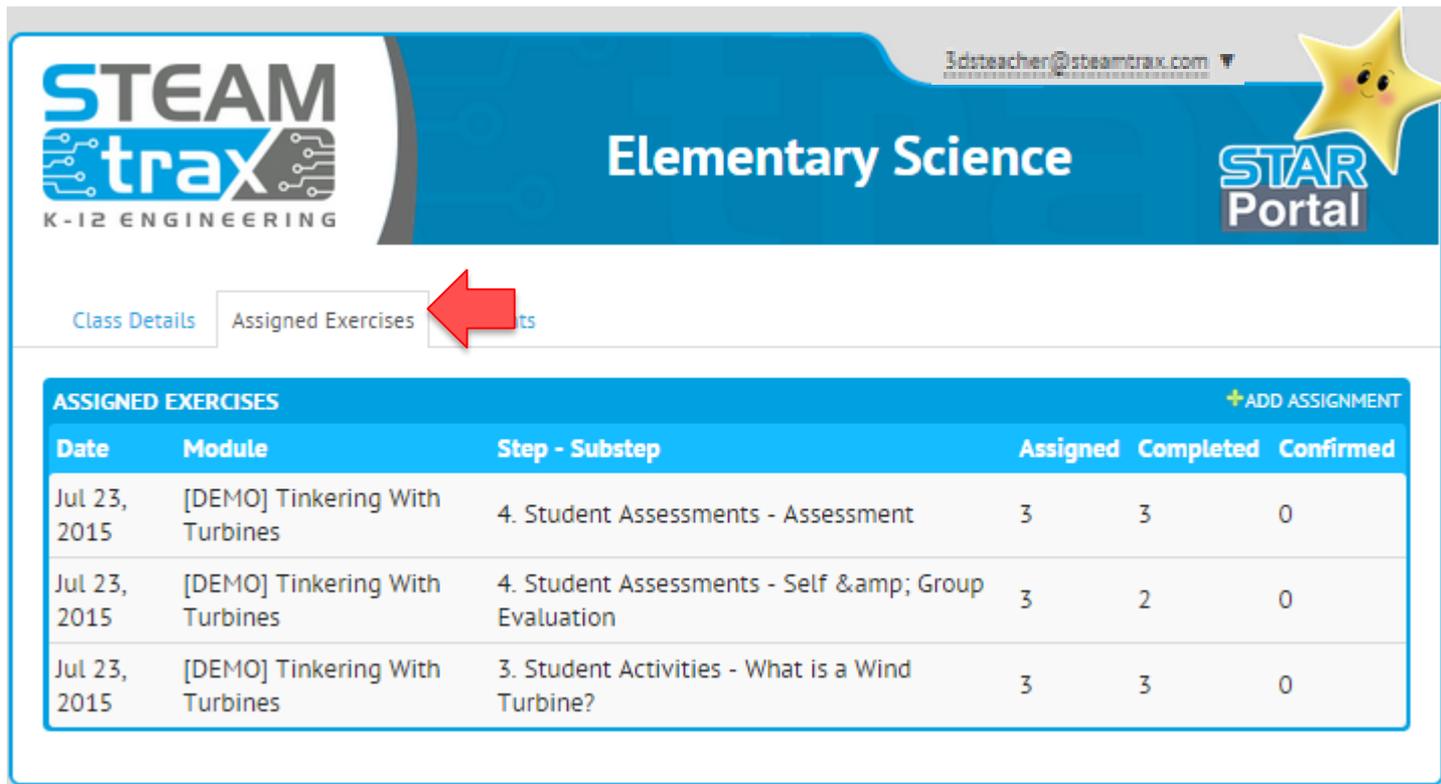
Class Details Assigned Exercises **Students**

STUDENTS			
Name	Email	Username	Join Date
Sample, Student1		3dsstudent1	6/10/2015
Sample, Student2		3dsstudent2	6/10/2015
Sample, Student3		3dsstudent3	6/10/2015

- This section shows a summary of students. If you click through a student, you will see his/her details of assignments that have been completed.

TEACHER DASHBOARD: ASSIGNED EXERCISES

- Navigate to “Assigned Exercises” tab:



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Elementary Science

STAR Portal

Class Details Assigned Exercises

ASSIGNED EXERCISES + ADD ASSIGNMENT					
Date	Module	Step - Substep	Assigned	Completed	Confirmed
Jul 23, 2015	[DEMO] Tinkering With Turbines	4. Student Assessments - Assessment	3	3	0
Jul 23, 2015	[DEMO] Tinkering With Turbines	4. Student Assessments - Self & Group Evaluation	3	2	0
Jul 23, 2015	[DEMO] Tinkering With Turbines	3. Student Activities - What is a Wind Turbine?	3	3	0

- This section shows history of activities that have been assigned and a matrix of what has been completed.

TEACHER DASHBOARD: AVAILABLE RESOURCES

- Navigate back to Teacher Dashboard home page by clicking on the icon:
- Teachers have access the “Latest News” and “3D Printing Resources”
- 3D Printing Resources provide how-to videos on printers, software, scanners as well as other helpful tips.
- “Engineers Today” section and “3D Printing Zone” are also visible on the Student Dashboard.



STAR
Portal

LATEST NEWS

Welcome to the STAR Portal!
Friday, May 1, 2015



The STAR (Student Teacher Administrator Resources) Portal is your one-stop-shop for accessing your modules and interacting with your students.

[Read More...](#)

3D PRINTING RESOURCES

[3DS Sense 3D Scanner Videos](#)
Watch these short how-to videos to learn quick tips and tricks when using your Sense 3D Scanner!



[3DS Cube 3 Printer Videos](#)
Watch these short how-to videos to learn quick tips and tricks when using your 3DS Cube 3 printer!



[Cube Printer Updates](#)
Be sure to download the latest software updates to your Cube Printer by following these simple steps!



[View All](#)

ENGINEERS TODAY! [STUDENT]

[Derby the Dog](#)
See how Engineers at 3D Systems help improve the Life of Derby the Dog!



[Environmental Engineering](#)
What is Environmental Engineering?

[Welcome to "Engineers Today!"](#)
You are the Engineers of tomorrow, starting today! Here are some resources to help you in your journey.

3D PRINTING ZONE [STUDENT]

[Cubify for KIDS](#)
Visit cubify.com/store/kids to access fun 3D printing file downloads and apps to use!

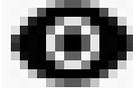


[Designing A Rocket](#)
Shoot for the stars!

[3D Printing Zone](#)
Looking for additional fun exercises and 3D printable fun? You've come to the right place!

TEACHER DASHBOARD: RECENT STUDENT ACTIVITY

- “RECENT STUDENT ACTIVITY” gives the Teacher a running list of recent student activity. The Teacher can review the student submission by clicking on the preview icon.



