Fab@School MAKER STUDIO™

Creatively Designed by
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User Guide v1.8

Updated Dec. 2021

FableVision

FableVision® LEARNING

reynoldscenter TLC
for teaching, learning and creativity

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Introduction

Welcome to FabMaker Studio! As a web-based application, FabMaker Studio will continue to grow and evolve as we add more features and resources.

FabMaker Studio emerged from research by the Make to Learn initiative – a collaborative of nonprofit, educational, and for-profit organizations spearheaded by the University of Virginia. This initiative worked together to achieve a shared goal of tackling the disruption in the STEM education and career pipeline – at a much earlier point in students' learning journey. The coalition has spent the last six years building a research-based initiative to integrate STEM education into elementary and middle school curricula in more effective ways – with support from, among others, NSF, U.S. Department of Education, MacArthur Foundation, Motorola, and the Gates Foundation.

With this research as a foundation, the Make to Learn coalition, in partnership with the Reynolds Center for Teaching, Learning, and Creativity and noted educator and software designer Dr. Peggy Healy Stearns, has developed FabMaker Studio, a web-based digital fabrication/3D printing software tool for grades K-8 that creates a more accessible, comfortable onramp for teachers to introduce more meaningful STEM learning to their students. With easy-to-use tools and curricular support, teachers are now able to engage younger students in rigorous STEM learning in a way that is motivating, fun, and inspiring.

FabMaker Studio is the first digital design and fabrication software designed specifically for the classroom.

- Start with Step by Step and Ready-Made Projects — or imagine and invent from scratch.
- Create and design with friendly yet powerful tools.
- Enjoy a range of projects from simple to sophisticated — 2D Stuff, Pop-ups, and 3D Stuff.
- Fabricate by hand with scissors or use easy and inexpensive digital fabricators.
- Prototype with paper.
- Access standards-based activities
- Discover a practical alternative to expensive mechanical die fabricators.

We are excited that you've joined the FabMaker Studio FabAwesome team. We would love to hear how you are using FabMaker Studio in the classroom or at home.
Send your FabAwesome stories to info@fablevisionlearning.com.

System Requirements

Supported Operating Systems:

FabMaker Studio is a web-based program that requires an Internet connection. It has been tested to run on devices (Mac OS X, Microsoft Windows, Chromebook, tablets) that support the following browsers:

- Chrome
- Firefox
- Internet Explorer
- Safari

Recommended Hardware:

FabMaker Studio supports a range of technology including hand tools, digital fabricators, and an on-ramp to 3D printers. Besides hand tools like scissors, we recommend you start with one or more digital fabricators.

The digital fabricators that FabMaker Studio works with are:

- Silhouette Portrait
- Silhouette Portrait 2 (USB only)
- Silhouette Portrait 3 (USB only)
- Silhouette CAMEO 1
- Silhouette CAMEO 2
- Silhouette CAMEO 3 (USB only)
- Silhouette CAMEO 4 (USB only)
- Silhouette Curio

The digital fabricator will come with everything you need – power cable, USB cable to connect to your Mac or Windows machine, and cutting mats.

FabMaker Studio's basic on-ramp to 3D printing lets you export 2D objects to STL format to open in your 3D printer application.

Inside FabMaker Studio

Main Menu

1) Tutorials

Select **Tutorials** to learn how to use FabMaker Studio features to create 2D projects, Pop-Ups, 3D objects, and working machines. Student accounts will not have access to tutorials.

2) New Project

Select **New Project** to open the New Project dialog and start designing a project from scratch.

Layout: Choose portrait or landscape. The default is landscape.

Page Size: Use the drop-down menu to select the page size that will match the intended media.

Registration Marks: If you don't plan on printing the design before cutting, choose "None." If you plan to print before cutting, use the **Registration Marks** drop-down menu to choose your digital fabricator. Select **OK** to go to the Edit Screen.

3) Step-by-Step Projects

Select **Step-by-Step Projects** to get started with quick and easy Step-by-Step Projects. Select a tab to choose **2D Stuff, Pop-Ups, or 3D Stuff**. Select a project and then select **Open**. The selected activity will open in the Edit Screen. Step-by-Step activities include simple instructions and graphic templates to guide construction. Follow these steps to learn how to use the FabMaker Studio tools to create quick and easy projects. The directions and template will not print or fabricate with the project.

4) Ready-Made Projects

Select **Ready-Made Projects** to jump right in and start fabricating. Select the tab for **2D Stuff, Pop-Ups, or 3D Stuff**. Then select a project and **Open**. The Ready-Made Project will open in the Edit Screen. Create the project as is or modify the design to create something new.

