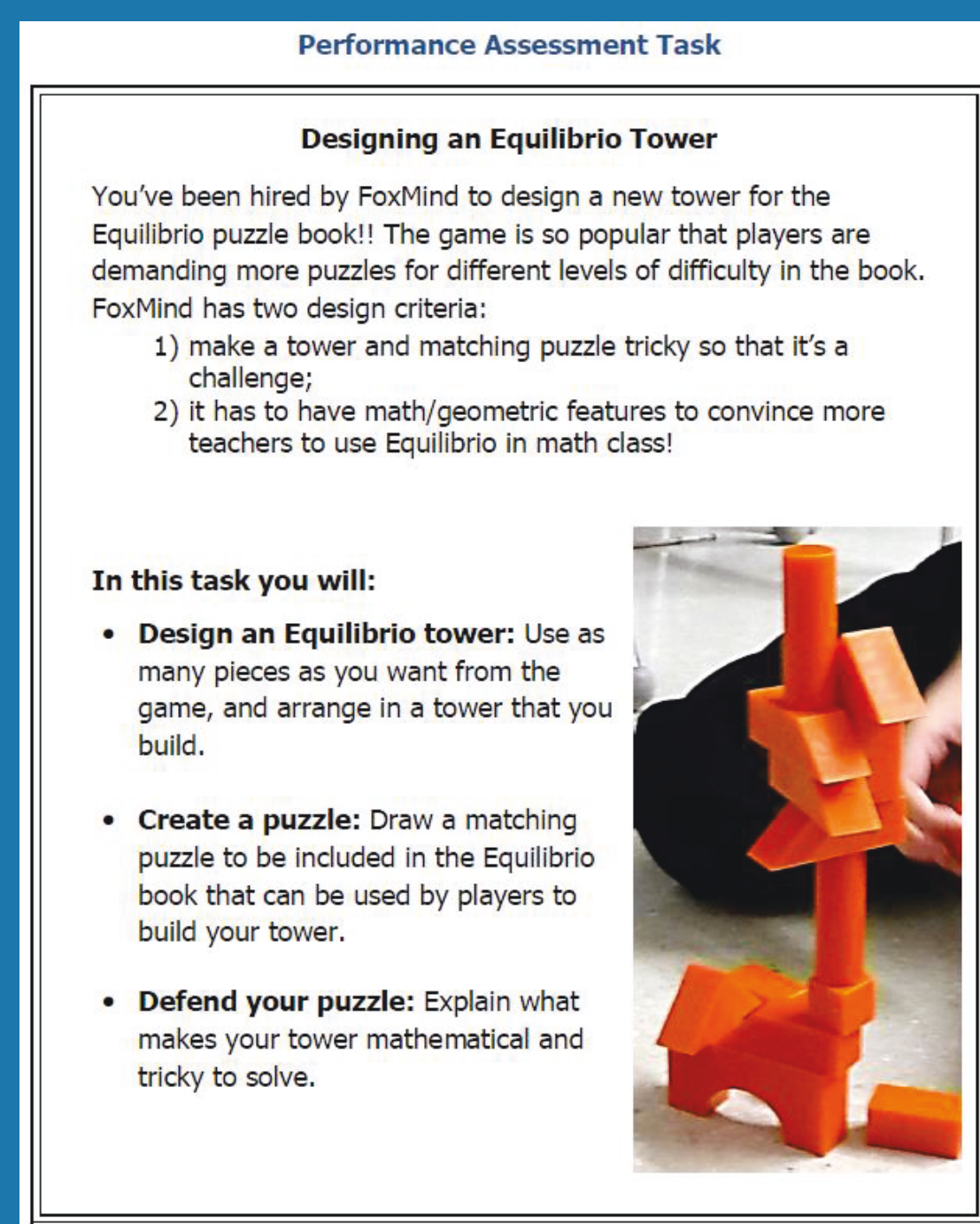


GENERATIVE UNIT ASSESSMENT: RE-VISIONING ASSESSMENT FOR GROWTH

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BACKGROUND

- Assessment's purpose is primarily as evidence to improve future teaching and learning in math class
- Reform in classroom-based mathematics assessment has not followed pace with reforms in teaching and learning
- Categories of assessment as formative (assessment for and as learning) and summative (assessment of learning) is limiting

QUESTION

What is the impact of designing and implementing a performance assessment to assess elementary school students' learning at the end of a math unit?

RESEARCH DESIGN

Over 4 months, Grade 4 and 5 students played games bi-weekly to develop logical and spatial reasoning, including Equilibrio and Quartex. The games framed a geometry unit on properties of shapes and transformations.