RECENT STUDENT ACTIVITY	
Student3 Sample completed the activity What is a Wind Turbine? in [DEMO] Tinkering With Turbines 25 minutes ago	
Student2 Sample completed the activity Self & Group Evaluation in [DEMO] Tinkering With Turbines 25 minutes ago	
Student3 Sample completed the activity Assessment in [DEMO] Tinkering With Turbines 29 minutes ago	



- Within the preview, the teacher can decide to “Confirm Assignment Completion” or “Reassign to Student”. This is a way for teachers to track which assignments they have reviewed and to provide feedback to students by reassigning where the submission needs re-work.

Confirm Assignment Completion

Reassign to Student

TEACHER DASHBOARD: AVAILABLE MODULES

- All purchased modules are organized by grade band and can be accessed under “AVAILABLE MODULES”

AVAILABLE MODULES

3rd-5th

[\[DEMO\] Tinkering With Turbines](#)

Students design, print, and test a wind turbine model that transforms wind energy into electric energy after researching types of energy and energy transformations.

[Preview All Modules](#)

- To access the Tinkering with Turbines DEMO module, click on the link.

MODULE VIEW

- Below is what you will see when you enter the module
- Every engineering module is organized the same with 4 sections:
 - 1. Module Preparation: Includes all of the preparation materials for the teacher
 - 2. Classroom Guide: Includes the classroom facing materials
 - 3. Student Activities: Includes the Student Notebook and Assignable Activities
 - 4. Student Assessments: Includes all evaluation materials to assess what was learned as well as the Standard-Based formative Assessment and supporting Answer Key.

The screenshot shows the module view for 'Tinkering With Turbines'. At the top left is the STEAMtrax K-12 Engineering logo. A blue banner with 'DEMO!' is overlaid on the top left. The main title 'Tinkering With Turbines' is in large white letters, with 'Tinkering' in a script font. To the right is the 'STAR Portal' logo and a yellow star character. The email '3dsteacher@steamtrax.com' is in the top right. Below the banner is a navigation bar with four sections: 1. Module Preparation (Pre-Lesson Instructions), 2. Classroom Guide (In-Class Presentation), 3. Student Activities (Assignable Interactives), and 4. Student Assessments (Post-Module Evaluation). Below the navigation bar is a 'Welcome!' section. A 'DEMO!' call-out box states: '*DEMO* Call-Outs such as this are provided throughout this module to provide additional product details.' On the right side, there are three buttons: 'Welcome!', 'Targeted Concepts & Skills', and 'Teacher Background'.

MODULE SECTION VISABILITY

Teacher vs. Student

- Each section has a green Teacher/T or red Student/S notation.
- A Teacher has visibility to all sections (green and red)
- A Student has visibility to red sections only

T Welcome!

T Targeted Concepts & Skills

T Teacher Background

T Set-Up and Management

T Materials Needed

S Parent Letter

1. MODULE PREPARATION Welcome!

- This page welcomes the teacher to the module and provides an outline of the 4 key sections for easy navigation.

1. MODULE PREPARATION

Targeted Concepts & Skills

- This section provides an outline of how the module aligns to different standards, including:
 - Next Generation Science Standards (NGSS)
 - TEKS Concepts (Texas)
 - Common Core (Math/Science)
 - Reading Connection
- It is recommended that you do some research to understand the common standard requirements within your territory.

3dteacher@steamtrax.com

STEAMtrax K-12 ENGINEERING

DEMO! Tinkering With Turbines **STAR Portal**

1. Module Preparation (Pre-Lesson Instructions) | 2. Classroom Guide (In-Class Presentation) | 3. Student Activities (Assignable Interactives) | 4. Student Assessments (Post-Module Evaluation)

Targeted Concepts & Skills

DEMO! STEAMtrax is the only 3dp curriculum that is aligned to NGSS, common core, and state standards.

SCIENCE CONCEPTS

Below is a comprehensive list of concepts covered in this Module and how they are aligned to NGSS, Common Core, and State Standards.

NGSS

- 5-ETS1-2: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- ETS1.B: Developing Possible Solutions
- 5-ESS3-1: Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
- ESS3.C: Human Impacts on Earth Systems

TEKS SCIENCE CONCEPTS

- 5.6A: Explore the uses of energy, including mechanical, light, thermal, electrical, and sound energy.
- 5.6B: Demonstrate that the flow of electricity in circuits requires a complete path through which an electric current can pass and can produce light, heat, and sound.
- 5.7C: Identify alternative energy resources such as wind, solar, hydroelectric, geothermal, and biofuels. (Readiness Standard)

TEKS SCIENTIFIC REASONING AND INVESTIGATION

- 5.1B: Make informed choices in the conservation, disposal, and recycling of materials.
- 5.2A: Describe, plan, and implement simple experimental investigations testing one variable.
- 5.2C: Collect information by detailed observations and accurate measuring.
- 5.2D: Analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence.
- 5.7F: Plan investigations that research investigations may increase the reliability of results.

1. MODULE PREPARATION

Teacher Background

- Each module includes a Teacher Background as a resource for teachers. It is a nice way for teachers to review the science and math concepts that will be taught in the module.
- For Tinkering with Turbines, it covers energy resources, wind, wind turbines, and electrical energy.

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DEMO! Tinkering With Turbines **STAR Portal**

1. Module Preparation
Pre-Lesson Instructions

2. Classroom Guide
In-Class Presentation

3. Student Activities
Assignable Interactives

4. Student Assessments
Post-Module Evaluation

Teacher Background

DEMO! Each module includes a detailed Teacher Background section for teachers to become familiar with the topics prior to teaching the module.

- Welcome!
- Targeted Concepts & Skills
- Teacher Background**
- Set-Up and Management
- Materials Needed
- Parent Letter

Note: The following information is for teacher knowledge. It is not to be required of students.

ENERGY RESOURCES

Most of the energy used in our country today comes from fossil fuels. Natural gas is used for cooking and to heat our homes. Oil is used in our cars and in the manufacturing of plastics. Coal is burned to produce electricity. Renewable energy resources, such as solar, wind, or geothermal, are good alternatives to fossil fuels. Solar, geothermal, and wind are considered renewable resources because they can be replaced within a relatively short period of time.

WIND

Wind is moving air, a type of kinetic energy. Wind is the result of uneven heating of the Earth's surface by the solar energy from the sun. During the day, solar energy heats up landmasses faster than areas of the Earth covered by water. The air above the land warms, expands, and rises. Winds are formed when cooler air from over the oceans or lakes rushes in to fill the space left by the warm rising air. Winds are formed in the reverse direction at night, because landmasses cool off faster than oceans or lakes in the evening.

WIND TURBINES

Wind can be used to generate electricity by wind turbines. Wind turbines transform the kinetic energy of the wind into mechanical or electrical energy. Due to recent developments in wind technology, wind energy has become one of the most promising ways to reduce our use of fossil fuels. Like the windmills used in the past, today's wind turbines use blades to collect the wind's kinetic energy. Wind flowing over the blades creates lift, causing them to turn. The blades are connected to a drive shaft that turns an electric generator to generate electrical energy.