5) Saved Projects

Select **Saved Projects** to open FabMaker Studio files that have been saved to your FabMaker Studio account, Google Drive, or computer.
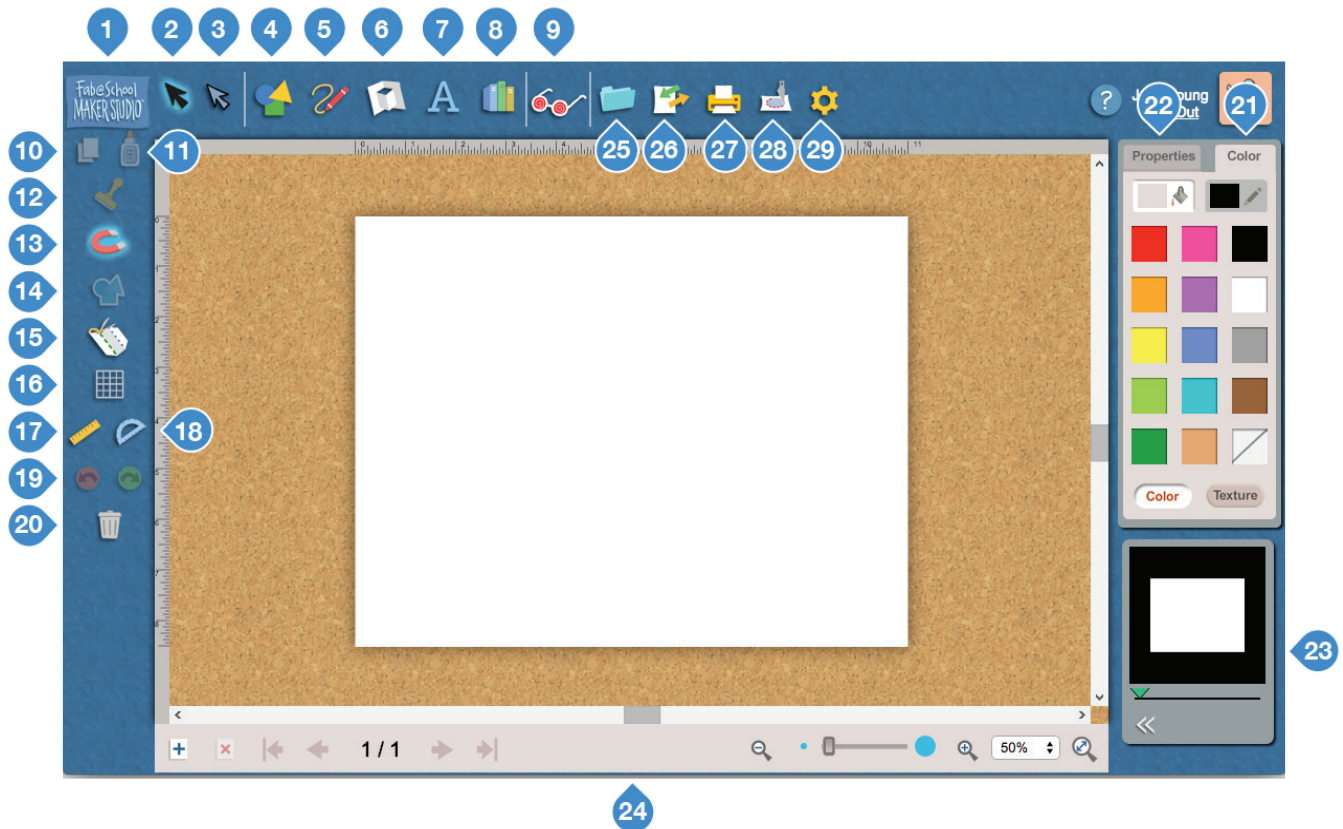

My Online Files: Contains files that have been saved to your FabMaker Studio account. Thumbnails of saved projects will appear in the preview window. You can scroll through saved projects or enter a keyword in the Search box. Select a thumbnail and select **OK** to open the file.

My Google Drive: Contains files that have been saved to your Google Drive. There are no thumbnail views for these files. You can open files that have been saved to a Google Drive only from within FabMaker Studio. When these files are opened directly from a Google Drive, they appear as text files.

My Computer: Contains files saved to your computer. When FabMaker Studio project files are saved to your computer, they are saved to the default download location and will appear as .xml files – for example, "My Project.xml." You must open files saved to My Computer from within FabMaker Studio. If .xml files are opened from the desktop, they appear as text files on your computer.

Edit Screen

|		
1) Main Menu	11) Paste	21) Color and Texture
2) Select	12) Stamp Tools	22) Properties
3) Edit Points	13) Magnetize	23) 3D View
4) Shapes	14) Weld Tool	24) Page Navigation
5) Lines	15) Cut Fold Tab	25) File
6) Pop-ups	16) Grid	26) Import/Export
7) Text	17) Ruler	27) Print
8) Library	18) Protractor	28) Fabricate
9) X-Ray	19) Undo, Redo	29) Settings
10) Copy	20) Trash	

1) Return to Main Menu

Select the **FabMaker Studio** logo in the upper left to return to the Main Menu.

2) Arrow

Use the **Select Arrow** to click or tap to select an object. To select two or more objects, drag a selection frame to completely surround the objects. For devices with a keyboard, you can hold the **Shift** key while selecting a series of objects. Select is on by default. It turns off when **Edit Points**, **Text**, a **Line** sub-tool, **Library**, or **Cut Fold Tab** is selected. **Select** becomes active again when those tools are deselected.

3) Edit Points

Use the **Edit Points** tool to see the control points that define an object's lines, curves, and shape.
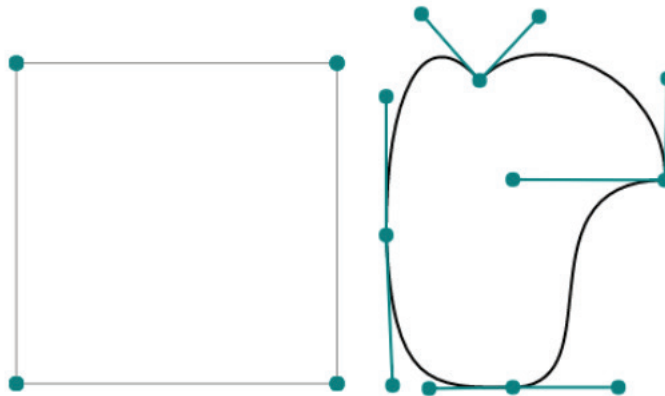
Change a Shape: Drag an **Edit Point** to change the shape.

Add an Edit Point: Click on a line to add a new **Edit Point**.

Delete an Edit Point: Select an **Edit Point**. When it enlarges, select **Trash** or press **Delete/ Backspace** to remove the Edit point.

Turn Off Edit Points: Select the **Edit Points** tool again or choose another tool to turn off **Edit Points.**

*Note: Edit points are not displayed for pop-ups, imported graphics, and library images other than geometric shapes because these objects cannot be edited with **Edit Points***.

