

# Paper Engineering [ SKILL UP ]

PROJECT STEPS	WAYS OF PROBLEM SOLVING AND SHARING YOUR PROJECT		
Dream It!	<b>SOLOIST</b> We/I had no need for brainstorming ideas, we only listened to one person who had a pretty good idea How many ideas did you explore?	<b>COLLABORATOR</b> We/I took turns brainstorming and discussed various solutions according to our constraints and time and different perspectives How did you choose an idea to explore deeper?	<b>INNOVATOR</b> We/I studied other ideas for inspiration, brainstormed and discussed multiple options, then came up with a unique solution How did you choose an idea to explore deeper?
Draw It!	<b>EXPLORING</b> My model or drawing can be explained by the makers	<b>EVOLVING</b> My model drawing can be understood by anyone because it is clearly labeled, to scale	<b>EXPANDING</b> I used 3D sculpting tools, like TinkerCAD, Fusion 360
Build It!	<b>EXPLORING</b> This is all new for me, I am trying new tools or materials and I am not sure what will happen	<b>EVOLVING</b> I am experienced with the tools and materials, I am able to make several iterations of my idea with ease	<b>EXPANDING</b> I am experienced with the tools and materials, I am able to make several meaningful iterations of my idea based on testing and feedback
Share It!	<b>PEER CRITIQUE</b> Share your project with someone who did not make it, ask them for their feedback and suggestions on how to improve the design	<b>COMMUNITY SHOWCASE</b> Share your project in a school wide or online family share showcase where you can explain the process of how you made your design	<b>DIGITAL CITIZEN</b> Why not share things you have made that you are proud of, like your latest project, slime recipes or invention? TikTok, Instagram, Tumblr and Twitter are good places to start if you are over 13
Expand It!	<b>ONE AND DONE</b> This project was fun, but I hope I never have to do it again	<b>ABOVE &amp; BEYOND</b> I found my own tutorials on how to complete this project and learned new skills all on my own	<b>GRIT AND GLORY</b> I am obsessed with this new technique of creative work. I cant stop searching for new ways to improve my projects and skills
<b>Makers Choice</b> Is there a criteria that you feel your project or efforts should be evaluated on that is not listed yet? If so, write it here:			

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## RATE THIS PROBLEM:

How hard was this project over all? (Check appropriate box)

1	2	3	4	5	6	7	8
EASY							HARD
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## REFLECT ON YOUR PROBLEM:

What made it hard (lack of ideas, knowledge, time, materials, help, tools, etc.)?

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All designers and engineers get stuck when making something for the first time. When I got stuck or needed inspiration what did I do?

- ☐ Did I use a tutorial? (listen and watch to learn)
- ☐ Did I discuss my ideas with others in person or online? (discuss to learn)
- ☐ Did I start to build even before I totally knew what I was doing? (tinker to learn)

- 1 The opening and closing of the page to make a pop up move and work is applying tension and compression forces. What is force and how do they make objects move?
  
  
  
  
  
  
  
  
  
  
- 2 Careful creases and folds create smoother moving parts. What role does symmetry play in a well designed paper pop up?
  
  
  
  
  
  
  
  
  
  
- 3 Materials matter when making a pop-up, what materials did you use and why?