ELECTRICAL ENERGY

Electricity is the flow of negatively charged particles called electrons through a conductor. Conductors are materials or objects that allow electrons to easily flow through them, such as metals. A closed circuit has a complete path of conducting materials for electricity to travel as it flows from the negative electrode where there is a surplus of electrons, to the positive electrode, where there are fewer electrons. In a closed circuit containing a light bulb, electrons flow from a battery or hand crank generator, through wires or leads that contain wires, to the bulb that lights up. This circuit demonstrates many energy transformations as chemical energy from a battery flows as electrons (electrical energy), from the negative end of the battery through the wires to the bulb, which pass through the filament of the bulb, which gets hot (thermal energy) enough to glow as light energy.

1. MODULE PREPARATION

Set-Up and Management

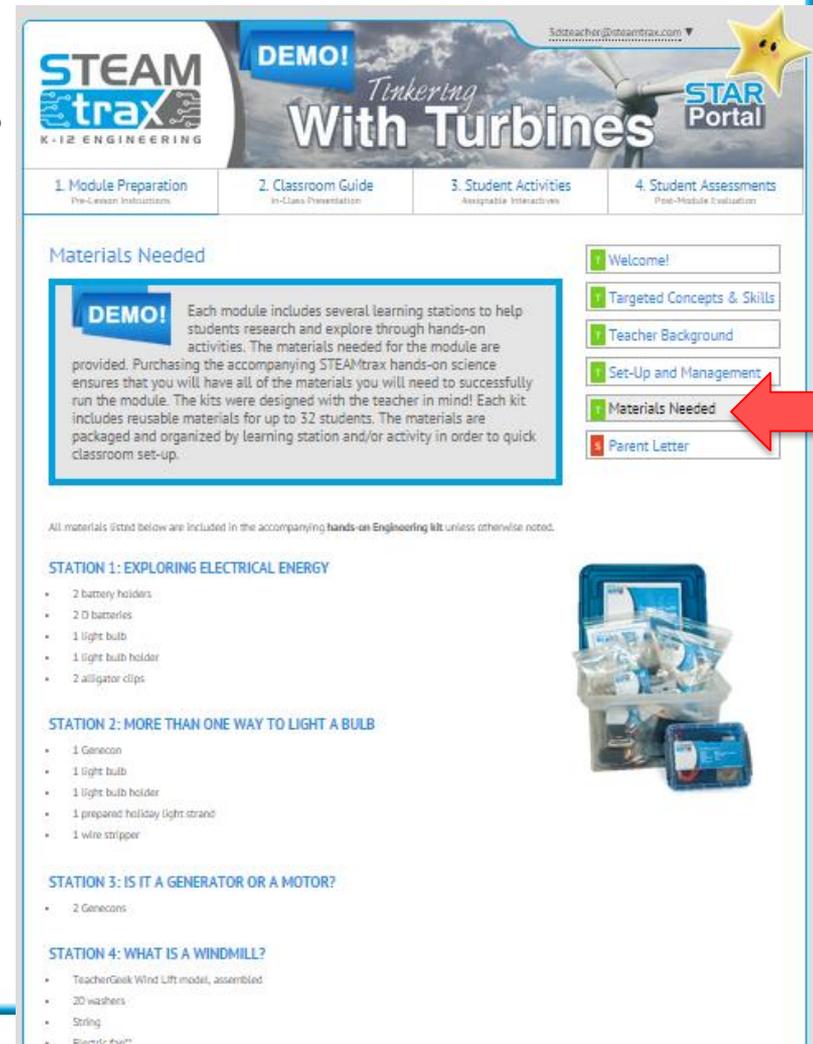
- The Set-Up and Management section provides guidance to teachers on what should be printed out ahead of time and how to set-up the learning stations.

The screenshot shows the website interface for the 'Tinkering With Turbines' module. At the top, there is a navigation bar with four tabs: '1. Module Preparation', '2. Classroom Guide', '3. Student Activities', and '4. Student Assessments'. Below this, the 'Set-Up and Management' section is highlighted. On the right side, there is a vertical navigation menu with links: 'Welcome!', 'Targeted Concepts & Skills', 'Teacher Background', 'Set-Up and Management', 'Materials Needed', and 'Parent Letter'. A red arrow points to the 'Set-Up and Management' link. The main content area contains a 'DEMO!' box with text: 'This section provides guidance for the teacher to prepare and set-up the class prior to teaching the module. The materials included in the accompanying hands-on science kit are organized by learning station for quick classroom set-up.' Below this, there are instructions for gathering materials, duplicating copies, and assembling station signs.

1. MODULE PREPARATION

Materials Needed

- The Materials Needed section provides a complete list of all the hands-on materials needed to run the module.
- It is organized by station or activity.
- All of the materials listed are included in the accompanying hands-on Engineering Kit (pictured on page), unless otherwise noted by **.
- This is a great way to show your customer the value of the hands-on Engineering Kit.
- As a reminder, our Engineering Kits have all been CPSIA certified with Children's Product Certificate.



STEAMtrax K-12 ENGINEERING

DEMO! Tinkering With Turbines STAR Portal

1. Module Preparation Pre-Lesson Instructions

2. Classroom Guide In-Class Presentation

3. Student Activities Assignable Interactions

4. Student Assessments Post-Module Evaluations

Materials Needed

DEMO! Each module includes several learning stations to help students research and explore through hands-on activities. The materials needed for the module are provided. Purchasing the accompanying STEAMtrax hands-on science ensures that you will have all of the materials you will need to successfully run the module. The kits were designed with the teacher in mind! Each kit includes reusable materials for up to 32 students. The materials are packaged and organized by learning station and/or activity in order to quick classroom set-up.

All materials listed below are included in the accompanying hands-on Engineering kit unless otherwise noted.

STATION 1: EXPLORING ELECTRICAL ENERGY

- 2 battery holders
- 2 D batteries
- 1 light bulb
- 1 light bulb holder
- 2 alligator clips

STATION 2: MORE THAN ONE WAY TO LIGHT A BULB

- 1 Genecon
- 1 light bulb
- 1 light bulb holder
- 1 prepared holiday light strand
- 1 wire stripper

STATION 3: IS IT A GENERATOR OR A MOTOR?

- 2 Genecons

STATION 4: WHAT IS A WINDMILL?

- TeacherGeek Wind Lift model, assembled
- 2D washers
- String
- Roundie Easi**

1 Welcome!

2 Targeted Concepts & Skills

3 Teacher Background

4 Set-Up and Management

5 Materials Needed

6 Parent Letter

1. MODULE PREPARATION

Parent Letter

- We provide a Parent Letter, customized for each module, for the teacher to send home with students.
- This is a great way to alert parents/guardians that their child will be going through a STEAMtrax module and using a 3D printer!
- The Parent Letter can be downloaded and printed out.
- Students have access to the letter to show their parents.