4) Shapes

Place: Select a shape to place it automatically in the center of the document. Drag a shape onto the workspace to place it in a specific location.
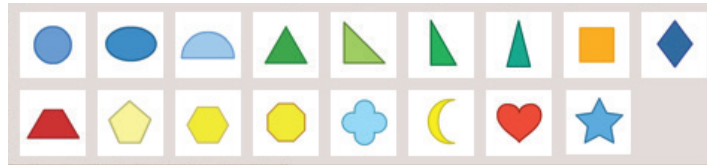
Move: When a shape or object is **Selected**, grab the center handle to move it. If the shape is filled, grab anywhere in the filled area to move.

Resize: Use corner handles to proportionately resize the shape. Use mid-line handles to resize in that direction only. Resize precisely by entering dimensions in the **Properties Palette.**

Color: Be sure the **Paint Bucket** is selected in the **Color Palette**, and then choose a color or texture to change the fill. Colors and textures can also be dragged and dropped on the object.

Note: *The outlines of shapes are cut lines by default. You can change cut lines to fold or graphic lines with the* **Cut Fold Tab** *tool.*

5) Lines

Straight Line: Select the **Straight Line** tool to draw a straight line or a series of straight lines. Click in the workspace to place the first point. Click to place each consecutive point. Double-click to place the final point or simply close the Line Tool. To create a closed object, place the final point on the beginning point.

Curve Tool: The **Curved Line** tool works the same way as the **Straight Line** tool. The curve will be formed when you select the third point and each successive point. Double-click to place the final point or simply close the Line Tool. To create a closed object, place the final point on the beginning point.
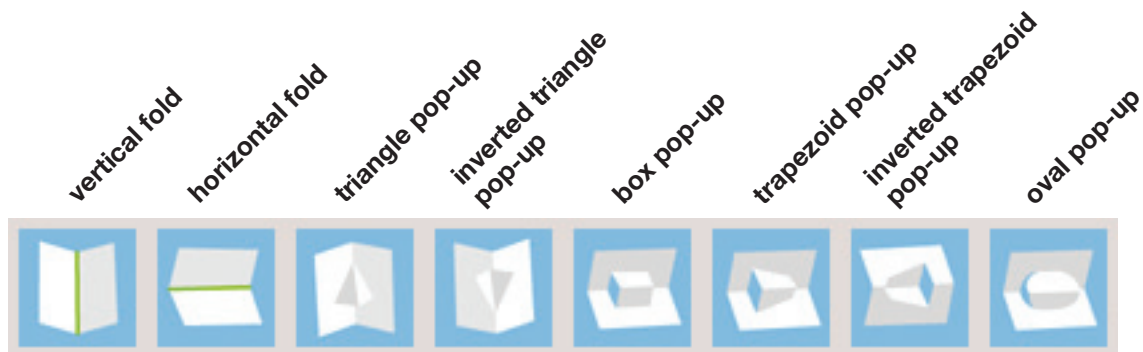
Brush Tool: Drag to draw.

Color: New lines use the color chosen in the **Line Color** menu of the **Color Pallette**. Closed line objects use the fill color selected in the **Fill Color** menu of the **Color Pallette**. To change the color of already created lines, select the line and pick the color from the **Line Color** menu in the **Color Pallette**.

Thickness: New lines use the thickness selected in the **Properties Panel.** To change the thickness of already created lines, use the **Select Arrow** to select the line and then use the **Thickness** slider in the **Properties Panel** to change the thickness.

6) Pop-Ups

Select the **Pop-Ups** tool to choose fold lines and Ready-Made Pop-Up elements.

vertical fold   horizontal fold   triangle pop-up   inverted triangle pop-up   box pop-up   trapezoid pop-up   inverted trapezoid pop-up   oval pop-up

Add a Fold Line: Select the vertical or horizontal fold line to automatically place a valley fold in the center of the page. When the fold line is selected, it can be dragged to reposition.

> **Note:** *A fold line does not need to be placed before adding a pop-up. Adding a pop-up automatically creates a fold line if one doesn't already exist. The automatic fold line will be horizontal on a portrait layout and vertical on a landscape layout. If you want the centerfold to go in the other direction, place it with the fold line tool before placing pop-up elements.*
>
> *In FabMaker Studio, the **Pop-Up** tool will place only one vertical or horizontal centerfold per page. When a centerfold already exists, the fold line options are dimmed.*

Add a Pop-Up: Select a pop-up to automatically place it on the centerfold. Drag a pop-up onto the screen to place it in a specific location. The pop-up will snap to the nearest fold line. Pop-ups must be positioned on a fold line.

Edit a Pop-Up:

Color: When a pop-up is selected, select a color or texture to fill. You can also drag a color or texture to the pop-up. You can make each side of the pop-up a different color.

> *Note: To make each side of the pop-up a different color, drag a different color/texture to each side.*

Size and Shape: Use corner handles to resize proportionately. Use mid-line handles to resize in that direction only. Resize precisely by entering dimensions in the **Properties Panel**.

Delete Pop-up Elements: Select a fold line or pop-up and select **Trash** or press **Delete/Backspace**. When a fold line is deleted, all the pop-ups on that fold line are also deleted. When a pop-up is deleted, any pop-ups placed on the center or side folds of that pop-up are also deleted.

Previewing Pop-Ups in 3D View:

3D View: See how the project will look when it folds in **3D View**. The thumbnail view appears in the lower right corner of the screen.

Enlarge: Select the **Enlarge** button to expand the view.

Fold: Drag the slider to see the pop-up fold.

Manipulate: Place the cursor in the view window and drag to view the design from different angles.

Reset View: Choose the **Front** view button to reset the view.

