

# 從自製指尖陀螺學對稱

臺北市士林區富安國民小學高德祥

## 課程背景與起因

對象：五年級下學期學生

能力背景：正在學習三角形、多邊形與線對稱圖形，並且即將教到柱體與球體。

起因：指尖陀螺是今年上半年學生間流行的抒壓小物，在這次課程轉化下，將流行結合課程進行設計後，學生對對稱與3D繪圖產生極大的興趣，讓主動學習發生。



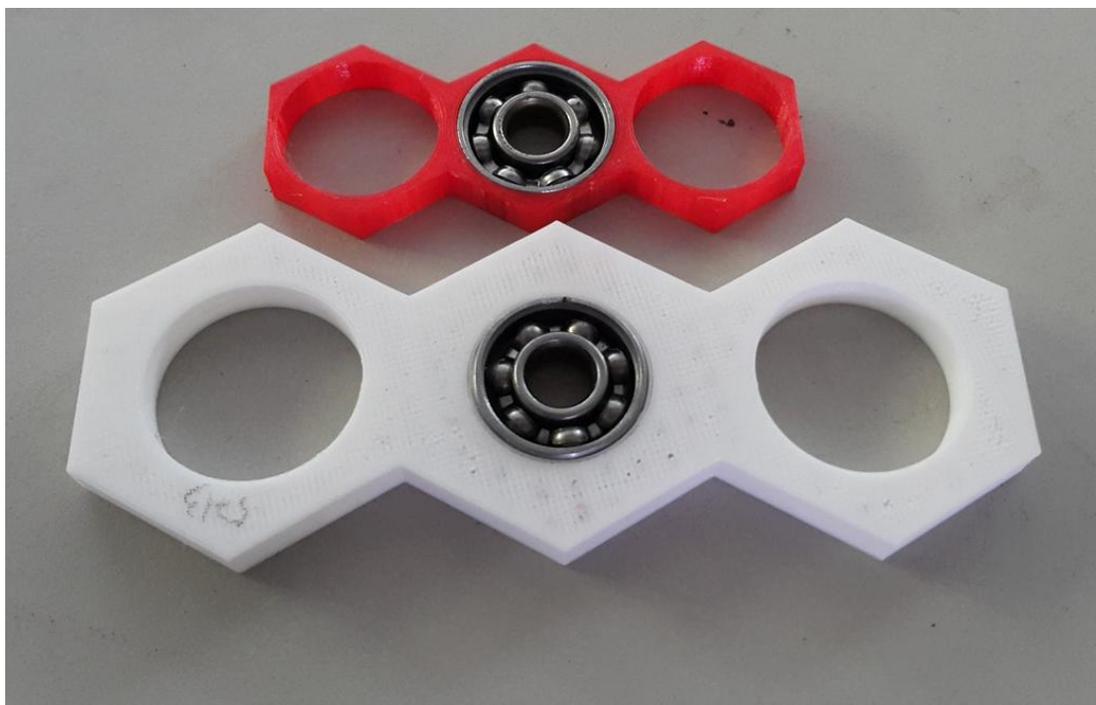
# 課程目標

學會3D Builder

觀察指尖陀螺造型後，拆解造型

利用立方體、圓柱體等拼湊出指尖陀螺

輸出成品後檢討作品缺失



# 觀察1：觀察與拆解指尖陀螺結構

The image shows a screenshot of the Thingiverse website's search results page. The top navigation bar includes the Thingiverse logo, menu items for DASHBOARD, EXPLORE, EDUCATION, and CREATE, a search bar with the placeholder text "Enter a search term", and a "SIGN IN / JOIN" link. The main content area is titled "SEARCH RESULTS" and indicates "44 results matching figet". A dropdown menu is set to "Relevant". On the left, there is a search filter sidebar with a search bar containing "figet" and a blue "SEARCH" button. Below the search bar, the "FILTER BY" section lists categories: Things (selected), Makes, Users, Collections, Groups, and Anns. The main search results are displayed in a grid of four items:

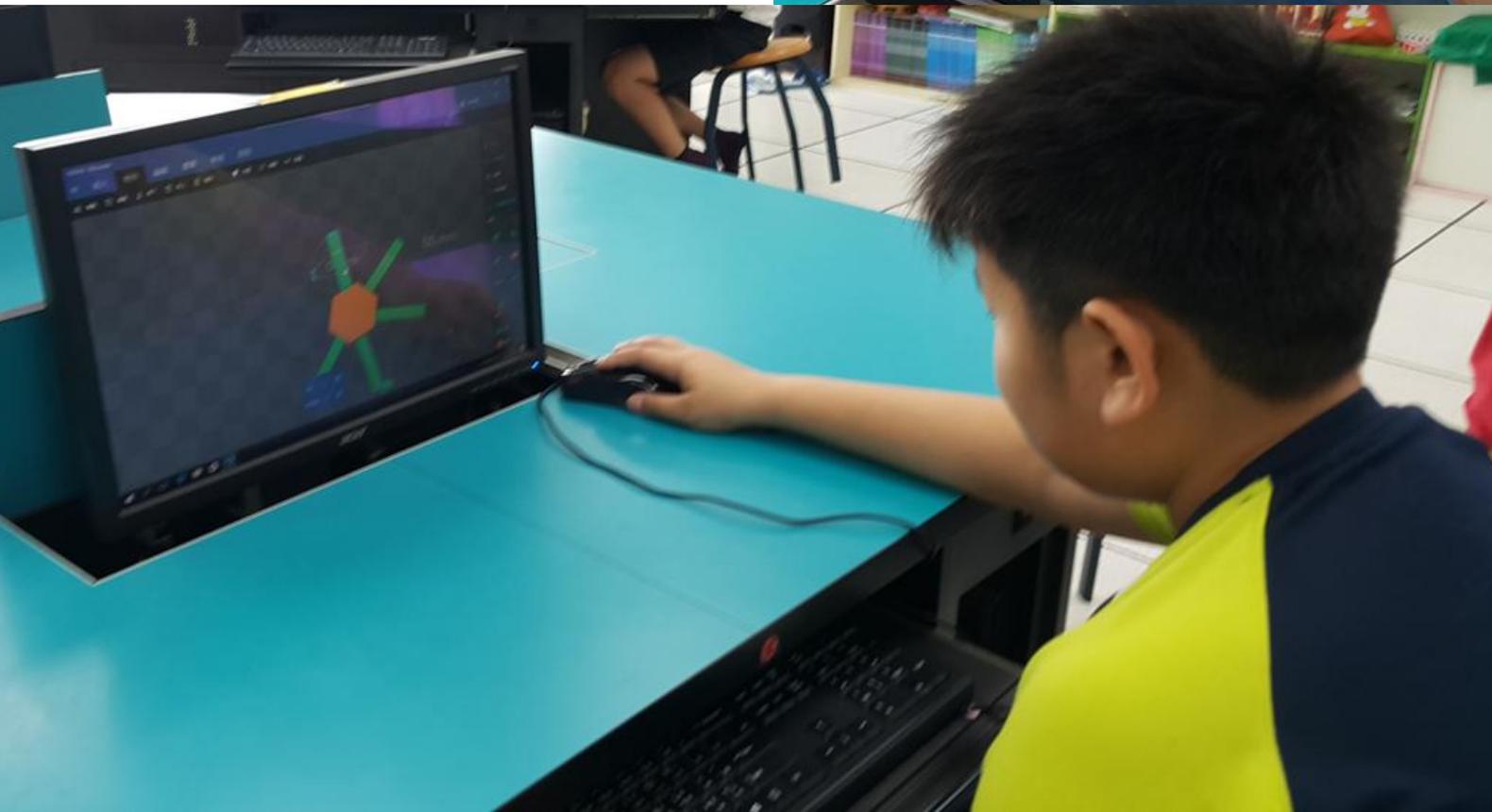
- Top Left:** A blue 3D-printed geometric structure. Title: "figet by rodman99", dated "Apr 4, 2017". It has 9 likes and 15 downloads.
- Top Right:** A red 3D-printed fidget spinner. Title: "Stor figet spinner by Leoniceboy", dated "May 14, 2017". It has 29 likes and 45 downloads.
- Bottom Left:** A blue 3D-printed fidget spinner. Title: "figet spinner by Herowolf", dated "May 12, 2017".
- Bottom Right:** A blue 3D-printed fidget spinner. Title: "Small Steel Ball Figet Spinner by Bazingaa", dated "Mar 24, 2017".