The screenshot shows the STEAMtrax interface for the 'Tinkering With Turbines' module. At the top, there is a header with the STEAMtrax logo, a 'DEMO!' badge, the title 'Tinkering With Turbines', and a 'STAR Portal' logo. Below the header is a navigation menu with four tabs: '1. Module Preparation (Pre-Lesson Instructions)', '2. Classroom Guide (In-Class Presentation)', '3. Student Activities (Assignable Interactivities)', and '4. Student Assessments (Post-Module Evaluation)'. The 'Parent Letter' section is highlighted, and a red arrow points to the 'Parent Letter' item in the right-hand sidebar menu. The sidebar menu includes: 'Welcome!', 'Targeted Concepts & Skills', 'Teacher Background', 'Set-Up and Management', 'Materials Needed', and 'Parent Letter'.

2. CLASSROOM GUIDE Facilitation Guide

- The Facilitation Guide is the ultimate resource for the teacher and includes all of the pacing, facilitation questions, objectives, and overall step-by-step guidance to run the module.
- It is recommended that the teacher print this out ahead of teaching the module to understand the flow and to take any notes.

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DEMO! Tinkering With Turbines

3dteacher@stamtrax.com

STAR Portal

1. Module Preparation
Pre-Lesson Instructions

2. Classroom Guide
In-Class Presentation

3. Student Activities
Assessable Interactivities

4. Student Assessments
Post-Module Evaluation

Facilitation Guide

DEMO! The Facilitation Guide was designed to be a helpful tool for teachers to provide guidance to the class while projecting the classroom guide slides. It includes lesson pacing, objectives, student notebook entry answers, and facilitation questions.

Facilitation Guide

Classroom Guide

3D Printing Files

Utilize this Facilitation Guide alongside the on-screen Classroom Guide. It will provide prompts, answers, and call outs to help facilitate your classroom conversation.

[Download Facilitation Guide for Tinkering with Turbines](#)

STEAM trax K-12 ENGINEERING

Facilitation Guide

STAR 1:

MIND INTRODUCTION

In the STEAM module, students discover that wind energy can be harnessed into electrical energy by wind turbines through the story of Willem Kalkbrenner, a young man who designed and built a wind turbine to help his family charge.

MODULE OBJECTIVES

Students will learn the following targeted concepts and skills:

- Identify alternative energy resources such as wind, solar, hydroelectric, geothermal, and biomass.
- Explore the uses of energy, including mechanical, light, thermal, electrical, and sound energy.
- Demonstrate that the flow of electricity in circuits occurs as complete paths through which electrons can pass and can include light, heat, and sound.
- Identify energy transfer systems in an electrical circuit.

NEXT GENERATION SCIENCE STANDARDS (NGSS)

3-5-ETS1-1: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-3: Draw and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

SC.8.EE.1: Identify and compare information about ways individual communities use various ideas to protect the Earth's resources and environment.

MIND ENGINEERING DESIGN PROCESS

OBJECTIVE

Introduce students to the STEAM-based Engineering Design Process and to different types of Engineers.

CLASS GUIDANCE

- Engage in the curiosity that they will follow the Engineering Design Process in order to solve the design challenge. Share with the students that Engineers use scientific, math, and engineering to help solve the world's problems. Remind the students that they can learn more about Engineering by logging on to the STAR Portal.
- Explain to students that a flow chart is a diagram showing a sequence of events.

Ask:

- What is the title of this flow chart? (Engineering Design Process)

CLASSROOM ACTIVATION

Engagement: Engage students in solving the design challenge using math and science. (Engineering ideas on solving the design challenge are provided.)

- What type of engineer does science, math, and engineering to construct a healthy future environment for today's generation? (An Environmental Engineer)

Environmental engineers use math and science to address environmental challenges, such as air pollution, water and pollution. They also study the impact of the environment on people's construction projects and development of alternative energy resources.

- Explain to the students that they will follow the Engineering Design Process in order to solve the design challenge.

Ask:

- What is Step 1? (Step 1 is to define the problem.)
- What is the first part of solving the problem? (See the image.)

2

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3

2. CLASSROOM GUIDE

Facilitation Guide

- It is recommended you download the Facilitation Guide PDF prior to the demonstration in order to quickly showcase with your customer after speaking to it. It is critical for the teacher to see the details that are included.

The collage displays several pages from the STEAMtrax Facilitation Guide, including:

- Page 1:** Introduction to the STEAMtrax module, module objectives, and Next Generation Science Standards (NGSS).
- Page 2:** Engineering Design Process overview and class guidance.
- Page 3:** Facilitation questions for the 'Setting the Stage' activity.
- Page 4:** Student notebook entry for the 'Setting the Stage' activity.
- Page 5:** Facilitation questions for the 'Identify the Problem and Design Challenge' activity.
- Page 6:** Student notebook entry for the 'Identify the Problem and Design Challenge' activity.
- Page 7:** Criteria and constraints for a skateboard design challenge.
- Page 8:** Facilitation questions for the 'Criteria and Constraints of a Skateboard' activity.
- Page 9:** Student notebook entry for the 'Criteria and Constraints of a Skateboard' activity.

2. CLASSROOM GUIDE

Classroom Guide

- The Classroom Guide is truly the ultimate resource for teachers to use in the classroom.
- Every module follows the Engineering Design Process.
- The EDP on this page is interactive which means that each sub-step is a link.
- Click on “Set the Stage” to get started.

STEAM trax **DEMO!** *Tinkering With Turbines* **STAR Portal**

1. Module Preparation: Pre-Lesson Instructions | 2. Classroom Guide: In-Class Presentation | 3. Student Activities: Assignable Interactives | 4. Student Assessments: Post-Module Evaluation

Classroom Guide

DEMO! The Classroom Guide was designed to be projected in front of the class and to be used in conjunction with the accompanying Facilitation Guide. To activate the slides, simply click through any of the Engineering Design Guide sub-steps. The slide view includes a navigation tool bar to advance a slide or mark a section complete as a placeholder for the next class.

Facilitation Guide
 Classroom Guide
 3D Printing Files

Below is your **Engineering Design Process Guide**, which will serve as an interactive menu to navigate through your In-Class Presentation.

Clicking on each section will take you to the appropriate full-screen slide. You may then navigate forward, backward, as well as mark each section complete.

Simply close the presentation to return to this Interactive Menu. We'll even keep track of which sections you've completed and where you visited last!

STEP 1: Define the Problem

- Set the Stage
- Identify the Problem
- Identify the Constraints and Criteria
- Discuss and Guide
- Research and Explore

STEP 2: Develop a Solution

- Brainstorm and 2D Sketch
- Debate and Decide
- 3D Prototype
- Test and Analyze
- 3D Create and Print

STEP 3: Test the Design

- Test
- Communicate

STEP 4: Improve the Design

- reDesign
- Defend
- 3D reCreate and Print
- Write and Wrap Up

Extend and Apply

- Entrepreneurship
- Art
- Community

2. CLASSROOM GUIDE

Classroom Guide

- The EDP Classroom Guide launches into a slide pop-up for the teacher to project on a screen or electronic white board.
- A teacher can navigate to the next slide by clicking on the “Next” in lower center of the slide OR by clicking on the left-side navigation.