As a unit assessment, we created a PA within the context of Equilibrio tower-building. In pairs, students designed, recorded, and defended mathematically a new puzzle. A rubric assessed understanding and processes.

Data included students' working papers for each session, field notes, photographs, students' PA with screencasts, and interviews with the teacher and students.

Data analysis involved open coding of the teacher and students' reflections on their PA experience in light of the PA products. The teacher's and students' perspectives on PA informed four characteristics of assessment practices that are generative.

RESULTS

The PA effectively replaced a unit test because it sponsored teacher- and student-growth. The process was dynamic in its impact on those involved, in contrast to unit tests being seen as a fixed event. The findings extend beyond previous work which indicated PAs as accurately assessing student understanding and skills in math class. Four characteristics of growth are illustrated.

TEACHER'S DEEPENING AWARENESS OF STUDENTS' MATH THINKING

Teacher: *Lots of students shocked me at how much they knew ... it helped me understand their thinking.*

Student: *When you do it like this, you can actually explain you're thinking and show you're thinking*

STUDENTS DEVELOPING CONSOLIDATED UNDERSTANDING OF MATH IDEAS

Teacher: *They had to use the word symmetry and applying that into their tower helped them understand better ... even in the summative assessment they were still learning.*

Student: *You weren't actually getting tested on stuff you just learned, you're actually learning stuff too.*

STUDENTS' EMERGING PRODUCTIVE DISPOSITION

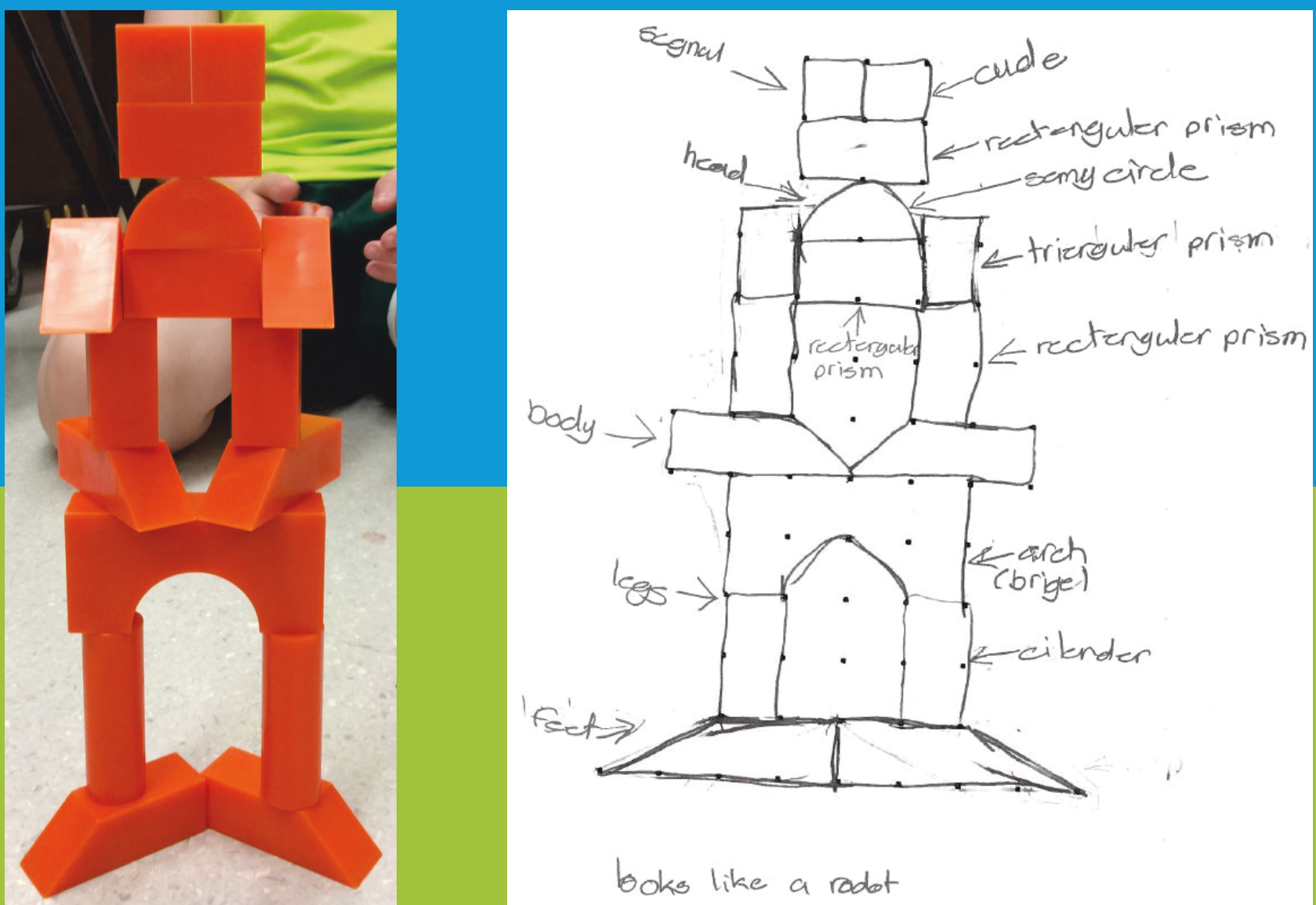
Teacher: *They were really excited to do math; anxiety was removed. It felt like they wanted to show their learning rather than get a [mark].*