Pop-up Guidelines: Some pop-ups do not display properly in **3D View**. To create pop-ups that display properly, follow these guidelines:

- Pop-ups positioned on the same fold line should not intersect or overlap.
- The cutline of a smaller (child) pop-up positioned on the center or side fold of a larger (parent) pop-up should only cross the fold line on which it is positioned.

Note: If a pop-up is created that does not follow these guidelines, it will not display properly. You will see an alert and the 3D view will disappear. If you don't want to see the 3D view alert again, click "Don't show this message again" in the alert dialog. Once the pop-ups are resized or moved in keeping with the guidelines above, the 3D view will reappear. Pop-ups that do not follow these guidelines are usually more difficult to fold when fabricated, but you don't have to fix them. You can fabricate as is to see how the pop-up turns out.

7) Text A

Add Text: Select the **Text** tool to open the **Text Palette**, and then click in the workspace to place the cursor. Type your text and press **Return/Enter.** This text will appear in your workspace.

Name: To change font, click on the current font selection in the **Text Palette** and drag to select a different font.

Font Size: To change font size, click on the current selection in the **Text Palette** and drag to select a different option. When the **Text** tool is closed, the handles of a selected textbox can be dragged to proportionally resize the text.

Font Style: Select **Bold**, **Italic**, or **Underline** buttons to toggle these font styles on and off.

Alignment: Select **Left**, **Center**, or **Right** alignment.

Spacing: To change the space between characters, drag the **Spacing Slider**.

    Note: dragging characters so they overlap will not weld them into a single object.

Cut Text: Check **Cut** if you want to cut individual characters.

Edit Text: Select a **Text Box,** and then select the **Edit** icon 🖊. Type the new text to replace the current text, or insert the cursor to edit.

Close the Text Tool: When the **Text** tool is open, clicking anywhere in the workspace creates a new **Text Box**. To turn off the **Text** tool, select the **Text** button again or select another tool.

Move, Resize, and Color: When the **Text** tool is off, select a text object to move, resize, and color in the same manner as other objects.

    *Tip: Because pressing **Enter/Return** sets the text, to create more than one line of text you need to create another text box and place it under the first.*

8) Library

Select the **Library** icon to open the image library dialog.
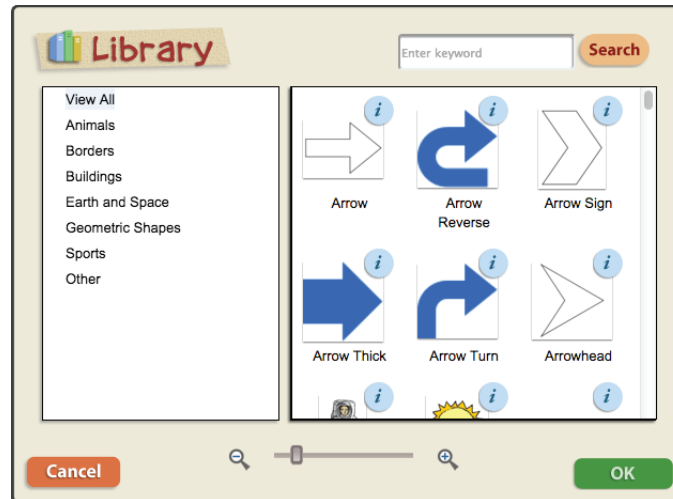
Browse: Place the cursor in the thumbnail preview window and scroll through the **Library** images.

Search: Type a keyword in the entry box to begin your search. You don't need to select the **Search** button to begin the search. The images automatically appear in the box. You can also search by category – for example, select **Geometric Shapes** to see only images in that collection. If a category is selected, a keyword search finds only designs in that category.

Zoom: Drag the slider or use the magnify icons at the bottom of the window to zoom in and out.

Add Image: Select an image, then click **OK**. The image is placed in the center of your workspace.

Resize: While a **Library** image is selected, use the handles to resize, rotate and move.

Color: Geometric Shapes can be colored using the **Color** and **Texture** panels.

> *Note: To cut out a **Library** image, use the **Cut Fold Tab** tool to define the image outline as a cut line.*

9) X-Ray

Select the **X-Ray** button to view cut and fold lines. When **X-Ray** is selected, color fill is dimmed and the cut and fold lines are displayed as follows:

- Cut lines are red.
- Fold lines are green.
- Draw only lines are black.

10) Copy

Select an object or objects and select the **Copy** button to save a copy in memory.

11) Paste

Select the **Paste** button to paste a copy of the object or objects from memory.

12) Stamp

**Select** an object and then select the **Stamp** tool. Choose one of the following options:

Single Copy: Click in the workspace to place a single copy at the click point. Click again to place another copy. Select the main **Stamp** tool again or select another tool to turn **Stamp** off.

Column Fill: Click in the workspace to make a vertical row of copies starting at the click point. Click again to place another row starting at the new click point. Select the main **Stamp** tool again or select another tool to turn **Stamp** off.

Row Fill: Click in the workspace to make a horizontal row of copies starting at the click point. Click again to place another row starting at the new click point. Select the main **Stamp** tool again or select another tool to turn **Stamp** off.

Page Fill: Click in the workspace to fill the page with copies. The original copy is deleted and replaced with the fill. When the page is filled, the **Stamp** tool is automatically deselected.

