

Thorncliffe Park P.S.: Exploratory Lessons for M4YC

Below are short descriptions of the exploratory lessons designed by the teacher team.

Cube Challenge: Discovering 3-dimensional Equivalence Through Flips, Turns, and Rotations

Students are asked to build as many shapes as possible using 3, 4, and 5 cubes. Then students work in partners to discover how many shapes they can make using 4 cubes and later 5 cubes. They have to be careful not to make duplicate shapes. They can identify duplicates by flipping and turning shapes to make sure they are equivalent.

Spatial Visualization: Building with the Mind's Eye

Teacher (and later students) constructed simple 3-D figures using different coloured cubes. Teacher described how to build the figure in an easy to understand step-by-step fashion. Students were asked to visualize what it would look like. Teacher then asked if anyone could picture the figure in their mind, and if so to describe it for the class. Teacher then presented a picture of multiple unique figures, only one of which is the actual figure that was described. Students are asked to identify which figure they had pictured and reason about how some of the options couldn't have been what was described.

Barrier Game

Students work in pairs with a divider set between them. One student builds a structure and gives instructions to his/her partner to build an identical structure. Spatial language is key to ensuring the accuracy of the structure building. Once the second structure is complete, the barrier is taken away and the two students can compare their structures.

Upside Down World: 3D Geometric Problem Solving

Students are presented with a brief narrative about a world that gets flipped upside down. They are then given a small set of buildings that have been flipped upside down and are challenged to think about what the figures would look like right side up. They are provided with bags of their own cubes and take turns describing to one another how to re-build the structure right side up.