STEP 1: Define the Problem
Set the Stage
Identify the Problem
Identify the Constraints and Criteria
Discuss and Guide
Research and Explore

OR

< Prev	Next >
--------	--------

2. CLASSROOM GUIDE

Classroom Guide

- At the end of a sub-step, a navigation button called “Mark Section Complete” will appear
- By clicking on the button, it will place a checkmark next to the sub-step
- Teachers can use the function as a way to remember where the class left off so that he/she can easily start back up next period.



2. CLASSROOM GUIDE

3D Printing Files

- The 3D Printing Files section provides a sample STL file and Step-by-Step CAD instructions for the teacher and students to use/reference
- For Tinkering with Turbines, the children will be designing and 3D printing out a wind turbine blade. We have provided 4 STL blade files and accompanying instructions.
- Students have access and visibility to the section which is a great way for them to practice at home and/or show their parents.

The screenshot shows the STEAM trax website interface. At the top, there is a navigation bar with the STEAM trax logo and a 'DEMO!' banner. Below the navigation bar, there are four main sections: 1. Module Preparation, 2. Classroom Guide, 3. Student Activities, and 4. Student Assessments. The '3D Printing Files' section is highlighted with a blue box and a 'DEMO!' label. A red arrow points to the '3D Printing Files' link in the right-hand sidebar. Below the '3D Printing Files' section, there is a 'STL FILE(S)' section with links to download four STL files (Blade 1, 2, 3, and 4). There is also a 'TINKERCAD' section with links to download design files for each blade.

STEAM trax K-12 ENGINEERING

DEMO! Tinkering With Turbines **STAR Portal**

3dteacher@steamtrax.com

1. Module Preparation Pre-Lesson Instructions

2. Classroom Guide In-Class Presentation

3. Student Activities Assignable Interactivities

4. Student Assessments Post-Module Evaluations

3D Printing Files

DEMO! Teachers and Students can access the STL files and CAD step-by-step instructions here!

Facilitation Guide

Classroom Guide

3D Printing Files

STL FILE(S)

Download 3D Printing Files here! They are in .STL format ready to be used with your 3D printer!

[Blade 1 STL File Download](#)

[Blade 2 STL File Download](#)

[Blade 3 STL File Download](#)

[Blade 4 STL File Download](#)

TINKERCAD

Tinkercad is a web based design application that is fun and easy to use. Anyone can use Tinkercad, just set up your free account at Tinkercad.com and you can design amazing objects to print on your 3D printer!

[Download Designing Blade 1 with Tinkercad](#)

[Download Designing Blade 2 with Tinkercad](#)

[Download Designing Blade 3 with Tinkercad](#)

[Download Designing Blade 4 with Tinkercad](#)

2. CLASSROOM GUIDE

3D Printing Files

- It is recommended you download the one of the Step-by-Step Tinkercad (CAD) Instructions PDF for one of the blades prior to the demonstration in order to quickly showcase with your customer after speaking to it. It is critical for the teacher to see the details that are included.

Tinkercad is a web-based design application that is fun and easy to use. Anyone can use Tinkercad—just set up your free account at Tinkercad.com and you can design and print on your 3D printer!

Follow the instructions below as a guide to design a 3D printable stl file for a wind turbine blade.

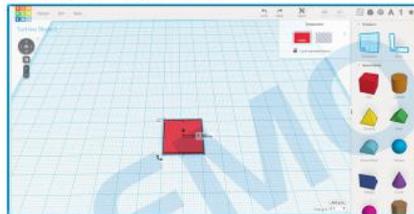
1. Log into your account on Tinkercad.com. Select the "Create New Design"



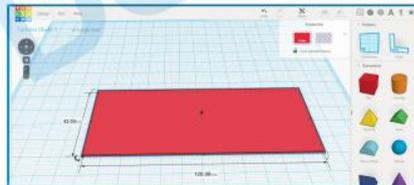
2

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4. In the Geometric tab on the right, select a Box and drag it onto your Workplane. In the bottom right corner change Snap Grid to .01.



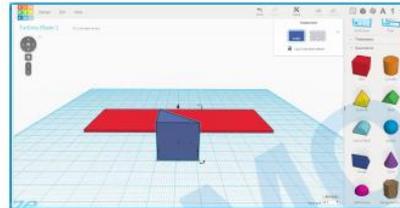
5. Change the Box height to 1.5 mm. Change the Box length to 43 mm. Change the Box width to 120 mm.



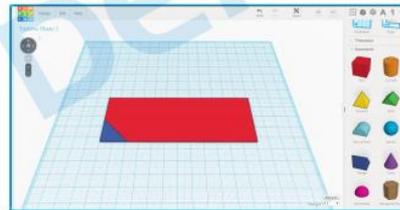
4

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6. Select a Wedge from the Geometric tab and place it on the Workplane. Rotate it 90° to the right.



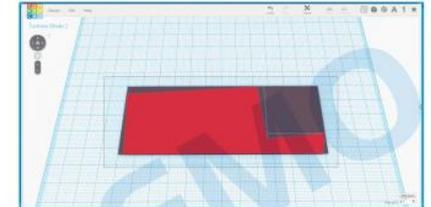
7. Change the height of the Wedge to 1.5 mm. Place the Wedge in the bottom left-hand corner of the big Box. Change the Length of the Wedge to 43 mm, and the Width of the Wedge to 3 mm.



www.steamtrax.com

5

21. Drag your mouse over all of the shapes to select them. In the top toolbar, select group, to make the shapes into one single shape.



22. Save your file as an STL file by clicking "Design" and then selecting "Download for 3D Printing" from the "Design" drop-down menu. Once selected a "Download for 3D Printing" dialog box will appear. Choose .STL and then save the file to your desktop. The stl file will then save as a download to your computer. When you open the downloaded file on your computer, your Cubify software will open and start building the cube file needed to print on the Cube printer.

14

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3. STUDENT ACTIVITIES

What is a Wind Turbine?

- In Tinkering with Turbines there is a digital activity called What is a Wind Turbine?
- In this activity, students will read and watch the video.
- Once the teacher assigns this activity, a student would see a “Complete” button to click on upon completion of the activity.

