

NCTM ARTICLE:  
“Flying with the Bird Tetrahedron:  
An origami activity can lead to rich tasks in several branches of mathematics.”  
by Oistein Gjovik August 2012

This article highlights the benefits and usefulness of incorporating hands-on activities such as origami to deepen student understanding and to open mathematical discussions. Origami can help unpack a number of mathematical concepts including “geometry, algebra, combinatorics, puzzles, and dice explorations.” In folding a tetrahedron, Gjovik explains that teachers can use this opportunity to have students make mathematical observations and to question students so that they can think of ways to justify their claims i.e., “How can we be sure that it is a square?” Getting students to question their own thinking and coming up with ways to prove or provide evidence through the origami activity prepares students for deeper mathematical thinking.

As I have heard origami can be beneficial in the classroom, it was nice to read about how Gjovik described an actual origami activity that involved the observation of properties of the shape, finding symmetries, and calculating volume. One thing that I learned from reading the article is that that activity opens the opportunity for teachers to facilitate and raise important questions that will allow students to apply their prior knowledge and test their assumptions, promoting mathematical thinking. For instance, “Is an isosceles right triangle always a 45-45-90 triangle?” Moreover, I learned that preparing for and knowing what questions to guide students in a mathematical discussion as well as helping students draw and make mathematical connections remains a crucial task for the teacher.

From reading this article, I would like to learn more about the process of how a teacher can go about establishing classroom norms for meaningful discussions and similar activities to occur in class on a regular basis. More particularly, how can teachers convince students that learning this way—such as exploring mathematics by folding paper—can be useful and beneficial? Another idea I am still grappling with is in what ways can other origami activities, such as building modular origami from Sonobe units serve a similar purpose to sparking deep mathematical discussion and in what ways can it differ from the Bird Tetrahedron or expound upon it?

I admit the questions I raise are quite dense and I know there is no right or wrong answer as there is a lot for one to think about in regards to the mathematics and implementation of the activity in the class. Nevertheless, I hope to incorporate engaging activities such as origami in my classroom when I teach to show students that mathematics is not only explained and done by writing with pencil on paper but also encapsulates a multitude of representations through modeling with 3-D objects, oral explanations, drawings, graphs, charts, and symbols. Having the opportunity to work with middle school students at an after school math club on origami activities gave me a perspective on how students communicate their ideas while folding paper. I think this is a great opportunity for the teacher to apply mathematical terminology when communicating to students as it is used in an applicable and meaningful way. Furthermore, this serves as a great opportunity to spark questions that require students to reason and make sense of their observations and ideas.