At the bottom left corner of the page, there is a small URL fragment: ".com/thina:2319963".

## 觀察2：測量真實指尖陀螺的構造與尺寸

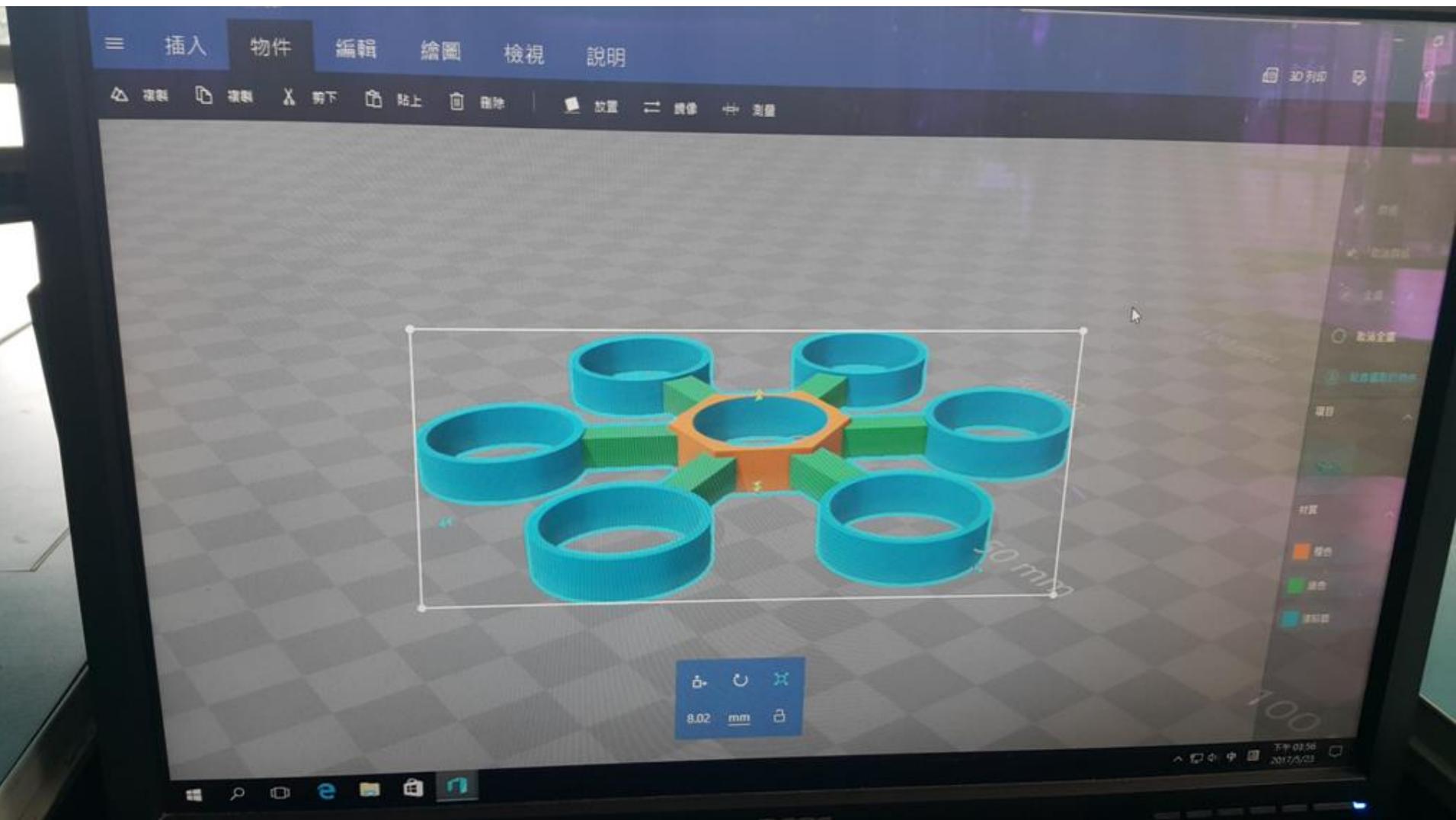


# 構思與組合指尖陀螺





找尋確實對稱的設計方式：利用數字座標



# 輸出與檢討：太大？、太小？



進度不同，差異化教學

# 檢討不同的指尖陀螺



# 互相合作設計