The screenshot shows the STEAM trax K-12 ENGINEERING Teacher Dashboard. At the top, there is a navigation bar with four tabs: 1. Module Preparation (Pre-Lesson Instructions), 2. Classroom Guide (In-Class Presentation), 3. Student Activities (Assignable Interactivities), and 4. Student Assessments (Post-Module Evaluations). The 'Student Activities' tab is selected. Below the navigation bar, there is a yellow box with the text: 'This activity is always visible to your students.' and 'To assign this activity for students to complete, click on "Assign to Students."' with an 'Assign to Students' button. Below this, the activity title 'What is a Wind Turbine?' is displayed. To the right of the title, there are two buttons: 'What is a Wind Turbine?' and 'Lesson Downloads'. A red arrow points to the 'What is a Wind Turbine?' button. Below the title, there is a 'DEMO!' box with the text: 'This is an activity that can be assigned by the teacher to be completed by students during or outside of the classroom. Teachers may assign by clicking "Assign to Students" directly on this page or via the Teacher Dashboard (STAR Portal).' Below the demo box, there is a paragraph of text: 'Most of the energy used in our country today comes from fossil fuels. Natural gas is used for cooking and to heat our homes. Oil is used in our cars and in the manufacturing of plastics. Coal is burned to produce electricity. Renewable energy resources, such as solar, wind, or geothermal, are good alternatives to fossil fuels. Unlike fossil fuels, these resources can be replaced within a relatively short period of time.' Below the text, there is another paragraph: 'Due to recent developments in wind technology, wind energy has become one of the most promising ways to reduce our use of fossil fuels. Wind turbines capture energy from the wind. Like the windmills used in the past, today's wind turbines use blades to collect the wind's kinetic energy. Wind flowing over the blades creates lift, causing them to turn. The blades are connected to a drive shaft that turns an electric generator to generate electricity. Watch this video about wind turbines.' Below the text, there is a video player titled 'Energy 101: Wind Turbines' with a play button icon. The video player shows a close-up of a wind turbine blade against a blue sky background.

3. STUDENT ACTIVITIES

Student Notebook

- Each module includes a downloadable Student Notebook for students to record their observations and answers.
- It is recommended that the teacher/school make print-outs of the Student Notebook prior to teaching the module.
- The Student Notebook is visible to the students so if he/she misplaces it, it is available for download.

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STEAM trax K-12 ENGINEERING

DEMO! Tinkering With Turbines **STAR Portal**

1. Module Preparation
Pre-Lesson Instructions

2. Classroom Guide
In-Class Presentation

3. Student Activities
Assignable Interactivities

4. Student Assessments
Post-Module Evaluation

Lesson Downloads

DEMO! Each module has a Student Notebook for students to record key learnings and observations. Students may download a copy of their Student Notebook here.

What is a Wind Turbine?

Lesson Downloads

STUDENT NOTEBOOK

[Download Student Notebook for Tinkering with Turbines](#)

Student Notebook

Tinkering With Turbines

www.stamtrax.com

2. CLASSROOM GUIDE

3D Printing Files

- It is recommended you download the one of the Student Notebook PDF for Tinkering with Turbines prior to the demonstration in order to quickly showcase with your customer after speaking to it. It is critical for the teacher to see the details that are included.



DEFINE THE PROBLEM
Setting the Stage

This is Stacy STEAMtrax reporting to you as I fly to Malawi, Africa. I am traveling to a village called Wimbe to investigate a story about a fourteen year old boy called William Kamkwamba, who designed and built a wind turbine to help his village.



William grew up in the poor village of Wimbe in Malawi, Africa. Like the other villagers, William's family raised corn on their small farm for food. When William was fourteen years old, a severe drought with no rain and strong winds dried up the corn crop. The people of Malawi began to starve, and William left fortunate to have one handful of corn meal each day for dinner. His family could no longer afford to pay his \$50 yearly fee for school, so William had to drop out.

Luckily, the school allowed William to borrow books so he could continue to study science. William borrowed a 5th grade book called Using Energy with windmills and wind turbines on its cover. He set the book to learn about electricity, electrical circuits, generators, and how to build a wind turbine.

The villagers who did not understand science laughed when William began to visit the junk yard to gather materials to build a windmill. He dragged home a rusty tractor fan, plastic pipe, wire, bolts, and a broken bike with a small generator headlight and bulb. To build thin blades to catch wind, he melted plastic pipe over a fire, flattened the pipe, and then shaped the blades with a saw. William's friends helped him to build a strong tower out of wood from trees and raise the plastic fan blades up to the top of the tower. William connected the generator from the bike, and everyone waited for the winds to come that evening.

When the winds came, the blades started to turn. William connected the wires from the bike headlight generator to the bulb, and the bulb lit! The villagers cheered, and praised William for discovering "his wind," which could provide power for a home.

Soon William designed and built another a wind mill from junkyard materials, and found a way to use power of the wind to draw water up from a small well near his home to water the parched crops on his family's farm.

Journalists in Africa wrote about William's story, and how he taught himself how to build a windmill to save his family from drought and famine. People from all over the world were moved by the story of William's determination and courage, and donated money to send him back to school to keep learning about science and engineering. Mickey was also donated to improve the wind turbines in his village irrigate the maize crops and prevent famine from droughts in the future. William is now an engineering student at Dartmouth College in New Hampshire. After he graduates, he plans to return to Malawi to continue his work to use wind as a renewable energy source to generate electricity and to pump water in African villages.

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Station Data Sheet

DEFINE THE PROBLEM
Setting the Stage Continued

- Read the story of William Kamkwamba, and how he overcame challenge and village from starvation.
- Complete the CLOZE sentence below about William's problem:

The challenge is to design a _____ that will _____

CRITERIA OR DESIGN REQUIREMENTS
List the criteria or what the design requires and the constraints or limits due to resources and environment below.

Criteria: _____

Constraints or Limits on the Design:

What are other questions or science concepts you need to learn before the problem?

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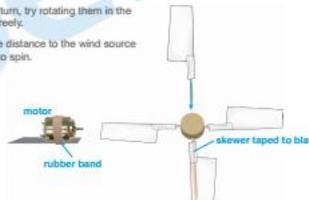
Student Notebook

Which Rotor System Works Best?

Follow the directions below to construct a wind turbine rotor. This rotor will be used to test how much electricity your model can generate. If you don't understand a direction or have trouble deciding what to do, study Figure 1 following these directions.

- Attach two alligator clips to the flat end of the motor.
- Use a rubber band to attach the electric motor to the end of a ruler. Be sure the shaft of the motor sticks past the end of the ruler.
- Use tape to attach the skewers to the cardstock wind turbine blades that your group selected. Think carefully about where the skewer should be taped to the blade.
- Insert the skewers into the hub to attach the blades. Push the hub onto the motor shaft.
- Rotate the ends of the skewers to get the blades to the desired angles in the hub, and place the cover on the hub.
- Take your rotor system to the voltage measuring station.
- Attach the alligator clips from the motor to the alligator clips on the DC voltmeter or voltage probe.
- Place the rotor system about 25 cm away from the fan (the wind source). Turn on the fan and measure the voltage produced.
- If the blades do not turn, try rotating them in the hub until they spin freely.
- If needed, adjust the distance to the wind source to allow the blades to spin.

Figure 1



Voltage generated by the rotor system _____

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4. STUDENT ASSESSMENTS

Evaluation Rubric

- The Evaluation Rubric is downloadable and is provided as an example rubric for students to reference.
- Each module has its own Evaluation Rubric.

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STEAM trax K-12 ENGINEERING

DEMO! Tinkering With Turbines **STAR Portal**

1. Module Preparation
Pre-Lesson Instructions

2. Classroom Guide
In-Class Presentation

3. Student Activities
Assignable Interactives

4. Student Assessments
Post-Module Evaluation

Evaluation Rubric

DEMO! For the design and 2D sketch section of the Engineering Design Process, students have access to the downloadable sample rubric.