Student: *I want to try again until I get it, and I'm so proud that I finally got it for once.*

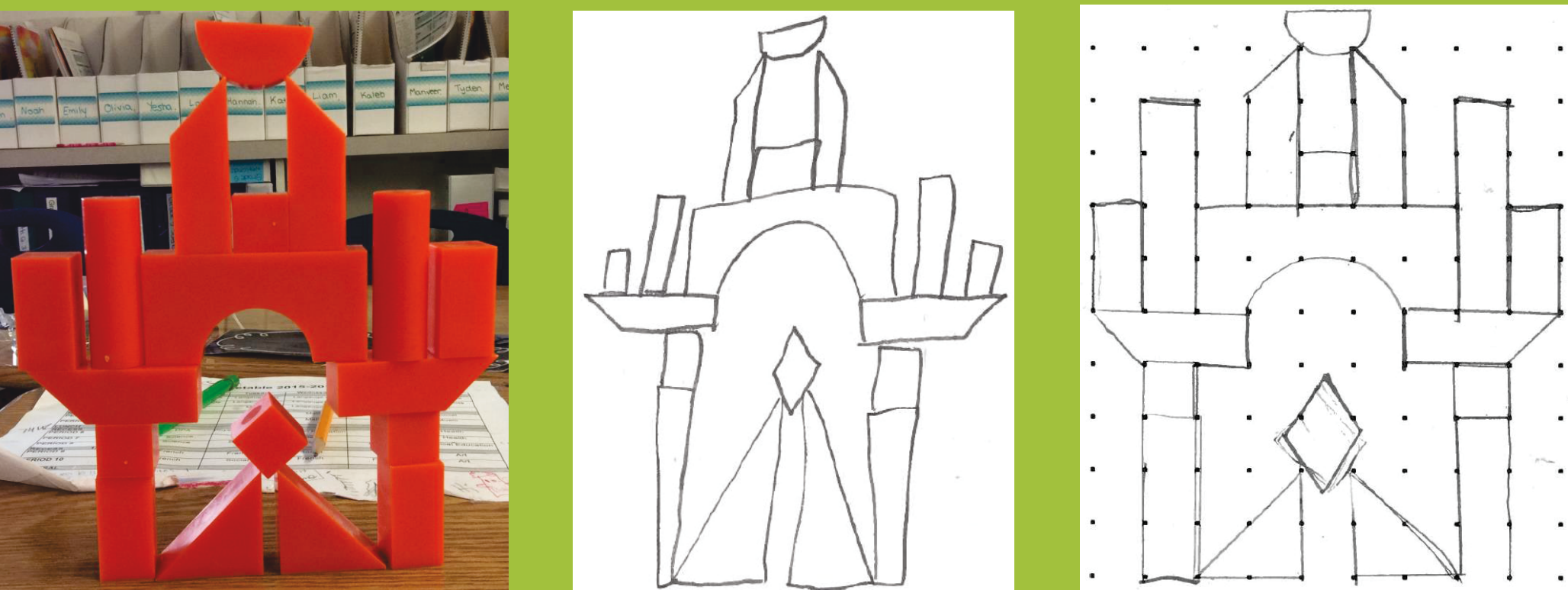
STUDENTS IMPROVING USE OF MATHEMATICAL PROCESSES

Teacher: *I could see from their first tower to their second ... their problem solving was something I focused on.*

