Processing is a Java-like programming language that was originally created at MIT. We use it because it is open-source, free, has easier syntax than Java, and is good at generating graphics. It also now has a version that can run on Mac, Linux, Windows, and Android, plus an online editor. We use the Linux version.

**2D Processing**
We find 2D Processing to be good for an introduction to programming that lets students generate graphics and simple games quickly.

```java
void setup() {
  size(450, 450);
}

void draw() {
  scale(0.5);
  fill(150, 210, 255);
  rect(100, 325, 700, 550);
  triangle(100, 325, 400, 325, 450, 125);
  fill(250, 100, 50);
  rect(550, 450, 200, 400);
  fill(255, 255, 255);
  rect(450, 100 -75, 100, 100);
  rect(200, 450, 300, 300);
}
```

Processing 2D has basic shapes like triangles, rectangles, and ovals, which can be combined to create most shapes. It also allows you to import a picture which will display as a rectangle. Its underlying functionality is similar to Java’s with the same data types and data structures.
3D Processing
We find 3D Processing gets students really excited and motivates them to work harder to understand concepts like iteration. They are also more willing to work on geometry problem solving to get the results they want.

3D Processing is harder to teach because it has only two built-in shapes: a sphere and a box. It also demands more patience and a familiarity with the available commands as small syntax errors accumulate quickly. Seeing student creativity is well worth these challenges.

Our approach is to give them a library of shapes we made, both basic (pyramid, cylinder, prism, ellipsoid) and complex (trees, flowers, a car, houses, sprinklers). They can read through the code for these shapes and use it as is in their creations or play with it to make something new. This code library provides a basis for them to check their syntax and find out about things we may not directly cover during the workshop.

Our 3D Processing libraries are available upon request.

To learn more about Processing, you can visit their website at https://processing.org/