- 5 Evaluation Rubric
- 5 Self & Group Evaluation
- 5 Assessment
- 1 Teacher Answer Key

[Download Evaluation Rubric](#)

STEAM trax K-12 ENGINEERING Evaluation Rubric

Group Members: _____

Wind Turbine Rubric

Criteria Assessed	Meets Criteria with High Quality	Meets Criteria	Meets Criteria at the Grade Level	Does Not Meet Criteria
Model is complete and realistic				
Model is constructed of appropriate materials				
Model is well identified				
The student(s) who made up the model				
Model illustrates appropriate aerodynamics				
Model is aesthetically pleasing				
Model is a successful solution				
Group members worked well together				
Group members participated equally				

Group Score: _____ Grade Conversion Scale:
 50-100 = A
 40-50 = B
 30-40 = C
 20-30 = D
 Below 20 = F

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4. STUDENT ASSESSMENTS

Self & Group Evaluation

- The Self & Group Evaluation is intended to be completed at the conclusion of the module.
- Students have a copy of the Self & Group Evaluation in their Student Notebooks.
- The teacher can choose to have students fill out in their Student Notebooks or have them complete it on the Portal as an assignment.

The screenshot shows the STEAMtrax portal interface for the 'Tinkering With Turbines' module. At the top, there is a navigation bar with four tabs: '1. Module Preparation' (Pre-Lesson Instructions), '2. Classroom Guide' (In-Class Presentation), '3. Student Activities' (Assignable Interactions), and '4. Student Assessments' (Post-Module Evaluation). The '4. Student Assessments' tab is selected. Below the navigation bar, there is a yellow box with the text: 'This activity is always visible to your students.' and a button labeled 'Assign to Students'. Below this, the title 'Self & Group Evaluation' is displayed. To the right of the title, there are four buttons: 'Evaluation Rubric', 'Self & Group Evaluation', 'Assessment', and 'Teacher Answer Key'. A red arrow points to the 'Self & Group Evaluation' button. Below the buttons, there is a section for the evaluation questions. The first question is '1. How well did your wind turbine work?' with a text input field. The second question is '2. Did your wind turbine meet your expectations? Why or why not?' with a text input field. The third question is '3. Describe one problem you had while constructing your wind turbine. How did you solve this problem?' with a text input field. The fourth question is '4. List two things you learned from working on this project.' with a text input field. The STEAMtrax logo and 'K-12 ENGINEERING' are visible in the top left corner of the portal. A 'DEMO!' badge is in the top right corner. The 'STAR Portal' logo is also present. The user email '3dsteacher@steamtrax.com' is visible in the top right corner.

4. STUDENT ASSESSMENTS

Assessment

- Each module has its own standards-based Assessment
- The Assessment is not visible to students until it has been assigned by the teacher.

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STEAM trax K-12 ENGINEERING

DEMO! Tinkering With Turbines **STAR Portal**

1. Module Preparation
Pre-Lesson Instructions

2. Classroom Guide
In-Class Presentation

3. Student Activities
Assignable Interactives

4. Student Assessments
Post-Module Evaluation

This post-module assessment is not viewable to your students until it has been assigned. To assign this Assessment to your students, click on "Assign to Students."

Assign to Students

Assessment

DEMO! The Student Assessment is an assignable, interactive End-of-Module assessment for students.

- Evaluation Rubric
- Self & Group Evaluation
- Assessment**
- Teacher Answer Key

Directions: Choose the best answer for each question below. Remember to use and show your test taking strategies!

1. Which of the following is a disadvantage of using wind energy to produce electricity --

- a. The wind does not blow all of the time.
- b. Wind energy is a renewable resource.
- c. Wind energy does not pollute the environment.
- d. Electricity produced from wind energy can be sent long distances.

2. Why is wind energy considered a renewable resource? Wind energy --

- a. Can be transferred directly into electrical energy.
- b. Is clean and efficient to use.
- c. Does not produce air pollutants.
- d. Can be replenished in a short period of time.

4. STUDENT ASSESSMENTS

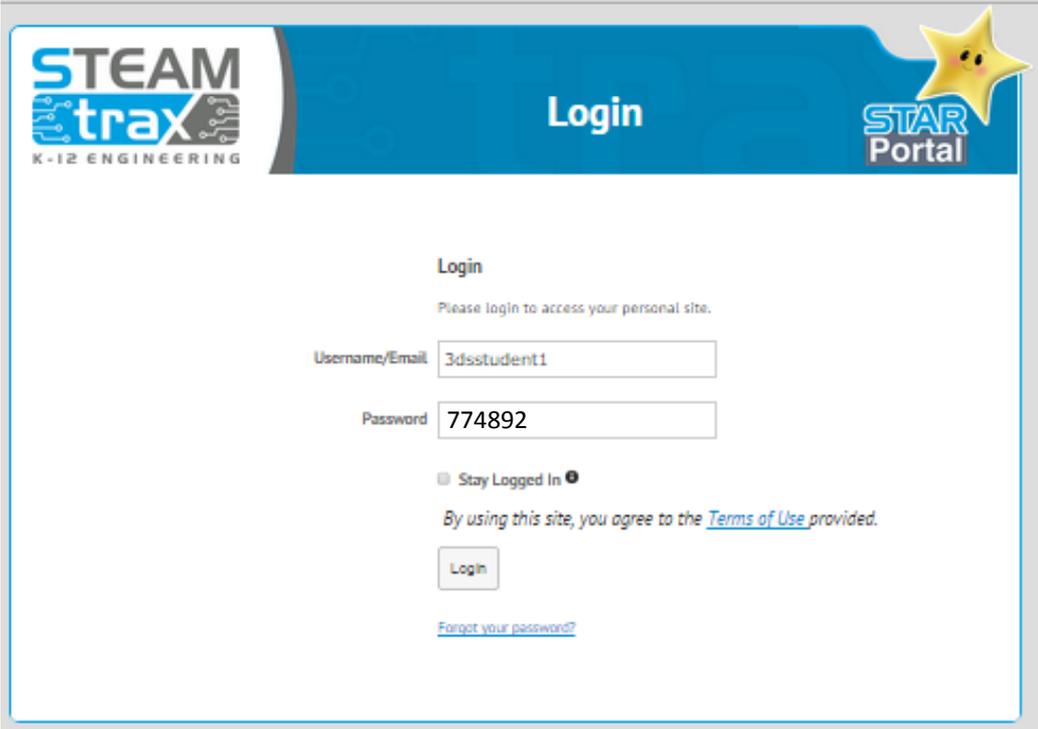
Teacher Answer Key

- We provide teachers with the Assessment answer key as a reference.