*Tip: The **Page Fill** option is a fun way to create custom fill patterns. Go to **Import/Export** and **Export** your page fill as a JPEG, PNG, BMP, or GIF file. When you want to fill an object with this pattern, select one or more objects and choose **Import** from the **Texture** panel.*
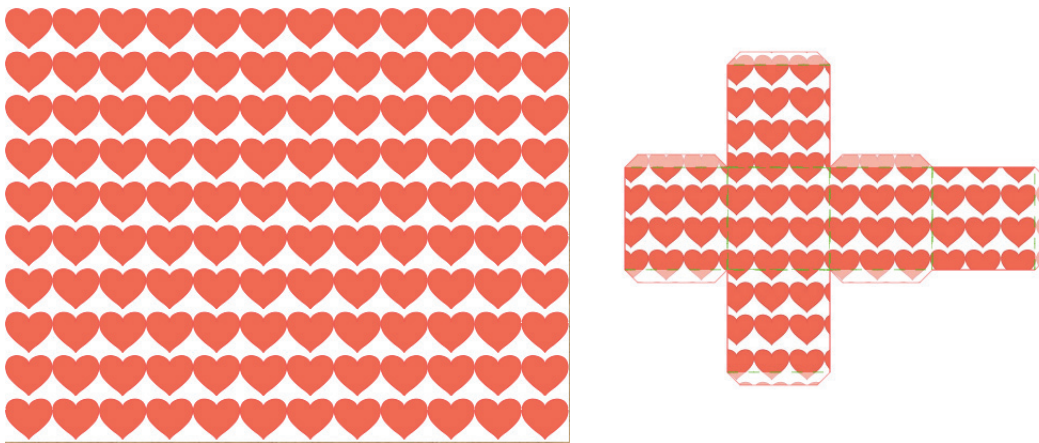
*Create a pattern using **Page Fill**, export as a JPEG, then import as a fill using the **Color/Texture** palette.*

13) Magnetize

Magnetize is on by default. When **Magnetize** is on, objects snap together.

When Shapes and Line objects are snapped together, their individual sides become a single shared line. The shared line is automatically defined as a fold line. If you don't want objects to snap, or want to align objects without creating an automatic fold line, select the **Magnetize** button to toggle it off. **Magnetize** will stay off for the rest of the current session even if a new project is started.

14) Weld

Select two or more adjoining or overlapping objects and select **Weld**. The objects are welded into a single object with a single outline and color fill. If the original objects were adjoined but did not overlap, the new object will be colored like the object that was first placed in the project. If the original objects overlapped, the new object is colored like the object on the bottom layer.

Note: If one object is entirely contained within another object, the objects will not be welded.

Un-weld: Select a welded object and select the **Weld** button. The welded object is un-welded and the individual objects regain their individual characteristics.

If welded and un-welded objects are both chosen, **Weld** combines all the objects into one.

15) Cut Fold Tab

Cut Fold Tab lets you select line segments and define them as cut or fold lines and add tabs. When you open **Cut Fold Tab**, you'll see **Markers** at every vertex and edit point.

Add a Marker: Drag a marker from the palette to any point on a line to define a new line segment.
Move a Marker: Drag a marker along a line to move it.
Delete a Marker: Drag a marker off the line to delete it.

Cut Line: Select a line segment and then select the **Cut** button. The line will be defined as a cut line and will be cut when sent to the digital fabricator. If the line is already a cut line, cut will toggle off.

Mountain Fold Line: Select a line segment and then select the **Mountain Fold** button. The line will be defined as a mountain fold and perforated when sent to the Silhouette. If the line is already a mountain fold, selecting this button will toggle it off.

Valley Fold Line: Select a line segment and then select the **Valley Fold** button. The line will be defined as a valley fold and perforated when sent to the Silhouette. If the line is already a valley fold, selecting this button will toggle it off.

Tab: Select a line segment and then select the **Tab** button to add a tab the width of the line. The base of the tab will be a fold line, and the perimeter will cut. If a tab already exists, selecting this button will remove the tab. Customize the size and shape of a tab by dragging the markers at the top and base.

Cut Fold Tab works with **Shapes**, **Line** objects, and **Library** images. It does not work with **Pop-Ups**, **Text**, or imported images.

*Note: When you are in **Cut Fold Tab** mode, you cannot move or resize objects or use other tools. Leave **Cut Fold Tab** to use these functions.*
*Note: Tabs do not display in **3D view**.*

16) Grid

Background Grid: Select the **Grid** button to place a grid in the background.

Foreground Grid: Select the **Grid** button again to move the grid to the foreground.

Turn Grid Off: Select the **Grid** button a third time to turn the grid off.

Customize Grid: Customize measurement units and grid size in **Settings**.

17) Ruler

Select the **Ruler** button once to place the 6-inch ruler in the middle of the workspace.

Select the **Ruler** button a second time to switch to a 10-inch ruler.

Select the **Ruler** button a third time to put the ruler away.

Manipulate the ruler

Move: Grab the ruler in the bottom half to drag it around the screen. The cursor changes to a move cursor.

Rotate: Grab the ruler on the top half near either end and drag to rotate it. The cursor changes to a rotation cursor.

Resize: Grab the ruler at the edge and drag to extend or shrink it. The cursor changes to a resize cursor.

18) Protractor

Select the **Protractor** button once to place the 180-degree protractor in the center of the workspace.

Select the **Protractor** button again to switch to the 360-degree protractor.

Select the **Protractor** button again to put the protractor away.

Manipulate the Protractor

Move: Grab the 180-degree protractor in the bottom half to drag it around the screen. The cursor changes to a move cursor. Grab the 360-degree protractor in the center to move it.

Rotate: Grab either protractor anywhere between the center and the number scale. The cursor changes to a rotation cursor. Drag in a circular motion to rotate.

Resize: Grab the protractor along the number scale and drag out to expand or to shrink.

Reverse Scale: Select the two-way arrow to reverse the order of the number scales.

Draw: Use the protractor to draw lines at precise angles. Grab the round handle at the end of the line that extends beyond the scale. Drag the handle around the protractor to the desired angle. Drag outward to the desired length. Double-click the handle to draw a line from the zero point to the handle.

Customize the protractor in **Settings**.