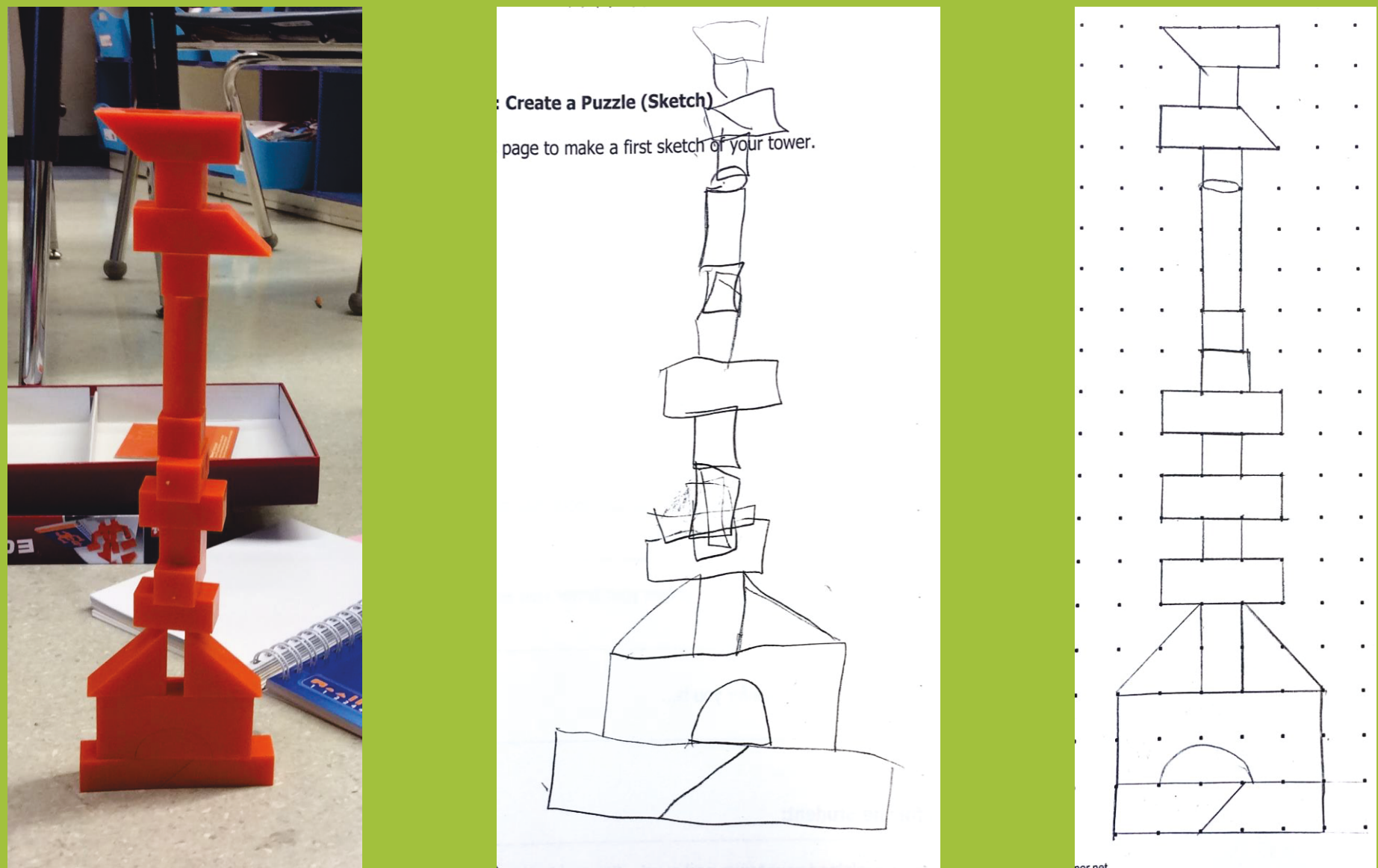
Student: *It helps us learn some tactical math thinking.*



1. *Making the rectangular prism and the 2 cubes below on the semicircle was hard because the center of the rectangular prism has to be on the semicircle. And the cubes have to be the something.*



2. *You need to have the square in the right angle or it will make the triangles and make the tower fall.*



3. *This part at the top has no symmetry because if you were to fold it the ends won't match up. It's also has symmetry. This part was from Junga.*

DISCUSSION

Through interpreting data, we re-visioned classroom practices to: 1) critique a means-end view of assessment as solely leveraging evidence to inform future actions; and 2) collapse categories which focus on timing of assessments. Rather, we recognize the human endeavor of learning—where *generative assessment* occasions growth for all involved as a necessary intention of attending to students' learning through engagement with an assessment task.

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