Using TinkerCad to Introduce Students to the Wide, Wonderful World of 3D

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Start Here

Our notes are available through a browser:
http://cs.oregonstate.edu/~mjb/tinkercad

The TinkerCad program is available through a browser too:
http://www.tinkercad.com

You can create your own TinkerCad account. The advantage of this is that TinkerCad will keep your 3D creations in cloud storage so you can get at it later. If you are under 18 years old, get your parents’ permission and have them help you.

To use our account, use:
User: mjb@engr.oregonstate.edu
Password: corvallis72542

The First Screen You See

Who you are
Designs this account has worked on before

Logging In

Nope, don’t go here
No, not here either. Don’t ever create your own new account on anything without your parents’ permission!
Yes, go here!

Welcome back

Yes, go here!

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TinkerCad is a free web-based CAD package from AutoDesk. (Thanks, AutoDesk!) It is a solid modeler, so you always have legal 3D objects suitable for 3D Printing.

You get to it at: http://www.tinkercad.com/
First Screen You See

Click here to start something new

Moving the Scene around in 3D

You can also click or touch over here

If you have a mouse:
- Rotate – right mouse button
- Scale – scroll wheel
- Pan (translate) – middle mouse button

If you don’t have a mouse:
- Rotate – touch and move the blue plate, or touch and rotate this cube
- Scale – pinch on the plate, or touch the + and - buttons
- Pan (translate) – two-finger touch on the blue plate

Un-do and Re-do are Your Best Friends Ever!

Keyboard shortcuts:
Un-do: Control-Z
Re-do: Control-Y

Start by Placing an Object into the Scene

With your finger or the left-mouse button, drag a shape into the scene

The Small Symbols Let You do Things to the Object

This curved arrow allows you to tip the object
The solid black triangle allows you to lift the object up in the air.
Touch or left-click in the object to move it left-right and in-out.
All the white and black dots allow you to change the size of the object in one or more dimensions
This curved arrow allows you to rotate the object in the horizontal plane
Scaled, Lifted, and Tipped

Changing the Color

With the object selected, click here and select a new color.

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Combining Objects

Take 2 objects and overlap them.

Combining Objects

Select both objects (touch both, or left-click on one and then shift-left-click on the other) ... and then click on Group.

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An even cooler trick – while the objects are overlapped, click on just one of them and then click on Hole.

This makes that object a “negative object”.

Now select both objects again, then click on Group like you did before. This causes the Hole object to take a “3D Bite” out of the other object. You can use this to make new shapes or can even create holes through shapes.

In Computer Aided Design, this is known as Constructive Solid Geometry (CSG), or Boolean shapes.

Think of it as 3D Venn Diagrams:

Changing the Name of Your Design

When you start a new design, TinkerCAD gives it a funny name. This is OK, but if you want to give it a more descriptive name, click on the funny name and type in a new one:

Geometric Primitives

These are the standard built-in objects that you can use.

3D Text!

Select and drag Text

Type your text in here

Not Sure Where to Start?
Try One of These

Computer Graphics
Scribbling!

The screen changes to this:

Drag the Scribble icon into the scene

Grab the blue circle and, well, scribble with it (duh)

Your scribble

Click Done when done

3D Preview

From there on, it acts like any other 3D object

Here you are subtracting a cylinder from your 3D Scribble.

Other Cool Stuff

- Solid letters and numbers
- Solid symbols
- Solid goofy things
- Shapes where you can enter information about them (includes state outlines!)
- Shapes donated by other users (includes some good text-input objects)
- A place to store your favorite shapes
A Shape Generator is a way of making different versions of a shape by interacting with a dialog box.

The Fidget Spinner is in here.

States and countries are in here.

The Voronoi Shape Generator is Pretty Fun Too.

State and Country Shape Generators.

More Fascinating Features.

Smithsonian.
More Fascinating Features

Writing Your Design to take to another 3D Modeling Program

Writing Your Design to take to a 3D Printer

Thanks for Coming!

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