Mental Rotation: Why should biologist care?

Visual representations are often used when displaying information in science. Many of these visual representations are two dimensional illustrations that are meant to convey a three-dimensional object (e.g. phylogenetic trees). The first part of this presentation will explore how mental rotation is connected to a biology student’s ability in tree thinking. Reading and comparing phylogenetic trees correctly involve understanding the branches of the tree can rotate at the nodes without changing the meaning or interpretation of that tree. The research conducted compare students’ scores on an instrument measuring mental rotation ability and an instrument that assessed their tree-thinking. Can a student’s measurement of mental rotation ability inform us as to how well they will do on a tree-thinking assessment? As a whole there is a connection between the ability to compare trees and a student’s mental rotation ability before instruction on how to read and interpret phylogenetic trees. This connection does not continue after a semester of instruction on how to read and interpret phylogenetic trees.

The second part of this presentation will explore if a student’s hobbies are connected to their mental rotation ability. Many hobbies involve the ability to visualize an object or end result in three-dimensions (e.g. pattern making or sculpting). Does enjoyment of such hobbies indicate an individual will have a higher mental rotation than the general public?