19) Undo / Redo

Select **Undo** to undo the last action. You can undo up to 10 actions.
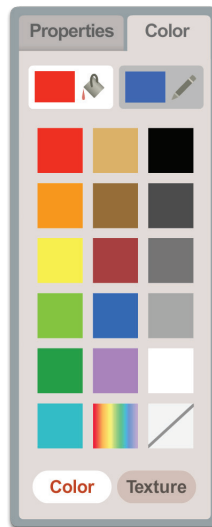
Select **Redo** to redo the last action.

20) Trash

Select one or more objects and select **Trash**. You can also drag objects to the **Trash** or press the **Delete/Backspace** key.

21) Color and Texture

Select the **Color** tab to view Color and Texture options.

Color Fill

Select the **Fill** button. Then select one or more objects and pick a color. Color can also be dragged to the object. With pop-ups, a different color can be dragged to each side of the pop-up.

To remove all fill, select the **No Fill** button.

Texture: Select the **Texture** button at the bottom of the **Color** palette. Select one or more objects and select a texture to fill.

Import Texture

Choose File Flower Pattern.jpeg

Cancel   Import

Select **Import** to import a custom texture to fill an object. In the dialog, select **Choose File**, and then navigate to the desired file and select **Open**. The fill pattern will appear in the preview window. Select **Import** to fill the selected object(s). Select **Cancel** to go back to the Edit Screen without filling.

Imported fill patterns are centered on the page on an invisible background layer. When an object with an imported fill is moved, it is actually moving on top of the fill layer, so the object's fill shifts. For this reason, smaller scale repeating patterns may work best.

You can import JPEG, PNG, BMP, GIF, and SVG fill patterns up to 1024 x 1024. You will receive an alert if your file is too large or the file type is not supported
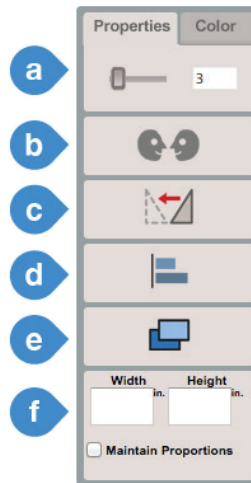
Line Color

To change the color of the lines, select the **Line Color** button. Then select one or more objects and select a color.

New Shapes and Line objects will be created using the selected outline color.

22) Properties

Select the **Properties** tab to view the **Properties Panel.**

a) Line Width: To change the line width of an object, first select the object and then drag the slider. The width in points is displayed on the right.

When another Line object is selected, the line width changes to display the line width of that object.

New Line objects will be created using the selected line width.

b) Reflections

Select the **Reflections** button to view the options.

Reflect Left: Choose **Reflect Left** to create a mirror image to the left of the original.

Reflect Right: Choose **Reflect Right** to create a mirror image to the right of the original.

Reflect Up: Choose **Reflect Up** to create a mirror image above the original.

Reflect Down: Choose **Reflect Down** to create a mirror image below the original.

c) Flip

Select the **Flip** button to view the options.

Flip Horizontal: Select one or more objects and choose **Flip Horizontal** to flip the object(s) along the horizontal axis.

Flip Vertical: Select one or more objects and choose **Flip Vertical** to flip the object(s) along the vertical axis.

d) Align

Select the **Align button** to view the options.

Align Left: Select two or more objects and choose **Align Left** to move the objects so their left sides align. All objects except the one farthest left will move.

Center Vertically: Select two or more objects and choose **Center Vertically** to move the objects horizontally so the centers of the objects align. All objects except the one closest to the top will move.

Align Right: Select two or more objects and select **Align Right** to move the objects so their right sides align. All objects except the one farthest right will move.

Align Top: Select two or more objects and select **Align Top** to move the objects so their top edges align. All objects except the one at the top will move.

Center Horizontally: Select two or more objects and choose **Center Horizontally** to move the objects vertically so the centers of the objects align. All objects except the object(s) closest to the left will move.

Align Top: Select two or more objects and choose **Align Bottom** to move the objects so their bottom edges align. All objects except the one at the bottom will move.

e) Arrange

Select the **Arrange button** to view the options.

Bring Forward: Select an object and choose the **Bring Forward** button to bring the object one layer closer to the top.

Send Back: Select an object and choose the **Send Back** button to send the object one layer closer to the bottom.

Bring to Front: Select an object and choose **Bring to Front** to bring the object to the top layer.

Send to Back: Select an object and choose **Send to Back** to send the object to the bottom layer.

f) Dimensions

Display Dimensions: Select an object to see the width and height displayed in the **Properties** palette. You can choose inches or centimeters in **Settings**.

Specify Dimensions: Specific dimensions can be set by selecting the current value and entering the desired dimension. Press **Return/Enter** to set.

Maintain Proportions: Check **Maintain Proportions** to automatically adjust one dimension when the other dimension is changed.

Show Dimensions: If **Show Dimensions** is selected in **Settings**, dimensions of all selected objects will be displayed alongside the objects in the Edit Screen.

23) 3D View
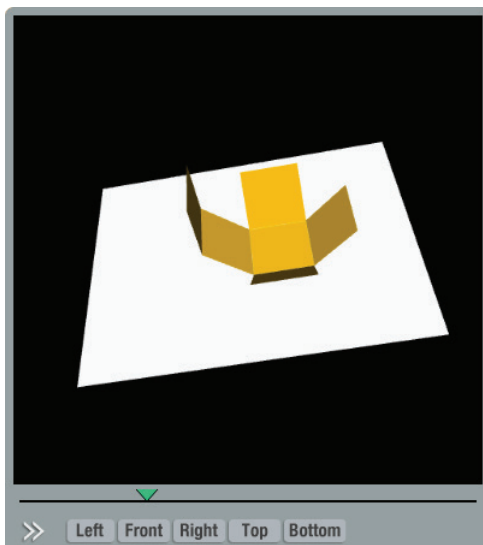
3D View lets you view how the project will look when it folds. **3D View** in FabMaker Studio V1.0 works for **Pop-Up** elements and nets or flat patterns constructed with Shapes.

