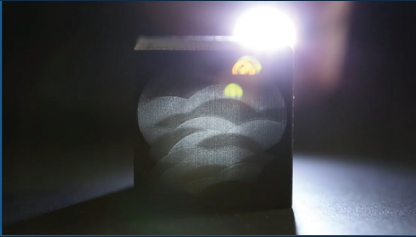


# LESSON GUIDE



## Creating Special Effects

### Guiding Design Questions

1. What types of structures can influence light?
  - a. Lenses
  - b. Fibers
  - c. Absorbers
  - d. Dispersers

How can these components be combined to create an interesting lighting effect?

2. How can 3D printing technology allow you to print complex structures with varied properties without assembly?

### Design Tips for 3D Printed Parts Using Connex Technology™

1. Use VeroBlack™ as the opaque material and VeroClear™ as the transparent.
2. You can create parts with intermediate optical properties using Digital Materials. Digital Materials are mixtures of the base resins at different ratios and they span the spectrum of properties between the base resins.
3. To be completely opaque, VeroBlack needs to be thicker than about 3 mm. To pass a significant amount of light, VeroClear needs to be thinner than about 40 mm.
4. Because you can't use reflection, (like in mirrors), or total internal reflection, (like in optical fibers), don't try to bend the light's path too much.
5. Use matte surfaces to disperse light. This is useful in creating a large angle of illumination for the light entering the cube as well as creating a "screen" on the exit side.

### Lesson Guidelines

1. Design a cube that shows an image when light is passed through it.
2. Leverage the ability of Connex™ technology to print multiple materials in one build by creating a structure that acts as a light guide.
3. The entire structure must be 3D printed smaller than 5 x 5 x 5 cm.
4. Use a flashlight to shine light through the cube and create the effect.

6. To create a structure that can be assigned different properties in different sections, you need to divide the complete structure into sections in your CAD software. Then export each as a separate STL file and insert all the sections together as an assembly into Objet Studio™ software. This will create an assembly (the complete structure) on the virtual tray in which a material (base resin or digital material) can be assigned separately to each section.

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