The screenshot shows the STEAMtrax STAR Portal interface for the module 'Tinkering With Turbines'. The header includes the STEAMtrax logo, a 'DEMO!' badge, the email address '3dsteacher@steamtrax.com', and a yellow star character. Below the header is a navigation bar with four tabs: '1. Module Preparation (Pre-Lesson Instructions)', '2. Classroom Guide (In-Class Presentation)', '3. Student Activities (Assignable Interactives)', and '4. Student Assessments (Post-Module Evaluation)'. The '4. Student Assessments' tab is selected. The main content area is titled 'Teacher Answer Key' and contains an 'ASSESSMENT KEY' section with a list of five items: 1. A, 2. D, 3. C, 4. B, and 5. C. To the right of the main content is a vertical menu with four options: 'Evaluation Rubric', 'Self & Group Evaluation', 'Assessment', and 'Teacher Answer Key'. A red arrow points to the 'Teacher Answer Key' option in this menu.

LOGGING IN - STUDENT

- Go to build.steamtrax.com and fill in the student login credentials:
 - Username/Email = **3dsstudent1**
 - Password: **774892** (August 2015)



STEAM
trax
K-12 ENGINEERING

Login

STAR
Portal

Login

Please login to access your personal site.

Username/Email

Password

Stay Logged In

By using this site, you agree to the [Terms of Use](#) provided.

[Forgot your password?](#)

STUDENT DASHBOARD

- Once you login as a student, you will see the Student-facing dashboard. The next series of slides will call out key features for you to share with your customer.



The screenshot shows a student dashboard for '3D Systems DEMO Student'. The header includes the STEAM trax logo, a 'Welcome, Student1!' message, and a 'STAR Portal' icon. The dashboard is divided into several sections:

- SUMMARY:** A table showing assignment statistics:

Total Assignments	2
Complete Assignments	2
Confirmed Assignments	0
- ENGINEERS TODAY! [STUDENT]:** A section titled 'Welcome to "Engineers Today!"' with a message: 'You are the Engineers of tomorrow, starting today! Here are some resources to help you in your journey.' It lists 'Environmental Engineering' and 'Derby the Dog' with brief descriptions and a small image of a dog on a leash.
- AVAILABLE MODULES:** A section for '3rd-5th' grade featuring a 'DEMO! Tinkering With Turbines' module. The description states: 'Students design, print, and test a wind turbine model that transforms wind energy into electric energy after researching types of energy and energy transformations.' A small image of a wind turbine is shown.
- ACTIVITY LOG:** A list of recent activities:
 - You completed an assignment! - in a few seconds [DEMO] Tinkering With Turbines - 4. Student Assessments - Assessment
 - You completed an assignment! - a few seconds ago [DEMO] Tinkering With Turbines - 3. Student Activities - What is a Wind Turbine?
 - You have been assigned an assignment. - 2 minutes ago [DEMO] Tinkering With Turbines - 4. Student Assessments - Assessment
 - You have been assigned an assignment. - 3 minutes ago [DEMO] Tinkering With Turbines - 3. Student Activities - What is a Wind Turbine?
- 3D PRINTING ZONE [STUDENT]:** A section titled 'Cubify for KIDS' with a link to 'cubify.com/students' and a note: 'Visit cubify.com/students to access fun 3D printing file downloads and apps to use!' It also includes 'Designing A Rocket' with the text 'Shoot for the stars!' and '3D Printing Zone' with the text 'Looking for additional fun exercises and 3D printable fun? You've come to the right place!'.

STUDENT DASHBOARD

Stacy STEAMtrax

Way to go! You don't have any Assigned Exercises at this time. How about you visit the 3D Printing Zone or browse your Available Modules!



- For our K-8 students, Stacy STEAMtrax provides fun guidance on any new assignments or letting the student know when all of the assignments have been completed.

STUDENT DASHBOARD

Summary & Activity Log

- Each student has a SUMMARY section that provides status on total number of assignments, total completed assignments, and confirmed assignments.
- Confirmed Assignments indicates the number of assignments that the teacher has reviewed. It is similar to receiving a check mark for completion.
- The ACTIVITY LOG provides a record of what the student has been assigned, when it was assigned, as well as a log of when the student completed an assignment.

SUMMARY	
Total Assignments	3
Complete Assignments	3
Confirmed Assignments	0

ACTIVITY LOG	
You completed an assignment! - 3 hours ago [DEMO] Tinkering With Turbines - 4. Student Assessments - Assessment	👁
You completed an assignment! - 3 hours ago [DEMO] Tinkering With Turbines - 3. Student Activities - What is a Wind Turbine?	👁
You completed an assignment! - 3 hours ago [DEMO] Tinkering With Turbines - 4. Student Assessments - Self & Group Evaluation	👁
You have been assigned an assignment. - 3 hours ago [DEMO] Tinkering With Turbines - 4. Student Assessments - Assessment	👁
You have been assigned an assignment. - 3 hours ago [DEMO] Tinkering With Turbines - 4. Student Assessments - Self & Group Evaluation	👁

STUDENT DASHBOARD

Resources

- Students get updates on engineering in the ENGINEERS TODAY section. “Derby the Dog” is a heart-warming story you will definitely want to watch and alert your customers to!
- 3D PRINTING RESOURCES is a great way for students to get STL files and news on 3D printing in and outside of the classroom.

ENGINEERS TODAY!

Welcome to "Engineers Today!"

You are the Engineers of tomorrow, starting today! Here are some resources to help you in your journey.

Environmental Engineering

What is Environmental Engineering?

Derby the Dog

See how Engineers at 3D Systems help improve the Life of Derby the Dog!



3D PRINTING RESOURCES

Cubify for KIDS

Visit cubify.com/store/kids to access fun 3D printing file downloads and apps to use!



STUDENT MODULE ACCESS

- Just like teachers, students can access a module by clicking on the module link under “AVAILABLE MODULES”

AVAILABLE MODULES

3rd-5th

 [\[DEMO\] Tinkering With Turbines](#) 

Students design, print, and test a wind turbine model that transforms wind energy into electric energy after researching types of energy and energy transformations.

DESIGN CHALLENGE

MODULE STUDENT VIEW

- Below is what you will see when you enter the module as a student.
- Students have visibility to all of the section that are red (Student/S)

The screenshot shows the student view of the 'Tinkering With Turbines' module. At the top, there is a header with the STEAMtrax logo, a 'DEMO!' badge, the title 'Tinkering With Turbines', and the 'STAR Portal' logo. A user dropdown menu shows '3dsstudent1' and a yellow star icon. Below the header is a navigation bar with four sections: '1. Module Preparation (Pre-Lesson Instructions)', '2. Classroom Guide (In-Class Presentation)', '3. Student Activities (Assignable Interactives)', and '4. Student Assessments (Post-Module Evaluation)'. The main content area is titled 'Parent Letter' and features a 'DEMO!' badge and a text box stating: 'Downloadable PDFs are provided for teacher and student access. The parent letter is a helpful tool to share with parents/guardians that their child will be participating in a STEAMtrax module.' To the right of this text is a red 'Parent Letter' button. Below this is a 'Download Parent Letter' link and a preview of the parent letter document. The preview shows a letter addressed to parents, mentioning the student's participation in exploring civil and environmental engineering using 3D printing resources. It includes a 'DATE:' field and lists learning objectives for Science and Technology.