 Enlarge: Select the **Enlarge** button to expand the view.

Fold: Drag the slider to see the pop-up or flat pattern fold.

Manipulate: Place the cursor in the view window and drag to view the design from different angles.

Reset View: Choose the view buttons to see the project from different angles. Choose **Front** to reset the view.

Select the **Smaller** button, to return to thumbnail view.

24) Page Navigation

You can create FabMaker Studio documents up to 16 pages. Use the **Navigation** controls to add and remove pages, move between pages, and zoom in and out.

a) Add a page.
b) Delete the current page.
c) Go to the first page in the document.
d) Go to the previous page.
e) Current page / total number of pages.
f) Go to the next page.
g) Go to the last page.

h) Zoom out. Zoom options are 25%, 50%, 75%, 100%, 200%, 400%, and 800%.
i) Drag to the left to zoom out. Drag to the right to zoom in.
j) Zoom in.
k) Use the pop-up menu to go directly to the desired zoom level.
l) Fit to Page. Resets the page to the largest view that fits within the window.

25) File 📁

New: Opens a new file in the workspace. If the current project has not been saved, there will be an option to save it now. See **Save** options below. FabMaker Studio allows one file open at a time.

Open: Lets you open saved files from three locations.

My Online Files: Files that have been saved to your FabMaker Studio account. Thumbnails of saved projects appear in the preview window. Scroll through saved projects or enter a keyword in the **Search** box. Select a thumbnail and select **OK** to open.

My Google Drive: Files saved to your Google drive. There are no thumbnail views for these files. Open files saved to the Google Drive from within FabMaker Studio. If these files are opened directly from Google Drive, they will appear as text files.

My Computer: Files saved to your computer. When files are saved to your computer, they are saved to your default download location and appear as .xml files – for example, "My Project.xml." From your desktop, you can move files to another location. There are no thumbnail views of .xml files. Open files saved to My Computer from within FabMaker Studio. If these files are opened from the desktop, they will appear as text files.

Save: Allows you to save files to three locations.

My Online Files: Saves your file to a FabMaker Studio account.

My Google Drive: If you have a Google Drive, this option saves the file to a Google Drive account. FabMaker Studio files saved to a Google Drive account will not have a thumbnail preview. Open files saved to a Google account from within FabMaker Studio. If the file is opened from Google Drive, it will appear as a text file.

My Computer: Downloads the file to your default download location. When the file is saved to the computer, the file will appear as an .xml file – for example, "My Project.xml." There are no thumbnail views of .xml files.

Save As: Allows you to save with a different file name and/or to a different location.

26) Import / Export

FabMaker Studio allows you to import images to use in a project, and export projects in a variety of formats.

Import File

Select **Import Image** to open the dialog.

Choose File: Select the **Choose File** button and navigate to the image you want to import. When the image is selected, a thumbnail appears in the preview window. Select **Import** to place the image in the center of your workspace. You can import JPEG, GIF, BMP, and SVG files up to 1024 x 1024.

Import and Identify Outline: If you want to cut out the image, or partially cut it for a pop-up or other effect, FabMaker Studio needs to identify the outline. Check **Process Image Outline** and then select **Import**.

For FabMaker Studio to identify an outline, the image must be on a white background and a single outline surrounding the entire image. If FabMaker Studio finds more than one outline, it will process only the first section and the rest of the image will be lost.

If you plan to use the image as a graphic only and don't plan to cut it out, you don't need to process the outline.

Export to Image

File Name: Give the project a name.

File Type: Choose file type. Projects can be exported as JPEG, PNG, GIF, BMP or SVG files. Select **OK**.

When exported, files will open as image files, not FabMaker Studio files. If you import the files back into FabMaker Studio at a later date, the files will not contain cut and fold line data.

Export to STL

FabMaker Studio supports a simple onramp to 3D printing. You can choose a 2D object, set the 3rd dimension, and export to an STL file format. The STL file can be opened in your 3D printer software and fabricated.

Select a single object in the Edit Screen and select **Export to STL**.

File Name: Give the design a name.

X and Y Axes: The object's current x and y dimensions are automatically entered. If you want to change these dimensions, do so in the Edit Screen.

Z Axis: Enter the desired height or thickness for the 3D printout. This is the Z dimension. Select **OK**.

An STL file will be downloaded to your default download location. The file can be opened in your 3D printer software to print as a 3D object.

27) Print 🖨

Select the **Print** button to open the print dialog.

Registration Marks: Registration marks are black printed symbols in the corners of the printed project which are used by the Silhouette digital fabricator to align the project for proper cutting. If you plan to send your design to an digital fabricator, choose your fabricator from the dropdown menu. Select **None** if you plan to print and cut by hand.

Print Cut & Fold Lines: If you plan to cut by hand, printed cut and fold lines provide a helpful guide. If you plan to send to the digital fabricator, these guidelines might not be needed.

Remove Color Fill: Check this option if you want to color by hand or save ink. **Fill** will be removed from Shapes and Line objects. Library and imported images will retain their fill.

Pages: Select the page range to be printed.

Preview: If the document is more than one page, use the arrows under the preview window to scroll through the pages.

Save to PDF: FabMaker Studio downloads a PDF of the design to your default download location.

Choose **Print to PDF** to export your project as a .PDF file.

Save the .PDF file to your computer.

Open and Print the .PDF document in your chosen PDF viewer. Be sure the printer is turned on, connected to your computer, and selected in the Print dialog. Be sure **Fit to Page** is not checked. Then select **Print.**

Note: Scale must be set to 100% for registration marks to be detectable by the Silhouette digital fabricator.

Print Now, Cut Later: If you are not connected to an digital fabricator or don't have time to fabricate when you print, you can save your printout and open the file later from a Mac or Windows machine to fabricate from that device.

28) Fabricate

About Fabricate: Fabricate allows you to send designs to an digital fabricator that will fabricate cut and fold lines. FabMaker Studio supports the Silhouette CAMEO 2, CAMEO 3, Portrait, Portrait 2, and Curio.

FabMaker App

To send designs to the digital fabricator, you need to first download and install the free **FabMaker App.** This install can be downloaded from within the program or on the System Requirements page for FabMaker Studio. Although FabMaker Studio files can be created on mobile devices like a tablet or Chromebook with an Internet connection, designs must be sent to the digital fabricator from a Mac or Windows machine.

The link to download the free **FabMaker App** is sent with the login information when a new account is set up. If you haven't already downloaded **FabMaker App** or don't have it installed on your current computer, you can download it here.

Silhouette Studio

In order for the Silhouette digital fabricator to function properly, you will also need to install **Silhouette Studio**, which contains the language that tells your computer how the cutter operates. Silhouette Studio can be downloaded here. On the download page under **Silhouette Studio**, select either **PC** or **Mac** and then click **Download**. A .dmg or .exe file will begin to download. Double-click this file to begin the installation process and follow the instructions. Silhouette Studio should be started and closed at least once to activate the drivers, but it must NOT be running while fabricating with FabMaker Studio.

How to Fabricate

Install **FabMaker** on a Mac or Windows computer.

Be sure the digital fabricator is turned on and connected to the computer with a USB cable.

 Select the **Fabrication** icon. If you are doing a multi-page project, click the page you want to cut. Select "Send to FabMaker App" to download the .fabmaker project file.

Locate the downloaded .fabmaker project file and click to open with the **FabMaker** app.

Project Title: The title of the downloaded .fabmaker project fill will appear in the "Project Title" line and the project image will appear in preview. If you don't see a file name or a project preview, select **Open Project** to locate the .fabmaker project file on the computer.

Detected Cutter: When your digital fabricator is on and connected to the computer, the name of the connected digital fabricator will appear next to the Detected Cutter line. If you don't see the name of your digital fabricator, first confirm that the fabricator is turned on and connected to the device. Second, close and relaunch the **FabMaker** app. The cutter should now be detected.

Registration Marks: If you printed your design before cutting, check **Use Registration Marks**. The fabricator uses registration marks to align cut and fold lines with the printed image. If the design was not printed, leave **Use Registration Marks** unchecked.

Choose Media: Choose the media type from the dropdown menu. The recommended blade setting for that media is displayed to the right. Check the blade setting on the digital fabricator and adjust it if necessary.

Advanced Settings: Check **Advanced Settings** if you want to manually adjust speed and thickness. This is generally not necessary because FabMaker Studio sets defaults based on the choice of media.

Speed: Use the slider to adjust speed. To achieve the best results, slower speeds are recommended for thicker materials or designs that are more intricate.

Thickness: Use the slider to adjust thickness. Thicker materials will likely require higher thickness levels.

Send to Cutter: Select this button to send the design to the digital fabricator and start fabricating!

Finished! Select **Unload Media** on the digital fabricator and remove the project from the cut mat.

For advice on how to set up for Fabricator, please download the most recent Fabrication Guideo.

29) Settings ⚙

General Settings

Measurement Units: Choose Inches or Centimeters.

Grid Size:

    Inches: Choose .25 in or .5 in or 1 in.

    Centimeters: Choose .5cm, 1cm, or 2cm.

Show Margin Rulers: Check to display margin rulers along the top and left side of the workspace.

Registration Marks: If you plan to print before cutting, choose an digital fabricator. Registration marks will appear in the workspace and be printed.

Show Protractor Inner Scale: Displays inner scale with numbers in reverse order.

Show Simple Protractor: Displays only 5 degree hash marks.

Show Dimensions: Displays dimensions alongside selected object(s) in the Edit Screen.

Keep Line Tool Selected: Keeps selected **Line** sub-tool – **Straight Line**, **Curved Line**, **Brush** – active until the **Line Tool** is closed. Every click places an edit point. This is useful if you plan to draw a series of line objects using the same sub-tool. When this setting is unchecked, the line sub-tool is deselected as soon as a line object is completed. If you want to use the same tool again, you must select it again.

Snap to Grid: When this option is selected, objects snap to the grid whenever it is turned on in the workspace.

Show Non-Cut Area Mask: When this option is selected, a cut-safe zone appears on the page.

Tool Settings

To customize the tools available in the **Edit Screen**, select a **Toolset** from the dropdown menu.

    Early Childhood includes the following tools across the top: **Select, Edit Points, Shapes, Line, Text, Library; X-ray, File, Import / Export, Print, Fabricate, Settings.**
    And these tools on the left: **Magnetize, Cut Fold Tab, Undo / Redo, Trash.**

    Full includes all of the above plus **Popups, Library, Copy, Paste, Stamp, Weld**, **Cut Fold Tab**, **Grid, Ruler,** and **Protractor**.

    Custom allows you to individually choose which tools appear on the **Edit Screen**. Select the checkboxes of the tools you would like to have available.

Shape Settings

To customize the shapes available in the **Shape** tool, select a **Shapes Set** from the dropdown menu.

    Early Childhood includes the following shapes: **Equilateral Triangle, 45-45-90 Triangle, Square, Circle, Semicirlce, Heart, Star, Crescent.**

Full includes all of the above plus **Isoceles Triangle, 30-60-90 Triangle, Trapezoid, Rhombus, Pentagon, Hexagon, Octagon, Quatrefoil,** and **Elipse.**

Custom allows you to individually choose which shapes appear in the **Shape** tool. Select the checkboxes of the shapes you would like to have available.